



THE IMAGE OF AGRICULTURE EDUCATION IN BOTSWANA

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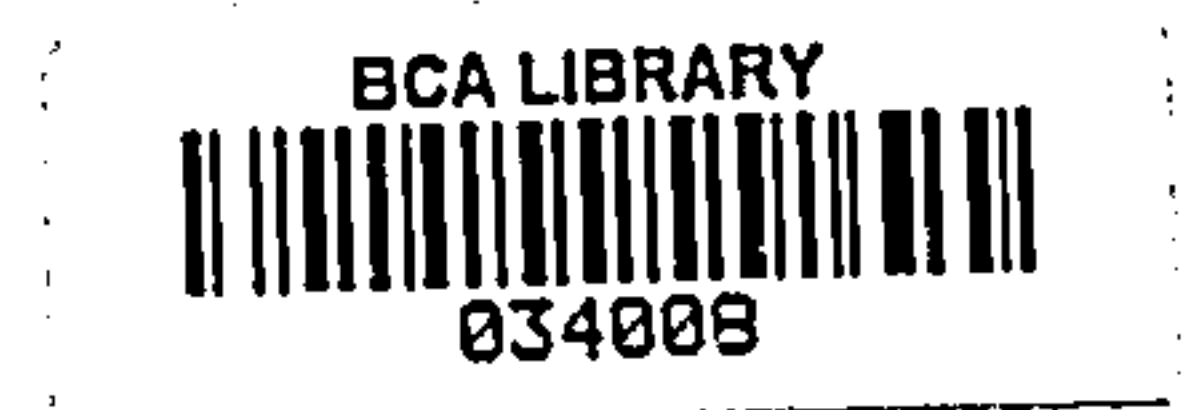
Mogadime Lepokane Rammolai



This thesis is presented for the degree of Doctor of Education.

Murdoch University

2009



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DECLARATION

I declare that this thesis is my own account of research and contains work that has not been previously submitted for a degree at any university or any other tertiary educational institution.

Mogadime Lepokane Rammolai

Murdoch University, Perth, 2009

ABSTRACT

This study examines agricultural education in Botswana among students and teachers. Since independence in 1966 to the present time, agricultural production has declined from about 40 percent to about 3 percent. Harsh climatic conditions and a general ignorance about agriculture contribute to the restricted perception of agriculture and careers in this field. Individual and focus group interviews were conducted with agricultural teachers who had resigned and former graduates in four secondary schools and three postsecondary educational institutions (Botswana College of Agriculture, University of Botswana, and Tonota College of Education). Negative, positive and mixed images emerged that revealed some similar and some contradictory perceptions of agriculture education. The attrition of teachers also attracted attention because of their working conditions and their images of agricultural teaching. However, the phenomenon of teacher attrition is not unique to agriculture.

Students and teachers had conflicting images concerning curriculum instruction. Teachers identified the inadequacy of practicals because students are unable to apply the theoretical knowledge they have acquired to satisfy the various skills required in their new jobs. On the other hand, students perceived practicals as misdirected intensive labour. Non-agricultural tertiary students demonstrated that they do not have a full understanding of the potential career opportunities that agriculture can provide. They often thought that agriculture was confined to ploughing and food production. Nevertheless, both agricultural students and non-agricultural students agreed that agriculture could be a good career that they might consider later in their lives.

Participants in the study suggested strategies to enhance the poor perception of agriculture education in educational institutions in Botswana. One strategy was for curriculum reform, such that agriculture teaching should reinforce practicals that are relevant to students' needs. Practical instruction should not be used as intensive manual labour but should be used to target specific skills that are needed in industry. Agriculture teaching should start at primary school so that pupils can develop a positive image towards agriculture education at a young age, at the age of seven students could be involved in simple experiments conducted in laboratories, then at eleven years students can start practicals in the garden, making sure not to overwork the pupils.

Through career guidance and counselling, agricultural teachers should broaden the limited perception that agriculture is simply food production and expand the field to its scientific and commercial careers, such as food processing and marketing. Even though the Ministry of Agriculture provides some incentives to farmers, they misappropriate the schemes. Access to loans has to be provided for students who have completed their studies and cannot find jobs so that they can also join the field of production.

Even though women are dominated by men in both agriculture and in education and food production in Botswana, this trend is changing; there are more female enrolments in agricultural educational institutions than males. The government is trying to create an equitable distribution of resources for women as well. The position of women in Botswana is better than what literature has revealed in sub Saharan Africa.

ACKNOWLEDGEMENTS

I would like to express my gratitude to all those who assisted me during the course of my study. My special gratitude goes to my God and Saviour Jesus Christ who gave me life to achieve my objectives, without Him, I would not have completed this study. I thank my family for their enormous support during my studies, more especially my dear wife, Kopanang and my son Katlego who came with me to give me support and encouragement.

My sponsors, Botswana College of Agriculture, deserve my gratitude for their financial support during the three years in Perth. Murdoch librarians who also assisted me with the databases; your assistance has been invaluable, trust me when I say; your skills will be passed on to others back home.

I cannot forget to mention how grateful I am to my supervisors, James Bell and Jan Currie, without whom I would not have completed this thesis. The patience and understanding they have shown has been invaluable. During my struggle with formal writing, you have been there to encourage and pass on your skills to me.

I would also like to thank Colin Besealy and Julia Hobson at the Learning Centre for their expert assistance in grammar and other aspects of formal writing. After contact with you I felt more confident and focused. Your assistance has been tremendous.

Special to my heart are the students and teachers in Botswana who reserved their precious time for me during data collection. I cannot help remembering some students who were vociferous about their dislike for agriculture, a subject that makes them dirty.

Thank you to the teachers, heads of schools and higher institution personnel for granting me permission to collect data. I would like to say to you in Setswana, "*le kamoso betsho.*" I will not forget you and promise to share my findings with you so that we forge a valuable relationship that will encourage fruitful interactions in the future.

To my friends in Perth I would like to say, you have been kind and sympathetic in your assistance with editing my work. You sacrificed your time and did not spare any effort to assist me. You have shown a full understanding of the spirit of humanity.

To my brethren at the Fremantle Seventh Day Adventist Church, I also hold you dear to my heart because it was through your moral and spiritual support that I was able to concentrate consistently on my academic work. When I was low, you were there to buoy me up with your special prayers.

No human being can live unto himself/herself. If I have overlooked anyone in my acknowledgements, I ask for forgiveness, your assistance was also significant. I thank you for your contribution too.

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PREAMBLE

My reading of the Bible in Daniel 2 has inspired the methodology for this study. In this story, King Nebuchadnezzar of Babylon had a terrible dream, which he could not later recall and was worried. He then summoned all the wise men of Babylon to come and tell him the dream and its interpretation. Even though what he asked for was not the right order for dream interpretation, he insisted that the wise men tell him what he dreamed about and the interpretation because they claimed to be wise. After failing to tell the king the dream and its interpretation, he pronounced the death sentence to all the wise men of Babylon and their families including some three Hebrew slaves working for the king. The three pleaded with the king to spare them all while they entreated their God for the dream and its interpretation. Nebuchadnezzar consented.

Then Daniel through the inspiration of God was able to tell the king what the dream was and its interpretation. It transpired that the king's dream was a statue with a head of pure gold, its chest and arms were made of silver, its stomach and thighs were made of bronze, its legs were made out of iron and its feet were made out of part iron and baked clay. This great image had frightened the king very much.

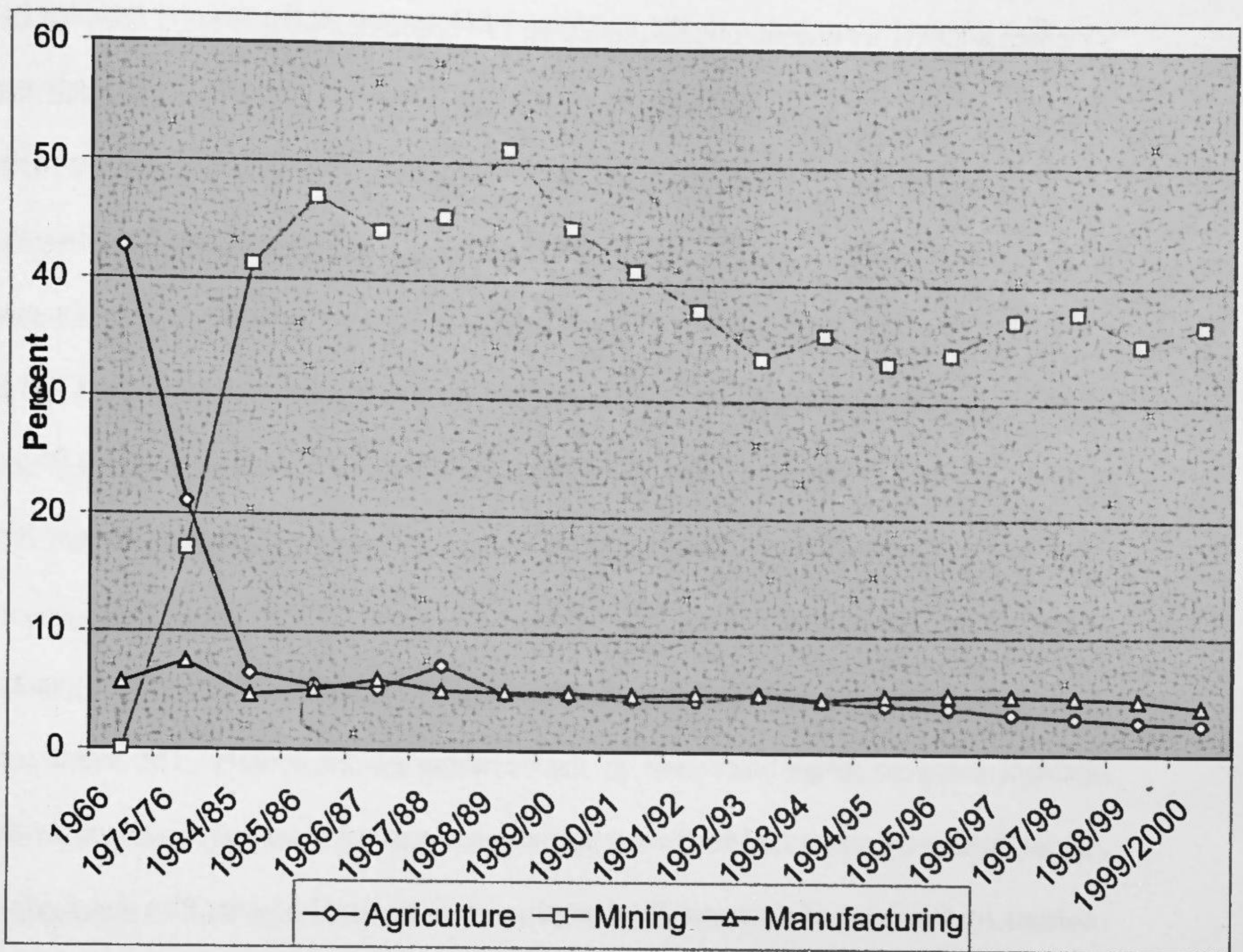
Daniel was able to tell the king the dream and its interpretation through divine revelation. In my study however, I started by asking the students to tell me what images they have of agriculture and then I interpreted the images. Students and teachers have their perceptions that I then interpreted. The images of agriculture were diverse and interpretations may vary depending on who is doing the job. My task is to meet the research participants for confirmation of the images of agriculture in Botswana.

CHAPTER 1

INTRODUCTION

The Context of the Study

Botswana has a population of 1.7 million (Central Statistics Office, 2001: 4), with a land area of 585 000 km². It is considered an upper middle-income African country with a per capita Gross National Product (GNP) of about US\$3300 in 1997 (National Master Plan for Agricultural Development, 2000: 1). During the colonial era Bechuanaland's crop production was so neglected that she was dependent upon imported basic foodstuffs during droughts to feed its population (Picard 1987). However at independence according to Picard (1987: 115) "the agricultural system was so underdeveloped that even in relatively good years, [sorghum], which is the country's staple food, had to imported" At present, thirty-five years after independence, the country still cannot feed its population and depends on food imports from South Africa and its other neighbours. The role of agriculture in Botswana has undergone tremendous change since independence in 1966. Agriculture at that time contributed about 40 percent to the Gross Domestic Product (GDP), but has now declined to about 5 percent (Seleka and Dambuza, 2000). This decline has been a result of the growth of other sectors of the economy like mining whose Gross Domestic Product rose from 12 percent in 1974/1975 to 35 percent in 1994/1995 (Seleka and Dambuza, 2000) see Figure 1.



Source: Seleka and Dambusa 2000

Figure 1: Botswana's GDP's contribution per sector since 1966 to 2000

In spite of agriculture's declining contribution to the GDP, it still acts as a source of food, employment and investment opportunities for the majority of rural area dwellers. This sector also has linkages in the economy with upstream and downstream industries (NDP 9 2003/04-2008/09). The greatest challenge that faces the Ministry of Agriculture is to make agriculture productive, profitable and sustainable so that it could contribute effectively to economic development, poverty reduction and food security to fulfil Vision 2016 (NDP 9 2003/04-2008/09).

The greatest contributor to the economy of Botswana is the mineral industry (mainly diamonds). In spite of this bleak picture, the government has continued to provide support to the agricultural sector during the past 37 years. The National Master Plan for Agricultural Development (NAMPAD) conducted by Israeli Consultants describes an even smaller percentage of agriculture in relation to the macroeconomic structure of the country. They state that, "according to official statistics, its overall contribution to the GDP is just 3.1 percent broken down as follows: Arable agriculture 0.50 percent, livestock 1.95 percent and veld products (hunting, forestry, and fishery) 0.65 percent" (National Master Plan for Agricultural Development, 2000: 22).

From the figures provided by the Israeli Consultants, it is clear that agriculture in general plays an insignificant role in the economy of the country. The significance of agriculture is therefore tied to the government agricultural policy of food security that "is related to the issue of domestic food production" (National Master Plan for Agricultural Development, 2000: 2) and "is defined as permanent access by all people to productive sources of income in order to be able to satisfy their food demand. It therefore advocates the diversification of income sources and efficient, competitive and sustainable domestic production."

The government, therefore, regards agriculture as crucial to the economic development of the country even though it does not contribute significantly to the economy. The positive image that agriculture receives from the government in spite of its bleak economic perspective is evidenced by the creation of the Agriculture Master Plan.

The other factor contributing to the national significance of agriculture is that it provides about a fifth of the employment opportunities within the country. Half of the

population live in rural areas and about half of the population depend on arable farming for its income (National Master Plan for Agricultural Development, 2000: 1).

Botswana has a serious cereal deficit that it has to overcome by importation. The projection for the marketing year (2001/2002) is a cereal deficit of 279 000 tonnes, which include 128000 tonnes of maize and 53 000 tonnes of millet and sorghum (SADC Quarterly Bulletin: html document). The domestic production of 55 000 tonnes is not enough to supply the total requirements which stand at 333 000 tonnes (SADC Quarterly Bulletin: html document). These figures vary from year to year.

Interestingly, even though there is a need to strengthen and diversify agriculture in Botswana, agricultural science is apparently perceived as a low status course by students in comparison with courses like information technology, medicine, law and engineering. This situation is evident particularly in secondary schools where the average students appear to be encouraged to take agriculture as an elective, whereas the best students are encouraged to take the “pure sciences”. However, the selection for sciences in Botswana’s education system at secondary level is based upon students’ academic performance at Form Three (year 10), and students could choose arts subjects if they wish. Those students who aspire for science based careers and whose science scores are high are selected for “pure sciences” options that include, Mathematics, Chemistry, Physics and Biology in senior schools (Ray 1988). In this selection it is conspicuously clear that Agriculture is left out because it is not regarded as a “pure science” subject.

Teachers reinforce the impression that agriculture is more suited to those who are not academically high performers. This attitude is perpetuated during interviews for sponsorship, which take place after the first two years of university education. This is when

students have to choose their career and thus specialise. All those students who have not made the grade for courses like medicine and engineering are asked to consider a career in agriculture. This attitude lowers the image of agriculture and may have a negative impact on any student who finally chooses to take agriculture as a career. However, some students with high grades decide to do agriculture because they like it.

Approaches to Education: Traditional and Modern

Education can be described as a system of beliefs that aim at controlling and guiding a society for self-maintenance. Strouse (1997:54) recognises the fact that education is a means of control exercised by an older generation over a younger generation:

Education is the influence exercised by the adult generations on those that are not yet ready for social life. Its object is to arouse and develop in the child a certain number of physical, intellectual and moral states, which are demanded of him by both the political society as a whole and the special milieu for which he is specifically destined.

The controlling function of education is evident in both traditional and western education. Traditional schools for boys and girls in Botswana used to socialise students into their societies to fulfil specific functions. Traditional education, unlike western education, was not based on the cash economy, even though skills were imparted for active roles in the society. The introduction of the cash economy has changed the conception of traditional education which is now regarded as outdated and only suitable for the "uneducated" in the modern sense. Paid occupations to suit people for jobs have changed the way students and parents perceive agriculture and vocational skills.

Agricultural Production in Botswana

Agriculture is practised under two land tenure systems in Botswana, both including crop and livestock farming. There is the traditional system in which the land is owned by the community and cannot be bought or sold. The second system is the modern system where the land is leased to commercial farmers or is freehold. The traditional is characterised by low output and is practised by the majority on communal lands. The commercial is characterised by the use of machinery, is business-oriented, and is practised by the minority who are able to purchase land. Commercial agriculture is marked by the market approach and the use of modern technology and utilises "purchased inputs, such as hybrid seeds, agro-chemicals, and exotic livestock breeds" (NDP 8, 1997/98-2002/03: 228). In contrast, traditional agriculture is subsistence-based and labour-intensive.

Traditional farmers practise mixed farming in communal grazing areas whereas commercial farms are associated with freehold or leasehold farms. The traditional farms cover about 70 percent of the total land area while the commercial farms cover only 8 percent and tend to specialise in cattle production. The National Development Plan (NDP 8, 1997/98-2002/03) indicates that commercial farms accounted for 14 percent of all the cattle and 37 percent of the total production of cereals and pulses in 1993.

Even though in macroeconomic terms agriculture has been on the decline contributing only 2.6 percent to the Gross National Product (GNP), it is government policy to improve this sector because according to The National Master Plan for Arable Agriculture and Dairy Development:

Agriculture has the potential to provide for food security at both the household and the national levels and the fact that about half of the rural

population or 20% of the country's population still depends on agriculture for income and employment (Government White Paper No 1, 2002: 1).

It is evident then from the policy on agriculture that even though agriculture is contributing insignificantly to the GNP, government perceives agriculture a priority politically and strategically because rural people still depend on it. In the 1980s when the government realised that self-sufficiency could not be achieved, it adopted a strategy of food security at the expense of self-sufficiency. However, given Botswana's geographical location (land-locked and susceptible to persistent droughts) it has become crucial that Botswana should do a lot more in trying to attain self-sufficiency in agricultural production. When delivering the budget in 1999, the Minister of Finance and Development Planning focused on the challenges that still face the agricultural sector and said: "the challenges include improving food security and rural employment in the face of persistent droughts. To meet these challenges, we need to transform and diversify our agricultural production base" (*The Budget Speech*, 2000: 10).

Traditionally agricultural duties (crop production) were mainly the responsibility of women and girls, while the men and the boys were responsible for the livestock. Acker et al. (1998: 14) reinforce this point by saying that:

It is well documented that women play critical roles in food production at the household level in sub-Saharan African countries. Women's role in food production continues to increase as urbanization and economic difficulties drive men to the cities and women are left to compensate for this.

The division of labour is fading gradually among those studying agriculture. Currently agriculture is becoming gender-differentiated in the opposite direction with males constituting a larger percentage in agriculture and females just a small percentage in both tertiary studies and in the work force. Table 1 illustrates low enrolments for females per

programme for 1999/2000 and 2000 /2001 intakes at the Botswana College of Agriculture (BCA).

Table 1 Enrolments at BCA showing Males and Females per Programme

Programme	Year of study	1999/2000			2000/2001		
		Male	Female	Total	Male	Female	Total
Certificate in Agriculture	1	36	11	47	33	18	51
	2	31	10	41	35	12	47
Certificate in Animal Health and Production	1	37	10	47	30	9	39
	2	22	5	27	33	10	43
Certificate in Forestry and Range	1	-	-	-	-	-	-
	2	10	9	19	-	-	-
CSRM	1	-	-	-	10	8	18
Diploma in Agriculture	1	18	4	22	31	12	43
Diploma in Animal Health and Production	1	20	1	21	40	8	48
	2	3	6	9	12	2	14
Diploma in Agricultural Education	1	29	5	34	51	19	70
	2	20	7	27	24	5	29
	3	42	12	54	23	5	28
Diploma in Agricultural Engineering	1	5	-	5	-	-	-
	2	-	-	-	7	-	7
	3	42	12	54	23	5	28
Diploma in Forestry and Range	1	16	5	21	-	-	-
	2	-	-	-	12	2	14
Diploma in Horticulture	1	-	-	-	8	9	17
	2	-	-	-	-	-	-

Programme	Year of study	1999/2000			2000/2001		
		Male	Female	Total	Male	Female	Total
Bachelor of Science in Agriculture	2	12	14	26	8	2	10
	3	22	2	24	14	4	18
	4	9	9	18	22	2	24
Bachelor of Science	2	11	6	17	15	4	19
	3	11	6	17	15	5	20
	4	13	10	23	8	6	14
SPEC		20	7	27	9	5	14
Total		394	143	537	449	151	600

Source: BCA Annual Report.

Agricultural Education in Botswana

Agriculture is offered at all levels of government institutions in Botswana. Two streams are offered in lower primary (year one), and upper primary year four and year five to year seven. The overall aim of teaching agriculture at this stage (upper primary) is to enhance the economic development of the youth, who are considered as future leaders. However, it is interesting to realise that agriculture here is considered only in the limited aspect of food production and employment creation.

Agriculture is also offered as a core subject at junior schools from years eight to ten. Then those students who pass their Junior Certificate examinations can opt to take agriculture at senior school. At this level, it is not a core subject any more, even though in some schools it is treated as a core subject. The rationale for offering agriculture at these levels is the recognition that agriculture is considered as "pre-requisite to economic development, the teaching of agriculture in schools is aimed at developing a human base

capable of improving agriculture production and stimulating economic growth . . .” (Junior Secondary Syllabus).

Agricultural programmes are offered in the Brigades and tertiary institutions like Botswana College of Agriculture (BCA), Tonota College of Education (TCE) and the University of Botswana. All these institutions offer agriculture at varying levels of specialisation. The Brigades offer various vocational trades to those students who have performed badly at year ten and twelve and cannot be admitted in other institutions whose entry requirements are more stringent. Botswana College of Agriculture offers agriculture from Certificate level to Degree level in various areas of agriculture, for example, Certificate in Agriculture, Certificate in Forestry and Range, Diploma in Agriculture, Diploma in Agricultural Education, Bachelor of Science in Agriculture, Bachelor of Science Agricultural Education. The University of Botswana (UB) offers various programmes from Diploma to Degree level and has started to offer a degree in Agriculture for primary school teachers in the last five years.

Status of Agricultural Education

Presently the Ministry of Education is finding it difficult to recruit qualified agricultural teachers to supply all the junior secondary schools throughout Botswana. The human power shortage is so acute that unqualified teachers (those who have completed their “O” levels and those who only have a Certificate in Agriculture) are employed to fill the gap. The recruitment of expatriates is also not sufficient to alleviate the situation. Even the College of Agriculture does not have the capacity to supply enough teachers to meet their demand. Coupled with this deficiency is the attrition of local agricultural teachers. Subair and

Mojaphoko (1999: 47) reveal the state of affairs in their study on the factors of attrition among agriculture teachers in Botswana.

Although Botswana has taken great strides in building the image of agricultural education, and training of teachers, the country is continuously faced with a shortage of agricultural teachers in secondary schools. This statement is supported by the Botswana National Development Plan (1991-1997), which states that the attrition percentage of trained Botswana teachers per year is 8 percent, of which 3.2 percent are agricultural teachers.

The attrition rate of local agricultural teachers, excluding expatriate (end-of-contract) teachers is 4 percent, according to 1996 figures (Subair and Mojaphoko, 1999). The study by Subair and Mojaphoko does not reveal the proportion of female teachers who are affected by the phenomenon. It would have added an interesting aspect to contrast the reasons for attrition between the genders, so that appropriate measures could be taken to deal with the differences, if any.

Agricultural training in Botswana is attracting more attention, shown by increased enrolments at the Botswana College of Agriculture (BCA) and its upgrading to degree programmes. The programmes include a degree in Agricultural Education and a Diploma in Agricultural Education and a general degree in Agriculture. Even though there are more males than female students in the programmes offered at the college, there has been a marked increase of females as noted by Matte (1999). One of the factors has been the introduction of merit-based enrolment to the college in contrast to enrolment based on available accommodation facilities that favoured male students. It has become clear that there is a move towards accessibility to educational opportunities for females.

Research Questions

This research investigates Botswana students' and teachers' images of agriculture education. More specifically, the following research questions form the focus of this research:

1. What is the present image of agriculture education in Botswana?
2. What strategies could be used to enhance the image of agriculture education in Botswana?
3. Should agriculture be an elective or a compulsory subject in schools in Botswana?
4. Which factors determine students' choice of career in agriculture and are these factors related to the present image of agriculture education in Botswana?
5. Which factors determine the attrition of agricultural education teachers in Botswana?

Framework

The Image of Education – Sociological Perspectives

Educating a society involves some measure of power on the part of the provider of the education towards the recipients. In modern western societies, the provision of education is by the dominant class to all classes. It does not involve tangible use of force, but is achieved “primarily through consensual social practices, social forms, and social structures produced in specific sites such as the state, the school, the mass media, the political system, and the family” (Maclaren, 1989: 173). However, hegemony by the dominant group during the colonial era involved force because there was resistance. It is true that non-western societies had forms of traditional education they propagated through similar approaches within their societies.

The image that education receives within society depends upon the dominant class and the structures they put in place. The subordinate classes are gradually won over by the dominant class and they willingly participate in the education provided. This is what happened during the colonial era in different parts of the world. Education in all societies is always laden with ideology and is never free from a state's control. In this process of the state's control of education, the recipients are often thought only as objects that have to utilise what they are offered by the state. Maclaren (1995:56) articulates this point by observing that, "students are treated as objects of consumption just as they are simultaneously taught the value of becoming consuming objects." In real classrooms, it cannot be assumed that students are merely consumers; they are active and interact with their teachers and with their society to make their context meaningful and interesting. Even though the curriculum is predetermined for students, finding out what meaning they attach to it through images they have developed because of the teaching and learning process shows that they should not be thought of as passive recipients, but have developed perceptions that are worth investigating.

The provision of education involves some weaknesses that Henry (1966) calls "vulnerabilities" that are an inherent characteristic in educational systems regardless of the nature of education provided. Both traditional and western forms of education have vulnerabilities because the state acts under the expectation that the education it offers would be adequate and acceptable to the recipients. In spite of the expectations, the state is uncertain about the reaction of the recipients towards the education they are going to offer. Students, on the other hand, may accept it or not but this is dependent upon whether they feel it is worthwhile or not.

This study's framework is based on the symbolic interactionists also known as action theorists who are micro-theorists (Walker and Loughland, 2001). The focus is on individuals and how they construct meaning within their society. The aim is to find out what individuals in groups have to say or why they have chosen particular actions and try to ascertain if there is any pattern. Walker and Loughland (2001: 10) summarise the focus of interactionism by saying, "that all action is meaningful and meanings direct action."

Definitions

Agriculture

Agriculture has undergone tremendous changes and cannot be entirely limited to the production of food alone. Though it is true that agriculture involves the production of food, this traditional definition cannot be relied upon in our modern world. Agriculture involves a number of phases and processes. The production of food, research, processing, marketing and education are part of agriculture. Most people tend to view agriculture as having to do with farming and ploughing but this is a rather limited view. White (1990: 19) presents an expanded descriptive and inclusive definition of agriculture that has been proposed at the United States National Academy of Sciences in 1988 as:

[Encompassing] the production of agricultural commodities, including food, fibre, wood products, horticultural crops and other plant and animal products. It also includes the financing, processing, marketing and distribution of agricultural products, farm production supply and service industries; health, nutrition and food consumption; the use and conservation of land and water resources; development and maintenance of recreational resources related to economic, sociological, political, environmental and cultural characteristics of the food and fibre system.

This definition of agriculture is preferred because agriculture is not considered from the narrow view of production only. The definition also reflects the sustainable agriculture perspective that is now becoming definitional currency throughout the world.

Agricultural Education

The image of agricultural education in this study refers to the way in which agricultural teaching in educational institutions is perceived by both teachers and students. The perception is generally negative for both teachers and students. The image is based on the experiences of teachers as the providers of agricultural instruction and on students as consumers of the teachers' instruction.

Value of the Research

Botswana needs more agricultural workers and teachers. The significance of this research is to clarify the present images of agriculture education and attempt to improve them in secondary schools. Some of the students who are not good in mathematics and the pure sciences instructed to choose agriculture as an elective, because teachers think it is easy whereas those who are good in maths and the pure sciences are excluded from agriculture, particularly in years 11 and 12. The stigma of agriculture as a low status subject is implanted in the minds of those whose performance is poor. Similarly, in American colleges there is also a negative stigma attached to doing agriculture: "Educators say a big part of the problem is that the profession of agricultural education and food production often are stigmatised in the minds of students, particularly African American students" (Morgan, 2000: html document).

The survival of Botswana as an independent nation depends heavily on agriculture. Magee, when interviewed by Morgan in a study about African Americans and Agriculture,

pointed out, “a people can never be truly independent as long as all its groceries are in someone else’s pantry” (Morgan, 2000: html document). Botswana’s “groceries” have been in the South African ‘pantry’ since independence until the new millennium, and the situation may not change in the near future if nothing is done about it.

The educational situation in Botswana changed at the start of this millennium (2000). After the “O” levels, students used to go to National Service (Tirelo Sechaba) for one year. However, in 1999 the scheme was cancelled after an evaluation determined it was wasteful. The cancellation of the scheme has had an impact on students’ choice of careers because it was done without a concomitant increase in the capacity for tertiary institutions to absorb these students. This currently makes it difficult to determine which students are studying agriculture out of a genuine interest in the subject and which ones are there because they had no alternatives.

Methodology

Deciding which method is the best for the researcher is not easily resolved because both qualitative and quantitative research methods vie for superiority. Sarantokos sees the solution of this impasse by saying: “Qualitative and quantitative methods are the tools of the trade of social scientists, who use them according to the circumstances . . . according to the research question, the resources available . . . and most of all the type of information required” (Sarantokos1993: 56).

The conflict need not exist because these methods could be used in combination (triangulation) to take advantage of their different strengths in order to produce a credible piece of work. It also depends on the researcher which method he/she thinks is suitable for any particular research.

For this research issue, statistics about the problem exist, so there is little need at this time for surveys and more quantitative data. Despite the government's efforts to improve the image of agriculture, the problem persists. There are deeper issues that need to be uncovered, so the present study uses qualitative methods to obtain an in depth overview of the issues involved and to uncover them.

It is crucial to understand the philosophic assumptions of the qualitative and quantitative research paradigms. Many quantitative researchers regard their paradigm as more objective and of a higher status than qualitative research. The assumptions have to be clarified to show that qualitative research is also rigorous and is just as acceptable as quantitative methods. The two research paradigms, qualitative and quantitative, are based on competing perspectives about understanding the world.

The next section focuses on the crucial assumptions to illustrate the philosophical underpinnings of both research paradigms as suggested by Maykut and Morehouse (1994) and Erlandson et al (1993).

Objective versus Subjective

The two major paradigms of research use the terms subjective and objective. In the qualitative paradigm, subjective research is often seen as synonymous with poor research, and objective research in the positivistic paradigm tends to be valued as scientific and verifiable. However, Maykut and Morehouse (1999) provide a new interpretation for these two terms in order to give a clearer meaning so that the confusion that exists between these paradigms could be identified and understood, particularly for the qualitative researchers' defence of this paradigm. Being objective is seen as being synonymous with good research

in the quantitative approach and erroneously so in the qualitative approach. Maykut and Morehouse (1999: 20) illustrate:

The traditional position [quantitative] has had the advantage of defining objective and subjective as they relate to research. Therefore, objective has come to mean true, factual, and real. By default, subjective has come to mean partially true, tentative, and less-than-real.

According to Maykut and Morehouse, an object means 'a thing, an entity' and "to be objective is to be cold and distant. Within this framework, subjective also takes on a different meaning – to be subjective is to be aware of the agency that is of action." It also means to be aware of the agency or action. In this paradigm, subjective is synonymous with the actors/participant's perspective. The qualitative researcher is trying to understand behaviour from the perspective of the subjects in their context. Maykut and Morehouse (1999: 20) illustrate this point further:

Qualitative researchers understand that they are also subjects . . . and not outside of the process as impartial observers. Subjective researchers are exposed to the same constraints in understanding the world as the persons they are investigating.

In this research, therefore, the first person personal pronoun has been used in some chapters. In quantitative research, the use of the personal pronoun is deemed subjective and unscientific and thus undesirable or inappropriate. Thus, the use of the personal pronoun could not by itself invalidate the findings of the research.

Words and Numbers (statistics)

The naturalistic paradigm depends on the use of words as opposed to the positivistic approach, which employs numbers or statistics. Words are used in almost all human interaction because that is the way people communicate their situation as they experience it. The naturalistic researcher's function therefore "is to capture the process of interpretation"

(Maykut and Morehouse, 1999: 18). This function will obviously require a good understanding of and ability "to reproduce in one's own mind the feeling, motives, and thoughts behind the actions of others" (Maykut and Morehouse, 1999: 18). Maykut and Morehouse conceive the task of the qualitative researcher as attempting to find patterns of meaning of words and actions of the participants ". . . and to present those patterns for others to inspect while at the same time staying as close to the construction of the world as the participants originally experienced it" (Maykut and Morehouse 1999: 18).

The positivist approach, on the other hand, uses numbers/statistics to: "transcend the particular by higher and higher reaching for abstraction, and in the end disclaims in principle any explanatory values at all where the particular is concerned" (Maykut and Morehouse 1999: 18). From a qualitative perspective, to present research statistically may be to rob it of effectively representing the participants' experience. However, these two paradigms can compensate for what each of them lack through the processes of triangulation.

The Sample (Selection of Respondents)

Purposeful sampling (Erlandson et al, 1993; Patton, 1990; Sarantakos, 1993; Maykut and Morehouse, 1994) procedure has been used in this research. The method used enabled the researcher to purposefully choose the participants relevant to the research topic. This sampling does not intend to be representative, "but to maximise the range of information uncovered. The nature of the sampling process is governed by emergent insights about what is important and relevant" (Guba 1981: 86). Maximum variation sampling strategy (Patton 1990) was used to select the respondents.

According to Patton (1990:172) when this sampling strategy is used there would be no attempt to "generalise findings to all people or groups but would be looking for information

that elucidates...variation and significant common patterns within that variation.” Therefore, there was never any attempt to generalise the results. In this study, the selection of research sites – rural and urban areas, gender, agriculture and non-agriculture teachers and students, were themselves a case of maximum variation sampling or strategy.

Based on the research strategy selected (maximum variation sampling), twenty-four (24 students) and twenty-seven teachers from urban and rural settings were selected for the interviews, (see to table 2). There are twenty-seven Senior Secondary Schools in Botswana spread in the seven districts. Four schools were chosen from the seven districts, two in the towns and two in villages, (see Table 2).

The second set of respondents from agricultural and non-agricultural institutions were selected as follows; two (2) lecturers from BCA and five (5) agricultural students, five students (5) from the University of Botswana were also selected for interview, refer to table 3. The third set of respondents selected were six (6) resigned/retired agricultural teachers, (see to table 6). The fourth set of respondents selected were four (4) former BCA (Botswana College of Agriculture) graduates, (see table 5).

The teachers/lecturers in the study ranged in age from 25 – 43. This range also applies to retired teachers and former BCA graduates. The students’ ages ranged from 16–39 from four secondary schools selected, the University of Botswana and Tonota College of Education. In all the sites a majority of the participants were male. The bias for males was not by design, but because in these sites there are more male students than females, research indicates that educational institutions in Botswana have more males than females.

Table 2 Secondary School Respondents.

Secondary schools					
Name of Sites	Agriculture Teachers	Non Agriculture Teachers	Agriculture Students	Non Agriculture Students	Teachers and gender
1. Lobatse	4	0	6	6	M 2 F 2
2. Kgari Sechele	4	0	6	6	M 4 F 0
3. Mater Spei	4	7	6	6	M 9 F 2
4. Moeng	4	4	6	6	M 4 F 4
Totals	16	11	24	24	27

Three tertiary institutions were selected: namely, the Botswana College of Agriculture (BCA), Tonota College of Education (TCE) and the University of Botswana, (see Table 3). At the College of Agriculture, one focus group of lecturers and one of students was selected. At the College of Education, one focus group of agricultural students and one of agricultural lecturers and non-agricultural lecturers was used. The students from the University of Botswana were in a focus group of five.

Table 3 Tertiary Institutions' respondents.

Name of Sites	Tertiary institutions				Gender
	Agriculture Lecturers	Non Agriculture Lecturers	Agriculture Students	Non Agriculture Students	
BCA	1	-	4	-	M 5 F 2
Tonota College of Education	6	2	3	-	M 11
University of Botswana	1	2	2	-	F 5 M 3
Totals	9	4	10	2 5	F 2 28

Table 4 Retired / Resigned Teachers' respondents.

Resigned teachers/ retired			
Sites	Agriculture	Teachers	Gender
Gaborone, Francistown and Lerala	6		M 6
	0		F 0
Total	6		6

Table 5 Former BCA Students (Agriculture Graduates) respondents.

Former BCA students			
Sites	Agriculture graduates		Gender
Serowe	2		M 2
Francistown	2		F 2
Total	4		4

Tape-recorded focus groups with structured questions have been used to produce information for this research. The use of the tape recorder reduced the pressure of having to rely more on memory and increased the capture of more information (Taylor and Bogdan, 1998). Focus groups were particularly suitable for this research because they allowed for conversation and an exchange of ideas, sharing of experiences, commenting, and explaining. The advantage of the procedure is that the participants hear each other's responses and may have "... additional comments beyond their own original responses as they hear what other people have to say" (Patton, 1990: 335).

The method encourages interaction among participants that could not be achieved by a questionnaire. Participants have the advantage of seeking clarification if they do not understand a question, whereas the use of the questionnaire does not allow for the flexibility

and freedom for both the participants and the researcher. Tape recording was done after I sought permission and approval from the respondents in all the sites visited. In the case of students in secondary schools, headmasters granted approval. In cases where clarifications were needed, I was able to rephrase some questions for better understanding and stimulate discussions that can lead to a deeper understanding of issues involved.

Interview Locations

All the interviews were conducted in Botswana at the following sites: Lobatse Secondary School, Kgari Sechele Secondary School, Mater Spei Secondary School and Moeng College. Three tertiary institutions were included: Botswana College of Agriculture and Tonota College of Education and the University of Botswana.

Other participants were contacted at their places of work in various places: three resigned teachers were interviewed in Gaborone, two at the college of agriculture in a focus group and one in town at the Botswana National Productivity Centre. One teacher who had resigned in was working for Macmillan Publishing Company based in Francistown, and another interview took place in Lerala village.

Former BCA students who had completed programmes at the college were interviewed; two of these in a focus group of two were conducted in Serowe Agricultural Region Office and two individual interviews were held at the Agricultural Regional Office in Francistown. One focus group of students at the University of Botswana in Gaborone was also conducted.

Interview Times

Interviews in the schools were conducted after regular school lessons and lasted between forty-five minutes to an hour. The duration time for other groups was the same as

the students', the only difference being that for other groups the meetings were sometimes during working hours or outside working hours depending on the circumstances of interviewees.

Validity of the Research

The value of scientific research is partially dependent on the ability of individuals to demonstrate the credibility of their findings. Regardless of the discipline or the methods used for data collection and analysis, all scientific ways of knowing, strive for authentic results (LeCompte and Goetz, 1982: 31).

It is usually thought acceptable that in order to achieve validation the study should be supported by other studies - cumulative validation (Sarantakos, 1993). However true this may be, there is a need to check for trends that may be contrary to what has been found.

I not only looked for support of my findings, but also checked for trends that were contrary to what I hypothesised. This has helped lend greater credibility to this research. Patton (1990: 464) says that, "the human world is not perfectly ordered and human researchers are not omniscient." For this research agenda, it means that what needs to be known about this study may not be fully uncovered. However, evidence in qualitative research has to reflect the multiple realities of the respondents as closely as possible for it to be plausible. Therefore, the following strategies were used to lend rigour and enhance the credibility of my qualitative research agenda.

Phenomenon recognition (Guba and Lincoln 1981) was used to establish the credibility of this study. The respondents would be presented with questions that attempt to find out whether they understood the "reality" of their situations regarding agriculture education in their varied contexts. The responses that they gave would then be compared with other

respondents from the various sites visited to find out whether indeed they "... represent their common and shared experience" (Guba and Lincoln 1981: 186). This will involve engaging the respondents (at the end of the interview) by presenting a summary of their responses and asking if it does present their common understanding (Patton 1990).

In qualitative research like this particular one, not all cases are going to fit the categories proposed so that reporting even the negative ones may help provide confidence in the results or the hypotheses (Guba and Lincoln 1986).

To further increase the validity of my research agenda, structural corroboration was also used through the data collected in all the sites visited. Guba and Lincoln (1980: 106) cite Eisner's description that "structural corroboration is a process of gathering data or information and using it to establish links that eventually create a whole that is supported by the bits of evidence that constitute it. Evidence is structurally corroborative when pieces of evidence validate each other, the story holds up, the pieces fit, it makes sense, the facts are consistent."

Research Ethics

In this study, guidelines suggested by Tripp (1998) were used particularly with the members of staff in each of the sites where taped interviews were used. Tripp's guidelines begin by informing the interviewee/s about the confidentiality which is negotiated with the interviewees through four stages, namely: Stage 1 – talk, stage 2 – write-up (transcriptions), stage 3 - check and edit, stage 4 - clearance and safe-keeping of records.

Before proceeding with the research, permission was attained from the Human Research Ethics Committee. Participants were clearly informed of their rights to participate or to withdraw from the research at any point.

Structure of the study

Chapter One

This chapter sets the background and context of the study. The methodology is set out and the structure of the study is presented. Government efforts and failures to ameliorate the agricultural context are presented at a broader level as well as at the level of educational institutions.

Chapter Two

The literature review sets out both the macro and micro elements about the images of agriculture education. Image construction is treated broadly and specifically within the geographical setting of the study. Images are constructed and determined by individuals' experiences and the relationship with the classroom context and the society within which the teaching occurs. Images of agriculture education are presented from specific countries, both developing and developed. The plight of women in agriculture is highlighted in both developed and developing countries; their domination by males is significant.

Chapter Three

This chapter focuses on the microelements about agricultural education. Selected respondents relate how they perceive agriculture in relation to their experience as educators and as students.

Chapter Four

In this chapter, the images of agriculture education are discussed under the following categorisation: negative, positive and mixed images. All the images of agriculture education are associated with economic, social, government policies educational issues and environmental variables. Negative images are associated with hindrances or that are

encountered in agricultural teaching or practice and so the positive hinge upon what contributes to better practices in agriculture. Mixed images reveal certainties and uncertainties that are encountered in the agricultural engagements in education and practice in Botswana.

Chapter Five

Discussions of strategies by interviewees about the improvement of the negative images of agriculture education are presented. A variety of responses emerged. Agricultural teachers and students favoured curriculum restructuring whereas non-agricultural teachers and students emphasised the economic restructuring of agriculture. Teachers emphasised pedagogy while students advocated practice of agriculture. The dominant strategy was for agriculture to be compulsory in primary schools with the hope that students would like it.

Chapter Six

This chapter presents the themes that emerged from the interview data as well as an exploration of reasons for the responses and challenges that have to be dealt with. Agricultural teachers who have resigned present challenging reasons for their resignations. These teachers face problems such as lack of challenge in teaching, being called negative names by their colleagues and low remuneration packages that contribute to teacher turn over. These issues reflect the negative image of agricultural teaching in Botswana. Other respondents raised issues that include low prices for agricultural products by the marketing board; the tension between theory and practice of agriculture in educational institutions; too much dependence on government schemes and reluctance to pursue agricultural enterprises in order to create employment. These issues show a more negative image of agriculture and therefore present a challenge to all the stakeholders involved in the provision of education.

Chapter Seven

This chapter presents a way forward. Teacher problems like job satisfaction need to be resolved. Curriculum designers need to know the present perceptions of agriculture education so that they can address them in the curriculum design to avert a negative impact on students.

This chapter presents a range of issues that affect the image of agriculture and possible reasons for these responses. Economic, educational, environmental factors and teacher attrition are presented as issues that have to be addressed in the context of this study.

CHAPTER 2

LITERATURE REVIEW

Introduction

This literature review explores various themes related to the images of agricultural education. It treats the macro elements first and then the micro ones. Images of agriculture arise from society, from the media, from books and our general view of rural life. These images interact and affect the image of agricultural education. In analysing the images of agriculture, the macro structures of both developed and developing nations are investigated, along with the images of agricultural work in these countries. Developing countries such as India, China and Israel are discussed because of their similarities with Botswana. Developed countries such as the US, Britain and others are discussed more generally under the same theme.

Even though women play a significant role in agriculture in most developing and developed countries, their role is undermined by the cultural dominance of males and stereotypes that have led to their marginalisation in both agriculture and education. Therefore, a section of this literature review reveals how men eclipse women in agricultural positions though women bear the utmost responsibility in food production and processing in Botswana and other nations generally.

Curriculum issues regarding the teaching of agriculture are treated next because of their significance to agriculture education and how successfully nations are able to provide a supply of capable agricultural workers. The focal point of this section is the desire by curriculum designers in African contexts to emulate some inappropriate international standards.

The turnover of agricultural teachers is another significant factor that bears on a nation's ability to provide an adequate agricultural workforce. Agricultural teachers exit the profession because of a multiplicity of reasons that could be linked either to their jobs or to other factors. Some retire naturally because they can no longer continue because of age, others because of low salary, and others because of the desire to upgrade their qualifications. However, the attrition of agricultural teachers is investigated to determine how this attrition is linked with the overall image of agriculture. This section investigates why there is a high attrition of agricultural teachers in a range of international contexts.

Students' career preferences toward and away from agricultural work are also influenced by a multiplicity of factors. These factors are investigated here, and it becomes clear that some of their decisions are linked to the images of agriculture while others are not.

Image Construction

The images of agriculture are constructed through a variety of socialisation processes. These processes take place in both the school and home contexts as places where significant views about agriculture and other kinds of work are formed. Experiences and attitudes attained in the schools are very much related to those gained within the wider social context. Students and teachers derive their attitudes to reality within their society. Kress

and Van Leeuwen suggest that images are “located in a particular social way by and in relation to the image” (Emphasis in the original, 1990: 23). Although their work investigates the visual arts, the point is significant for this study. It is important to understand that images cannot be constructed in a vacuum. Everything is constructed from a social base and this can account for the ways different people view quite similar realities. Therefore, the images of agriculture cannot be divorced from people’s embeddedness in their wider cultural experiences and understandings.

Significant to this research are factors related to the methodological approaches used. In the focus group interviews, it is apparent that participants report some views of agriculture based on what other respondents were saying at the time. Sue Moore’s paper, *Contributions of Scenes of Place to Sustainability in Agricultural Land Scapes*, shows that agriculture and farming are closely related to the general attitudes of people at the place where the agricultural work is practiced and thus their images of agriculture cannot be isolated from the images held by those near the farm context. She adds, citing Ralph’s work, that “individual’s identities are constructed and reconstructed through interacting with place and each other” (Moore, 2002: 7). In another study, *Images of Men and Women in Indian Textbooks*, Nathkalia (1980) demonstrates that images of men and women are derived from school textbooks that act as a context for articulating the status of both men and women in Indian society. Nathkalia uses content analysis to uncover the images. Similarly, the images of agriculture education in this study are related to the subject as experienced by the students through teaching and learning processes. The teachers in both the field and those who have resigned or retired are influenced by their interactions with students and other stakeholders in related fields. Hazelton (1990) uses the nursing

profession to illustrate how images are constructed by media sources. As a result, a number of images have been identified: images of crises, images of militancy and images of incompetency. These “semantic domains” (Hazelton, 1990) help to shape the nursing profession as it attempts to find self-representation within medicine in Australia over the last decade.

In much the same way, Botswana students construct images of agriculture in relation to what they experience in the classrooms and the society in which they live and in relation to the world in a broader context. Teachers also construct images of agriculture through interaction with their professional teaching contexts and within the broader society.

Agriculture Education in Different Contexts

In this section, agricultural developments of specific countries are going to be discussed showing how images of agriculture are developed within industry and education. Images of agriculture vary considerably between the contexts of developed and developing nations. In the Third World, agricultural work has been affected by calamity and dependence, whereas in developed countries commercial agriculture and its economic dominance provide a more optimistic view of agricultural work¹. In contrast, Africa has been plagued by persistent droughts and the attendant famines that ravage the continent. Verheye (2000: html document) suggests that this contributes to an image of a nation's dependence on other providers of agricultural products.

Sub Saharan African Countries

The image of dependence is illustrated by the huge technical assistance Sub-Saharan Africa received during the period, 1990-1996. This assistance amounted to about 26

percent of financial aid allocated to developing countries during that period internationally. Even with such significant assistance, Africa still produces insufficient food and this cannot but bear on the image of agriculture in the region.

An image of crisis could be discerned in Sub Saharan African countries. Countries, such as Botswana, Lesotho and Swaziland, are best described as countries whose image of agriculture is in crisis. In Malawi for example, the development of agriculture after independence was strong, and the economy grew at about 3 percent in per capita terms and about 5 percent growth in agricultural production. This changed in a few years due to the unstable political situation in the region, particularly the war in Mozambique that closed Malawi's access routes to the sea. According to the World Bank (Impact Evaluation Report 1998: html document), agricultural production in Malawi fell to about 2.5 percent per annum in the 1980s. In Botswana, agriculture contributed about 40 percent to the Gross Domestic Product immediately before independence in 1965, but this also declined to about 3.5 percent in the 1970s, largely because of the discovery of diamonds, a discovery that has contributed significantly to the economy. This situation has remained unchanged and leaves Botswana without a sustainable agricultural sector and thus vulnerable to a range of other non-agricultural economic factors. Many African countries have not been able to feed their populations since they attained independence in the 1960s. A number of factors have led to this. Droughts, inefficient means of production in agriculture and lack of educational skills and technology, as well as political instability, have all had their impact on agriculture in the region.

¹ This is perhaps an overly optimistic view of the developed worlds' success in agriculture. This is not to disregard the important debate about big agribusiness farms versus agricultural sustainability.

It is safe to assume that adequate and sustainable food production confers status on nations while lack of adequate food production could be associated with images of hunger, disease and a total dependence on other countries. South Africa, Namibia and Zimbabwe (Rhodesia) were the only countries in Southern Africa that were ruled directly by whites and whose agricultural sectors flourished. These countries were the suppliers of agricultural products to their neighbouring countries over the years even during the apartheid era in South Africa. Consequently, the building of an image of agriculture is to some extent shaped by both place and governance history.

Some authors suggest that agricultural education in colonised developing countries particularly in Africa is plagued by problems that stem from this colonial legacy (Foster, 1968). For example, Julius Nyerere, the former president of Tanzania, saw the image problems of agriculture as originating from the alienating effects of western education that were practiced in the newly independent states after the Second World War (Dodd, 1969). Agriculture was ignored in colonial education contexts and in the process came to be regarded as low status and a vocation suitable only for the uneducated. The formal education offered was mainly elitist in nature preparing students for white-collar jobs. Other more vocational education forms were not very highly valued and this affected the images of a range of important work sectors in nations that have moved to independence from their colonial past.

Agricultural work had a strange educational function in the British colonies. It was used as a menial work form with the intent of teaching Africans and other colonised peoples the

virtue of work, and as such did not receive much emphasis in the formal curriculum. The colonial powers:

[Considered] education as a dangerous tool in the hands of Africans . . . colonial systems of education limited the amount, content, and quality of education that the local population could obtain to fit into the needs of colonial administrations. As a result, every African country that gained independence began with a serious shortage of educated and trained human resources. (National Summit on Africa: Education and Culture: html document)

It is also useful to note that the type of education the colonial masters transmitted initially through the missionaries was almost exclusively in the context of spreading the gospel. Surprisingly, even in the twenty-first century developing countries that were once colonised still have to contend with an education that is still struggling to pull itself away from the colonial era legacy to address issues that are relevant to the economic needs of these countries (Mthunzi 2003). It was this type of education that also reinforced the perception that agricultural education is for the uneducated, that the real goal of education was to assist indigenous people to become "Europeanised" in character rather than to become skilled in appropriate work sectors. The significance of this in relation to overall agricultural production in these countries cannot be underestimated, particularly as this education tacitly linked Christianisation with work forms that were 'appropriate' or desirable.

After the Second World War when most African states attained independence, many parents were reluctant to let their children study agriculture. Instead, there was an emphasis on clerical and other more white-collar work training. In this way, agriculture was regarded as menial work and only appropriate for the uneducated or the lower performing students.

Foster writes that in Ghana one of the reasons parents did not want their children to do agriculture was that it would be an admission of failure to let their educated children engage in work that could be done by uneducated individuals. The implication here is that agricultural jobs are not as prestigious as white-collar jobs nor pay as much: "since education was regarded as an investment, a career in agriculture may not . . . be perceived as constituting the optimal return upon that investment" (Foster1965: 154).

The negative image of agriculture has unfortunately persisted in some African countries because of this colonial legacy. Matte writes: "Africa continues to face food deficits despite the heavy investments countries continue to place in agricultural research and training" (Matte1988: 68). Though perceptions may have changed in Botswana over the last thirty-five years, education is still considered an investment. Moreover, the variety of images of agriculture held by agricultural students and teachers may be different from that held by the society in general. Many Botswana perceive agriculture as their livelihood because about 80 percent of the people live in rural areas and practice agriculture. Moreover, Botswana is a beef producing country and exports beef to the EU and other African countries. Agricultural students may view their studies in both positive and negative terms depending on how it is taught in schools. These are some of the issues raised in this thesis.

Israel

Here it may be appropriate to look at a nation where agriculture has a positive image. Israel has been chosen in this review because it has similar climatic conditions to those in Botswana, but it is self-sufficient in food production. Israel struggles with hostile conditions, yet at the same time makes maximum use of scarce water and arable land. Its success in agriculture is mainly due to the determination and ingenuity of farmers and

scientists: “who have dedicated themselves to developing a flourishing agriculture in a country which is more than half desert, thus demonstrating that the real value of land is a function of how it is utilised” (Ministry of Foreign Affairs Israel (MFA): html document).

It is clear that agriculture plays a crucial role in Israel; it contributes 2.5 percent of the Gross Domestic Product and 3.6 percent of agricultural exports and the proportion of agricultural workers is 3.7 percent. It produces 95 percent of its own food that is supplemented by imports.

In spite of its success, Israel still faces challenges that are being met by technology and research. Its total area under cultivation increased from 165 000 ha to 435 0000 ha, and its agricultural communities grew from 400 to 725 from 1948 to the present time. However, water is the greatest challenge for agriculture and for domestic purposes. Annual precipitation is 70 cm in the north and less than 5 cm in the south. The situation of harsh climatic conditions and in particular scarce water resources also prevails in Botswana; there is more precipitation in eastern Botswana than in the desert areas to the west. A network of canals and water stations counteract the water situation in Israel transferring water from the north to the agricultural areas of the arid south. Irrigated areas for arable farming increased from 30 000 to 186 000 hectares since Israel's independence in 1948 to the 21st century. Israel does a lot to conserve water for both drinking and agriculture. The following techniques are used: desalination, increase of water conserving crops, storage of flood waters, complicated irrigation systems to the roots and sewage recycling. These water saving techniques could benefit Botswana as it faces similar climatic conditions as Israel. The success of Israel in agriculture is attributed mainly to its Research and Development with government agencies, academic institutions and cooperative bodies working

collaboratively to find solutions to problems. This quote illustrates the interconnectedness of research and extension by clearly making that link:

The key to its success lies in the two-way flow of information between research personnel and farmers. Through a network of extension services, problems in the field are brought directly to the researcher for solutions, and scientific results are transmitted to the field for trial and implementation.
(MFA: html document)

It is clear that Israel has been able to succeed in agriculture because of the dedication of its farmers and researchers. Even though Israel is partly desert just like Botswana, it has combined technology and the dedication of all personnel to achieve an image of independence and food security for its population. What they have achieved can act as an inspiration and a relevant model to Botswana. Perhaps that is why the government of Botswana has hired the Israeli consultants to take advantage of their technical expertise in arid agriculture.

India

India is a third world country that serves as an example of the centrality of agriculture to the survival of its population and the revitalisation of its economy to self-sufficiency. The Green Revolution is perhaps one of the greatest achievements that can best illustrate India's determination to reverse the negative effects it experienced immediately after British rule.

The Green Revolution was initiated during the years, 1947–1978. It was precipitated by the greatest Bengal famine in which an estimated four million people died of starvation. Amartya Sen, the recipient of the Nobel Prize for Economics in 1988, established factors that contributed to understanding how and why the rampant food shortages occurred during the Second World War. He suggested that for the farmers a more significant reason goes back to the hysteria associated with the Second World War that made the British shift from

food production as a priority to developing industries for the war. Moreover, “the hysteria was further exploited by the Indian traders who hoarded food in order to sell at higher prices” (Ganguly: html document).

After independence in 1947, India made food security the number one priority and established legislative measures that would ensure that business persons would no longer hoard food for profit. Initially the efforts were not successful because “in a perfect case of Malthusian economics, the population was growing at a much faster rate than food production” (Ganguly: hmtl document). This called for drastic action to achieve the desired impact. The Indian government initially tackled the problem by increasing the farming areas. Then they introduced double cropping by means of irrigation and the natural harnessing of the monsoons. Finally, superior seeds were introduced and made a significant impact on production levels.

The Green Revolution was a success in India in various ways. Statistically, yields increased to make India one of the world’s exporters of grains. Agricultural yields increased by more than 30 percent between 1947 and 1979; in 1978 to 1979 India produced 131 million tonnes of agricultural products. India was transformed from a starving nation to an exporter of food.

Sociologically, the Green Revolution created jobs for all sectors of the society and improved the living standards of some farmers in the rural areas (the negative aspects are discussed later in this chapter). Economically, the benefits of the revolution were tremendous. There was growth in the local manufacturing sector because crop areas required more water, chemicals, pesticides and fungicides; therefore, new jobs were created.

The increase in irrigation meant that more dams were constructed and the water was used for hydropower that boosted industrial growth.

India's credit worthiness was boosted because India was able to pay back all the loans from the World Bank. Because of its success, Canada requested India to provide them with farmers who had knowledge of the Green Revolution to settle there and share their experience with them. This contributed even modestly to India's exchange earnings.

However successful India had been with the revolution, its agriculture was often susceptible to factors that were beyond its control, mainly natural causes. In 1979 and 1987, India experienced severe droughts due to poor monsoons and in 1987 had to import onions and sugar as a result.

India's top priority in the agricultural sector this millennium is to produce 230 million tonnes of food grains to feed its billion strong population. This has yet to be achieved. In 1999 there was production of 202.5 million tonnes. This shows that it is not always possible to achieve 100 percent self-sufficiency in agriculture.

The situation in India was bleak in its early years after independence, but it improved immensely after independence because of the success of the Green Revolution. The case of India demonstrates that agriculture is vital for the economic development of any country whose agriculture is poor. Countries like Botswana can try to follow the Indian example by attempting to reach a degree of self-sufficiency, but with caution so that the negative consequences of the revolution are not repeated.

The success of the Green Revolution in India does not imply that there have not been barriers related to it. The Green Revolution casts a dark shadow in various spheres of Indian society. The Revolution affected the small farmer who could not afford to buy new

seeds, could not have access to credit and thus was dispossessed of land and food production (Ward, 1979; Harrison, 1993). Women did not benefit from the success because traditional laws to purchase land barred them, and they had limited access to education as well.

At a macro level there appeared to be surplus only because of the dispossessed and lack of purchasing power by the small farmer. The ecological factors were enormous; the new seeds were not resistant to diseases and could not tolerate floods. The environment was polluted because too much fertilizer was used for the new seeds (Ward, 1979; Harrison, 1993).

Poverty resulted after the initial boom because farmers could not sustain themselves buying seeds and other costs. The Green Revolution discriminated according to class: it benefited medium and large farmers in good areas but did not benefit the small farmer in arid regions (Harrison, 1993). Ward articulated the problem of the Green Revolution: "the effects were in some ways comparable to the dispossession of the rural poor being brought about in the developing world by today's "Green Revolution" – with big machines, new seeds, artificial fertilizers, and increasing output for the well-to-do farmers, but a steady shedding of manpower in the process" (Ward, 1979: 169). The dilemma here is that new technology can simultaneously bring about negative and positive images about agriculture education.

China

Even though China is classified as the largest third world country, its agricultural sector is developing more rapidly than most developing countries. In 1996, China achieved the largest population in the world of 1.2 billion (Yonggong: html document), exceeding that of

Sub-Saharan Africa and Latin America combined. It does not have enough arable land to maintain and sustain itself because of environmental degradation problems and rapid industrialisation. An expanding population, environmental degradation and development are crucial issues the global society has to face and China has not been able to escape these problems. Yonggong discusses the extent of these problems by showing the path China has followed in its development:

After forty years of development, the Chinese conventional agricultural development pattern that is highly dependent upon resource consumption and manufactured agro-inputs has been running into a critical stage where the resources and the environment have become fragile and unsustainable. (Yonggong: html document)

The loss of fertile land to industrialisation is a barrier to food self-sufficiency (Vaclav, 1995: html document). The loss of land due to capital construction is estimated at about 190 000 hectares and is compensated by poor quality reclaimed land estimated at 245 000 hectares per year. Cultivated land in China decreased at a rate of 150 000 to 200 000 hectares per year because of non-agricultural uses. Water is another major constraint to increased agricultural production in China. There is an uneven distribution of water between the drought stricken north and the flood stricken south. This climatic feature is similar to climatic conditions in Botswana that constrain agricultural production in the country. In 1978, China introduced reforms in agriculture and its economy. Before the reforms China was one of the poorest countries in the world with 60 percent of its population (1 billion) living below the poverty line: "almost all of the poor were in the agricultural sector which provided a livelihood to nearly three quarters of the total population. There have been key transitions since 1978: from rural to urban society and from a command economy to a market based one" (Yonggong: html document). The government controls food grain

markets estimated at 260 to 400 million tons of grain allowing for 95 percent self-sufficiency. The government acquires this stock by purchasing three quarters of all marketed grain below market prices: "a level considered to be important to maintain low urban prices for consumers" (Nyberg and Goldberg, 1998: html document). Even though markets are opening up with increasing private enterprise, still the government controls them and thus maintains national stability in agricultural prices. In the market economies, this may have a negative impact on agricultural production, but in China, it does not have the same effect it would have elsewhere.

Even though China has experienced the negative effects of development, there is a realisation that increased research expenditure is needed to meet the challenges of self-reliance in agricultural production. However, this is only marginally achieved because of the many competing demands for public resources. In spite of all the major constraints in agricultural production, China has experienced the fastest agricultural rates and overall economic growth: industrial growth of 8 percent and agricultural growth of 6 percent per year. Agriculture has played a major role in leading approximately 200 million people out of poverty. The image of agriculture in this vast developing country is positive in spite of major barriers the central government has to deal with to avert the ravages of severe food shortages and malnutrition that precipitated the 1978 reforms.

The Role of Women in Agriculture Education

The problem of women's under-representation in agriculture and in many other fields is a worldwide problem. This problem is more pronounced in the Third World and in agriculture (Acker et al, 1988). In Third World countries, the under-representation of women could be attributed to cultural reasons that favour boys as more deserving of

education than girls. However, in Botswana there are more females than males in senior schools (Ray 1988, NDP 9 2003/04, 2008/09). Therefore, the problem is that of girl's under achievement in the sciences rather than accessibility as in some third world countries. There is equal opportunity for both boys and girls to access that is enshrined in the National Commission on Education (1993). However, special measures should be developed to increase the participation and performance of girls in science, mathematics and technology (National Commission on Education 1993). The acknowledgement of the problem of girl's under-representation in education in Third World countries is an old one and it seems that it will continue in spite of the efforts by feminist researchers to create an awareness of the plight of females.

In 1960, the issue of preferential advantage enjoyed by boys precipitated the United Nations Educational Scientific and Cultural Organization (UNESCO) to pass a recommendation to: "encourage girl's enrolment in primary education and general and technical secondary education as well as in higher education by offering them the same possibilities as boys" (Acker et al, 1988: 15).

Acker et al. (1988) indicated a number of problems that act as barriers to women's participation in agricultural education in the Third World. One problem emanates from formal higher education, lack of access, high rates of attrition and constrained achievement. However, some of these problems: "are expressed at levels well-below tertiary education levels as well as in spheres exogenous to the formal education system" (Acker et al 1988: 14). A study conducted by Subair (2002) about factors that influence girls' enrolment in agricultural science in Botswana has shown a number of contributory factors; the parent domain showed a strong (80%) influence for female students' enrolment in agricultural

science; school domain showed a moderate influence at (51.8%); agricultural teachers and students' domains showed little influence at 38.7% and 37.8 % respectively. The influence of the parent plays a major role than that of the teachers' perhaps because the parents are the ones responsible for their children's education more than the influence the teacher could exert on them.

In this century, food production is going to rest on rural women in developing countries. Even though they do not have as much access to agricultural education, they will have to feed the additional 2.1 billion people who will have increased the world population in about three decades (FAO, 2000: html document).

Pina (2002: html document) in *Agriculture: FAO Highlights Contribution by Rural Women* shows that women in Sub-Saharan Africa significantly account for 60 to 80 percent of food production in agriculture. In Asia, there is a variation among countries; for example, in the Philippines, they account for 47 percent, Malaysia 35 percent, Indonesia 54 percent and in Thailand, nearly 60 percent of the women are engaged in agricultural activities. In spite of these significant contributions, there is still an underestimation of women's effort by official data. Pina here presents an image of bias against women by commenting that:

Women are active participants in commercial as well as subsistence-level agriculture, but many of the activities they perform in producing food for household and community consumption, so essential to food security, are ignored by statistics (Pina, 2000: html document).

Women the world over, contribute significantly to agricultural production, but they are still dominated by males in agricultural education, particularly in Africa. They play a key role in food production at the household level in Sub-Saharan African countries. Because of urbanisation, they have to fill the gap left by men as they depart to urban areas looking for

paid employment. Morolong (1997: html document) talks about the “feminisation” of agriculture because of the economic situation that forces men to leave the rural areas to find work in urban centres leaving women as “managers” on the farms. It may seem as though agriculture is feminised, but in fact, despite their presence as farmers they still are often sidelined in terms of services. In fact, this manipulation of social structures leads to a further exploitation of women. In Burkina Faso, women are so marginalised that the image of a “farmer denotes a man, a male head of farming household” (Morolong, 1997: html document). In addition, women are not targeted by agricultural extension services. In a survey carried out in Burkina Faso, it was discovered that only 1 percent of the women had heard about extension services from their husbands whereas in Botswana the situation is different because women have an equal access to the extension services.

At Botswana College of Agriculture, gender-neutral policies saw the rise of female enrolment levels for certificate programmes from 12 percent in 1978 to 26 percent in 1984 and to 51 percent in 1989. Those studying for Diploma in Agriculture rose from 20 percent in 1989 to 22 percent between 1996 and 1997 (Acker et al, 1988). The study does not have any records for females or males studying for degrees in General Agriculture and Agricultural Education because these programmes were introduced after the study. In Botswana, however, research (Acker et al, 1988) reveals that the problem of access to education at Botswana College of Agriculture has since been solved by the current merit-based admissions system that was introduced replacing the previous system that was based on the availability of female accommodation. This change of policy shows that women are recognised as important in all aspects of agricultural training in Botswana today.

In Malawi, 70 percent of women did agricultural work and that women head 27 percent of households. It is clear that women in Malawi are responsible for much of the agricultural labour and decision making. Even though this reveals a positive image, it is still superficial in that these women did not receive adequate extension services until in 1981 the government launched an extension programme to empower them. Regarding the education of Malawian women in agriculture, there was a significant improvement because in 1989, 17 percent of female students enrolled for Diplomas and Degrees in agriculture and the number rose to 22 percent in 1997. If this trend could be maintained the role of women there would be enhanced (Acker et al, 1988).

In Tanzania like in Malawi, Acker et al. (1988) estimated that 87 percent of women were heavily involved in agriculture, but they only contributed 10 percent of the total graduates over the last twenty years. They go on to illustrate the gender disparity in the student body, and a tendency to favour boys over girls even though it is apparent that girls contribute much in agriculture. As a result, the Tanzanian government implemented changes that could address the marginalisation of women in agricultural education. Acker et al. illustrate how the country attempted to alleviate this apparent anomaly:

A combination of methods has been incorporated at several levels of the national system to improve the numbers of women involved in higher education in Tanzania. Deliberate policy changes have been made which were geared toward enhancing women's participation in the national development and decision-making process. (Acker et al, 1988: 18)

The types of problems that women face in the Third World regarding agriculture and education emanate from the dichotomous relationship that exists between the traditional and the commercial system. In some Third World countries, education tended to favour boys over girls so that girls and women were relegated to the all-important task of producing

food to feed the family, whereas boys were sent to schools to acquire education. This type of situation that disadvantages women more does not engender positive images among girls.

Education for both sexes is crucial and cannot be denied because research has proven that:

Basic education affects small landlords and subsistence farmers' productivity immediately and positively, and that a farmer with four years of elementary education is, on average, 8.7 percent more productive than a farmer with no education. (Gasperini, 2000: html document, Psacharopoulos and Woodhall 1985)

The traditional system in most Third World countries places too much strain on women in agricultural production, subsequently disadvantaging their contribution to its development because of limited access to extension services. Morolong points to the challenging realities that societies should be aware of and remedy, by concluding that:

One of these challenging realities is that of the role strains the woman farmer experiences that as she performs her productive and community maintenance roles for social reproduction within the family. The burdening effects of agricultural developments only make the situation worse for women. This is especially so in the phase of cultural attitudes about gender roles and responsibilities that circumscribes women's activities, decision-making authority and interactions with men. (Morolong 1997: html document)

Karl (1997: html document) conducted a case study that revealed the plight of women in the third world. The case study revealed that even though women play a vital role in agricultural production and marketing, their labour is unpaid for and not recognised in various countries because of cultural reasons. For example, in the Philippines, women play a significant role in agriculture but their labour is mostly unpaid family workers or self-employed farmers. Women and men share some tasks: for example, men assist with the heavy work of preparing the land while women are responsible for planting, weeding, harvesting, threshing, processing and marketing.

In Nigeria, a variation of roles exists that is determined by culture and ethnicity. The Hausa Fulani women do not engage too much in agriculture because of the plough/grain culture and Islamic restrictions. Whereas the rich Muslim women do not engage in agricultural activities, but the poor ones are heavily involved in food processing and preparation.

There has also been a change of work roles over time. Now women are involved in food production and processing including land preparation that was traditionally for men. In the Caribbean, Karl's study revealed that women contribute more than 50 percent of food production, processing and both local and inter-island marketing. He observed that:

The percentage of female-headed households is generally high, as much as one-third in Trinidad and Tobago. As these households are also among the poorest, the women cannot afford to hire labour and thus usually shoulder all agricultural tasks themselves. (Karl, 1988: html document)

Karl's (1988) survey found that in spite of women playing a crucial role in agriculture, in some countries like Nigeria, Côte d'Ivoire, Jordan and the Philippines women are also denied access to extension services. In Jordan, for example, women are denied access because of religious reasons; they cannot interact with extension agents who are males. In Côte d'Ivoire, extension services target men exclusively because traditionally women are not recognised as farmers, but are treated as mere accessories to their male counterparts. Tradition here reinforces the image of marginalisation and domination of women by men. This traditional image is more prevalent in patrilineal Africa. Women are almost treated as slaves as their labour is not recognised and rewarded appropriately.

The dominant role of men in agriculture and education is borne partly by tradition and the desire to project agriculture as a male occupation, even though women are part of the

activity and play a critical role. Even though governments in third world countries are trying to address the situation, it is still not enough because enrolments for females are meagre. It is interesting to note that:

Most women in ministerial positions are responsible for health, welfare, education, culture or women's affairs, areas that are traditionally considered women's concerns. Economic, political and agricultural ministerial positions are almost exclusively a male preserve (FAO, 2000: html document)

Education is a factor that can help increase the status of women in society, but it is not a guarantee that they will have access to positions of power and policy making because in some of the developing countries these patriarchal, stereotyped cultural tendencies are ingrained in the societies. It would be a positive step to promote the status of women from subservience to a prominent position in agriculture by investing in women's education in agriculture. In the developing world, women account for more than half of the labour needed to produce food, and about 75 percent in Sub-Saharan Africa (Forno, 1999: html document).

Agriculture education is shaped by culture. Women are still unfairly treated, yet they continue to engage in farming. Another area of concern recognised by feminist researchers (Rathgeber, 1990; Mies, 1986) is that of property rights. In some patrilineal societies in the third world, women are not allowed to own land. Feminist researchers indicate that in countries like India, China and Thailand men are even discouraged from selling land to women. However, in some of the countries, land ownership is enshrined in the constitution, but contradictions between statutory and customary laws deny women the political right to own land. Rathgeber sees the worsening situation of women's exploitation by asserting that: "[Women's] situation is exacerbated by the co-existence of conflicting statutory and

customary laws and a tendency for laws to be manipulated by men in such a way as to dispossess women" (Rathgeber1990: 8).

In Botswana, the problem of land ownership is not significant since women are allowed to own land constitutionally and practically in spite of the co-existence of two law systems, the statutory and customary. In 1993, females headed about 34 percent of farms in Botswana communal area (National Development Plan 8, 1997/98, 2002/03). It is worth noting that these women were often the poorest, elderly and often in the communal farm areas where mainly subsistence agriculture was practiced. In 1991 about 47 percent of these women were over 54 years and only 6 percent were less than 35 years (National Development Plan 8, 1997/98, 2002/03). This trend (that the elderly are the ones who engage in agriculture) is noted by Picard (1987:113) he observed that during the colonial era men were encouraged to work as immigrants in the South African mines, "left the tasks of agriculture and animal husbandry ... to the very old and the very young, and to women... to those least physically equipped to perform them." However, the trend has persisted after independence in a different way; men are now leaving the rural areas to go find work in urban centres within the country because of rapid economic development experienced by Botswana because of the mineral exploration in the 1970's.

A study conducted by Lyson (1990) in New Zealand and the US revealed that women engaged in farming did not report that they were farmers. Lyson advances three reasons that women in New Zealand and the US did not identify farming as their occupation: (1) some for example, about 36 percent of US women who were farming also held some off-farm jobs "which serve as the locus of their occupational identification" (Lyson1990:60). (2) Some of them did not see themselves as "primary" producers; and (3) some perceived

farming as a male occupation. It is this perception that reinforces an image of domination by males in agriculture as well as in other societal dimensions.

In the US, more women are now asserting their rights to own land, rent or inherit family farms. The conducive environment that engenders women's rise into farming is as a result of women's groups that are doing more to attract young women into farm groups and encouraging them to assume leadership roles in agriculture (Morgan, 2002: html document). Developed countries have made many changes so that women can participate without barriers that are still evident in third world countries. The invisibility of women's labour, time, energy and access to education in developed countries is no longer as much of a problem as it is in some developing countries.

In Sub-Saharan Africa and other third world countries, women are still "silent partners" in agricultural activities because enabling policies have not been fully implemented to ameliorate this situation. In many patriarchal third world countries, the role of women in agriculture is characterised by male domination in agricultural activities.

Curriculum issues in Agriculture Education

Some curriculum issues are central to the teaching of agriculture and the subsequent images that emerge particularly in the developing world. Matte (1988) treats some of these issues and suggests that the colonial legacy persists in the education structure in most developing countries. He observes that African universities are still linked to international standards that are not appropriate for the context in which they are applied. Instead of looking at agricultural education's relevance to the local situation, some of the universities in Africa pay particular attention to international standards as practiced by Europeans. The propensity to please foreigners rather than address the African situation is prevalent.

Publications that do not meet "international" standards but relate to the local situation are ignored and publications in foreign prestigious journals are recognised. What is published locally is considered below standard. This reflects on the strategies in African tertiary institutions that encourage selfishness of African agricultural educators who are legitimately trying to advance their careers at the expense of crucial issues related to the local contexts.

As regards the agricultural education curriculum and teaching in agricultural colleges and universities, Matte argues that there is not enough time to plan adequately for the programmes. Consequently, an overloaded curriculum that leads to teaching being too theoretical and didactic "in a bid to cover the content in the prescribed time" is the norm (Matte, 1988: 69). This problem has been elaborated by focus groups in this study, particularly the lecturers of agriculture, even though they did not cite the problem as emanating from an overload in the curriculum. Attempting to cover too much places stress on students because it means they have to study a lot of material that may not appear relevant to their needs. Placing too much attention on examinations also makes the curriculum too theoretical for the students. It results in students studying to pass exams so that they can get a certificate without enough practical application of the theoretical concepts. This kind of approach seems prevalent in African agricultural universities and produces students "who are severely handicapped in their performance on the job. Several studies have indicated that university graduates are ill prepared for the demands of their specific assignments, resulting in inefficiency and frustrations" (Matte, 1989: 69-70). The training of these students is exam-oriented, which may result in new graduates who are unable to cope with the multiplicity of demands that they may encounter in their jobs. All these factors need to be addressed in order that the image of agriculture education in

tertiary institutions may become more relevant to the African context. Moreover, resources are invested in building these institutions to produce supposedly graduates who should be able to deal with their immediate context. Agricultural education should not be dictated by outside influences that only act to frustrate graduates and the societies they operate within.

A study conducted by Machethe (1990) raises crucial issues that should be addressed by curriculum designers and agricultural institutions alike. His study shows that in South Africa agriculture attracts academically poor students who only take agriculture as a last resort. This conclusion by Machethe is given credence by first year student's poor performance in the prerequisites for agriculture at the University of the North in South Africa. Normally Physics, Biology and Mathematics are used as a measure for quality and competence of students intending to take agriculture. Student's performance showed the agricultural faculty draws students of lower quality in relation to students in other faculties.

The results of this study have some significance for curriculum designers in agriculture in Botswana. The question to ask is: why is agriculture failing to attract high performing students? Machethe citing Hannah provides one answer to this question:

With a few exceptions, agriculture has little status, is not very well understood by the educated classes and by government workers in developing countries, and is seriously handicapped by a lack of trained personnel and the leadership necessary to make it move forward. (Machethe, 1990: 309)

This is a partial answer to this important curriculum question. It is imperative that curriculum designers and teachers in agriculture identify and understand the relevant needs and focus of agriculture in their society and how they relate to agricultural education as a whole. This endeavour can only be achieved by undertaking focused research into this issue. It is only when the images are recognised that they will be addressed in conjunction with

both the Ministries of Education and Agriculture. The major stakeholders have to be involved so that the problem could be addressed professionally with input from both sides.

These curriculum issues are pervasive and far-reaching and may taint the perception of agriculture education and even discourage student's attraction to the field. This image of crisis needs to be addressed by African agricultural educators, and they need to answer two questions:

1. Whose interests are we attempting to serve with agricultural education?
2. How can we make the teaching of agriculture relevant to the African context?

In yet another study conducted in Botswana senior secondary schools by Mthunzi (2002:38) raises crucial curriculum issues. In this study, the students and the teachers in agriculture did not find any relationship between an entrepreneur and agriculture. He therefore concluded, "the findings seem to suggest...an over-concern with an academic acquisition of knowledge, which is compartmentalised and kept solely for use within the school boundaries" (Mthunzi 2002:38). This kind of academic knowledge is deep rooted within educational institutions in Africa from the colonial era up to post independent Africa. It is hardly surprising that practical subjects like agriculture are never associated with the real situations such as entrepreneurship by teachers as they have been handed down a curriculum that has socialised them to divest practical subjects like agriculture from its true value if combined with a culture of entrepreneurship.

Botswana's education system has to divorce itself from colonial education and produce students who have appropriate practical skills in technical and business management skills. The entrepreneurship culture had been the central strategy of Botswana's development over the last decade and has been seen as "the new catalyst for economic growth, a renewal and

a means of job creation” (Mthunzi 2002:29). Education as an end in itself is no longer a viable alternative; students have to be trained not only to enter the job market as employees but also as employers.

In BCA there is a paradigm shift marked in training students who are capable of being employers sometime after graduation. The shift in emphasis is evidenced by the introduction of Students Enterprise Project (SEP) that accentuates the entrepreneurship culture in agriculture. However, the idea of education with production is not a new one in Botswana, it has been ignored for over two decades in formal schools. Patrick van Rensburg is the pioneer of this concept that he started in 1965 with the Brigades in Serowe as a private initiative not sponsored by the government (Singh 1998). He dealt with the primary school-leaver problem by providing training that would benefit the student and his/her community. He included a mixture of practical and theoretical-on- the-job training. During the years, however the emphasis changed from primary-school leavers to secondary schools leavers as the government introduced a nine-year basic education programme for all in 1996. The concept of education with production began to receive more attention in the 1980’s at the level of international co-operation in education as it was felt that education would be more relevant if it integrated work experience and “.... [go] beyond the prevailing thinking that individual lives are divided into a span of time to study and another to work” (Singh 1988:6). With this kind of thinking, agriculture education in secondary school could have a new dimension that would guide teachers and students’ thinking that agriculture education could be associated with entrepreneurship. Teachers of agriculture have to be accountable in their interactions with students by making them aware that the subject is practical and could be applied in an entrepreneurial fashion by involving students in projects that

culminate in marketing the products they have produced during practical lessons in agricultural gardens.

Teacher Attrition

The turn over of teachers from the profession is attributed to multiple factors that are documented in the literature. This section discusses the causes of attrition due to factors related to images of agricultural education teaching. Other studies on attrition are not specific to agriculture will be used to complement specific studies on this subject.

The factors that cause teachers to leave their profession are related to their teaching conditions, teachers' low status and low salaries. Van Ry in a Californian study suggests the following range of factors: "low salaries, overcrowded classrooms, useless meetings, dirty rundown classrooms and pressures from all directions" (Van Ry, 2002: html document). However, a distinction has to be made between teachers who leave the service because of retirement (natural attrition) and those who leave because they need a better paying job and better opportunities.

There is also the problem of novice teachers who leave the teaching profession within the first seven years due to dissatisfaction with the profession or an inability to cope with the stress of teaching. Urzua (1999: html document) in a review of Brock and Grady's, *From First-Year to First Rate: Principals Guiding Beginning Teachers*, shows that 30 percent of beginning teachers in the USA leave the profession in the first two years and from 10 to 30 percent in the next five years.

In contrast, Van Ry (2002: html document) in his Californian study trying to determine teacher attrition found that novice teachers leave their teaching jobs more often because of personal and family reasons rather than job dissatisfaction. Teachers gave differing

responses as to why they were leaving their jobs: 56 percent indicated that they were leaving for other reasons not related with their current job and only 16.7 percent left because they were dissatisfied with their current job. The teachers gave differing reasons why they were leaving their work. Fully 69 percent indicated that low salary was not a major cause of dissatisfaction with the job. These findings coincided with another study cited by Van Ry in *Public Agenda 2000* (html document): "Where teachers . . . by very high margins . . . would sacrifice higher pay if it meant they could work in schools with well-behaved students, motivated colleagues and supportive administrators."

One would have expected teachers to identify salary as one of the major reasons for dissatisfaction, but other factors related to relationships between students and administrators were rated as more crucial. However, the study did not indicate the age of these teachers, whether they were novice or veteran teachers. Teachers were dissatisfied with the lack of support from administrators with 60 percent of them indicating this was a major reason for resigning.

Studies of attrition among agricultural teachers in Botswana (Subair and Mojaphoko, 1999: html document) have identified forty-eight factors that influence attrition. The factors were categorised as follows: remuneration factors, interpersonal relations, advancement factors, professional factors, working conditions, administrative factors, and autonomy factors. Teachers identified remuneration, advancement and working conditions as major factors that were associated with attrition in their subject area. Even though these factors were not unique to agricultural teachers, nevertheless they revealed the negative images of the subject. These factors show a negative image of agriculture within the confines of the research undertaken.

Perhaps another study should be conducted showing why novice agricultural teachers do not persist in the profession. It is significant to note that in the research conducted by Subair and Mojaphoko, fifty (50) percent of the respondents had an accumulated teaching experience of between 1 and 5 years. As noted earlier, Urzua (1999: html document) identified novice teachers as susceptible to resignation within the first five years. Another point made by Subair and Mojaphoko's study is that agricultural teachers could be interviewed in addition to agricultural heads of departments to gain a more balanced picture.

Students' Career Preferences

Common characteristics that students embrace when they choose or intend to take a subject as a career are well documented in the literature. These characteristics are usually associated with the socialisation that occurs in the family because of modelling and influences from the school system identified by Shapiro, Western, and Anderson (1988) as 'role acquisition.' Students are influenced by role models they experience in their teachers and to some extent in their family background.

Research into factors that students consider vital in career selection show convincingly that 'significant others' (Cecchettinni, Sommer and Leising, 1992; Shapiro, Western, and Anderson, 1988; Mallory and Sommer, 1986; Kortlik and Harrison, 1987) play a major role. Family influence was found to exert an important role for students studying at a historically black institution for agriculture (Kortlik and Harrison, 1987, Subair 2002). In addition, in the same study they found that the most important influences on career choices were ranked as: parents, friends and relatives other than parents, school personnel and

clergymen. However, personal interest received the highest ranking for both students doing vocational and non-vocational students and family tradition was the lowest ranking.

Another interesting study conducted by Mallory and Sommer with two focus groups of minority high school students in the USA showed that parents dissuaded their children from taking agriculture as a career because it “offered no security or prestige, poor pay and little chance of advancement” (Mallory and Sommer 1986: 16). This finding offers an opportunity for more research in Botswana about the indigenous groups (the San or ‘Bushmen’) within the educational context to determine what relevance minority issues may have on agriculture. In this study senior and junior students indicated that their top priority in choosing a career depended on a stable and a secure future and on the ability to earn more money.

Role acquisition was also evident in the study conducted by Mallory and Sommer (1986) as students in rural schools whose parents had worked in agriculture and lived on farms indicated that they would take agriculture as a career whereas urban students indicated that they were less likely to consider such a career. This characteristic is reminiscent of the study conducted by Moore (2002) in Australia, which showed that agriculture education is imbedded within the place where it is practiced. That is why rural students are attracted to a career in agriculture in contrast to those in urban areas.

The factors that students indicate as vital in choosing a career are closely related to the images of agriculture education. In studies that have been cited in this section, it is clear that the images of agriculture education impinge upon choosing a career in the field. A career in agriculture has been described in order of priority as “outdoor, hard work, natural, healthful, male, independent, safe, blue collar, boring, insecure” (Mallory and Sommer,

1986: 15). In the same study by Mallory and Sommer, students were presented with 12 career areas that were related to agriculture and were asked to rate them:

Students rated in order of most exciting: environmental management (71 percent thought it exciting), genetic engineering, biotechnology, applied economics and applied biology. The least interesting fields were plant science, toxic waste specialist, food science, food safety, community nutrition and farming. (Mallory and Sommer 1986: 16)

Agriculture education images that emerge here are ambivalent. The ambivalence could be attributed to the varied career interests of students. Inadequate knowledge about the range and relatedness of careers in agriculture also plays a crucial role in career selection.

Concluding Comments

The literature review reveals a diversity of images of agriculture. In developed nations like the USA, Britain, Israel and Australia, there have been tremendous strides in agriculture and agricultural education. Women are not dominated as they are in developing countries because of the greater access to education the women enjoy there. Overall, there is greater access in education for women in developed countries at 51 percent of total compared with Sub-Saharan Africa at only 34 percent. The image of agriculture education has long shifted from the perception of agriculture as dealing with farming and as a field reserved for males only. The field has developed into various specialisations and has experienced the proliferation of women farmers during the 1980s. In developed nations, women farmers are a living reality that serves to attract younger women into the field; in contrast, women in developing nations face many impediments in agriculture in spite of their active involvement. The effects of marginalisation are still evident in developing nations. In training institutions women face barriers because of gender disparity between males and females. Even though some countries are addressing this problem, the efforts in this regard

are not adequate because of an overwhelming number of males in agricultural training and technical institutions.

The balance between theory and practice is a major curriculum issue that also needs attention. For agriculture education to appear relevant to students and employers, a mix of appropriate pedagogies is needed so that graduates can function adequately in the field. African agricultural universities and colleges have to make a concerted effort to develop their own standards that will be used to determine what could be published. Finally, the image of dependence needs to be severed and these countries need to develop an image of independence and confidence in agricultural education contexts.

CHAPTER 3

UNFOLDING THE IMAGES OF AGRICULTURE EDUCATION

Introduction

The aim of this chapter is to show how different categories of respondents perceived agriculture. These responses were solicited by the question: *What is your image of agriculture?* This was the same question asked of the four groups interviewed: (1) agricultural teachers, resigned and retired; (2) tertiary agricultural and non-agricultural lecturers and non-agricultural teachers; (3) agricultural students from tertiary institutions and agricultural graduates; and (4) non-agricultural students from the University of Botswana.

The question: *What is your image of agriculture?* It was included so that the interviewees could articulate how they individually perceive agriculture. By analysing the results, there was an expectation that their answers may assist policy makers in making agriculture more attractive to both prospective students and agricultural teachers. This was the original rationale for asking the respondents to articulate their perception of agriculture education. The findings also indicate some of the problems in the current teaching practices in schools and agricultural colleges. Finally, some ideas were expressed which may point to some ways of improving the practice of agriculture generally within schools and outside schools.

Responses about Agriculture Education

Table 8 reveals that overall there were more negative responses about agricultural education than positive responses. Among the groups, the non-agricultural teachers (65 percent, see table 8) and students (60 percent) gave more negative responses about agriculture education than the agricultural teachers (40 percent, see table 6) and students (39 percent). Conversely, agricultural teachers and students gave more positive and mixed images responses. Thus, the negative responses will be described first followed by the expressions of positive responses and finally the mixed responses. There is a similarity in the responses of agricultural teachers and students so these were grouped together. Likewise, the non-agricultural teachers and students had similar responses that were grouped together.

Table 6. Responses about agricultural education (Responses and Respondents)¹

Question	Agriculture Teachers		
	No. of Responses	% Responses	No. of respondents
What is your image of agriculture?			
Negative	40%	15	6
Positive	43%	13	8
Mixed	26%	10	2
Totals	100%	38	16

¹Responses and respondents: have been reported in tables that indicate such information.

Table 7. Responses about agricultural education

Question	Agriculture students		
What is your image of agriculture?			
	No. of Responses	% Responses	No. of respondents
Negative	7	39%	6
Positive	7	39%	14
Mixed	4	22%	4
Totals	18	100%	24

Table 8. Responses about agricultural education

Question	Non- Agriculture Teachers		
What is your image of agriculture?			
	No. of Responses	% Responses	No. of respondents
Negative	11	65%	7
Positive	4	42%	2
Mixed	2	12%	2
Totals	17	99%	11

Table 9. Responses about agricultural education

Question	Non- Agriculture Students		
What is your image of agriculture?			
	No. of Responses	% Responses	No. of respondents
Negative	3	60%	18
Positive	1	20%	3
Mixed	1	20%	3
Totals	5	100	24

Non-agricultural teachers' and students: *Negative responses*

The negative images responses that emerged from these two groups centre on the following: economic, social, educational, political, and environmental factors. Some of the negative images show misunderstandings or a lack of information regarding the national government policy on education and other policies that have been designed to support agricultural practice. Other images are based on the actual situation of agriculture in Botswana. Thus, there are real problems facing farmers in Botswana that give rise to being negative about agriculture education.

Economic factors

One negative image was the perceived lack of financial support from the government. One teacher claimed that foreigners mostly own commercial farms in Panda. In addition, subsistence farmers are also discouraged by low prices the marketing board offers for their produce. This is a somewhat misinformed concern because the government supports subsistence farmers through schemes like Accelerated Rainfed Arable Program (ARAP) and Arable Lands Development Program (ALDEP). Nevertheless, the concern was voiced by one of the non-agricultural teacher:

Botswana are not getting support. Foreigners mostly own farms, and you find that people around the village are subsistence farmers. After harvesting the little that they have, the marketing board buys their produce at low prices, which discourages them. (Non-agriculture teacher 4, male, Mater Spei Secondary College.

Similarly, university students felt that there has not been much support from the schools in disseminating more information about agricultural potential. One of the students related this negative image: *"The image we have of agriculture is ploughing sorghum and maize"* (Uni student 1, male). The concern about the lack of adequate information about agriculture

contributed to the negative image that was pervasive image among the students. One student emphasised the lack of information: *"We don't have a good picture of what agriculture is. That is the main problem"* (Uni student 3, male).

Social factors

Agriculture was generally seen to be on the decline that was attributed to abandoning agricultural production to less educated subsistence farmers. One non-agricultural teacher articulated the problem by saying:

Agriculture is dying. As I grew up, I saw many families ploughing, planting and harvesting. Now this is not happening . . . it has declined. This is an incontrovertible fact. Now the common person practices it. (Non-agriculture teacher 2, male, Moeng College)

The negative image has been observed because of changes in the way of living in Botswana, particularly the rural to urban migration trend. One non-agricultural teacher made this observation:

That is why agriculture is dying in this country not that the government is not supporting it. We have been socialised in this country to believe that when, 'I grow up I must go to town; I must adapt to a new life and not remain with the cattle and till the land'. (Non-agriculture teacher 2 male, Moeng College)

Agricultural graduates were seen as reinforcing the negative image because they did not put into practice the agricultural skills they had acquired. Their function in the field as role models who should lead by example is not obvious among students they teach and in the society. One of the non-agricultural teachers commented that:

Those people, who manage to go through tertiary education perhaps going to the level of demonstrators, should demonstrate, in other words, they should be exemplary in promoting agriculture. (Non - agriculture teacher 4, male, Moeng College).

Educational Factors:

Change of agricultural career beyond graduation

Related to agricultural graduates' reluctance to act as role models, non-agricultural teachers, remarked that changing careers by agricultural students after graduation was a negative comment by non-agricultural students. The University of Botswana students felt that most of the agricultural students who take agriculture at the college as their career (Botswana College of Agriculture) are there out of desperation, since they could not get admission into the university or other post secondary institutions. One student made an observation regarding those who have chosen agriculture and have later changed careers because they took it as a "fall-back career" and thus were not committed to it:

I have observed that most students who took agriculture as a career are changing to new careers. Some of them are doing accounting in the evening. They want to change completely because they are saying they did agriculture out of desperation. (Uni student 3, male).

It is apparent from the statement above that some agricultural students have a bias towards white-collar jobs that Botswana regard as high status because the jobs pay much more than a vocational career in agriculture. In addition, white-collar jobs are considered clean and prestigious. Paid employment with a steady income does not pose the risks found in agricultural practice.

Educational Planning

Another negative policy pointed out by one non-agricultural lecturer was the skewed educational planning that tends to focus on one area alone. For example, the government is now focussing on Information Technology and there are people who see this as excluding areas like agriculture:

Agriculture is one of those subjects, which is disadvantaged now, because the government is looking in one particular direction. For the time being agriculture shall remain where it is and perhaps even go down, especially because we are talking about information technology. (Non-agriculture lecturer 3, male, TCE).

This assertion is based on a misunderstanding and a lack of information regarding the Revised National Government Policy on Education. One of the objectives of the Revised National Government Policy is "to raise educational standards at all levels" (1994:5) and develop an education that is geared to national development. This would include agriculture, but it may not garner as much funding as an area like Information Technology. In sum, the negative image is founded on misunderstandings regarding the National Policy on Education (1994) and on thorough knowledge of the ramifications in the society.

Political Factors

As mentioned earlier, tertiary non-agricultural teachers feel that the negative image is directly attributed to negative government policies regarding agriculture. One such policy is the lack of regulation of prices for agricultural produce; prices are too low consequently discouraging subsistence farmers from engaging in agriculture. One non-agricultural lecturer illustrates:

Even the fact that the market for whatever is produced is very low has a negative impact and shows that the nation has a low regard towards agriculture. (Non-agriculture lecturer 1, female, TCE)

Farmers, like other members of society, are not immune from external forms of rewards. Farming has to be profitable for it to have a positive image. Production of cereal crops like sorghum are produced at high cost, but then when sold, attract less than the production costs that discourage farmers, hence the negative image response. This problem could be related to the ministry of agriculture's shift from food self-sufficiency to food security which

resulted in millers being reluctant to purchase "overpriced" sorghum when there are cheaper alternatives elsewhere (Sigwele 1993, Nilson 1993, Inger 1993).

Environmental Factors

The hostile and unpredictable climatic conditions in Botswana also contribute to the negative image of agriculture education particularly among those involved in agriculture.

One non-agricultural teacher described the problem this way:

Weather conditions, the climate of this country— even our parents today don't see the importance of going to the land any more . . . if it rains they can do it. However, when it rains, it actually destroys the very plants they have planted. These kinds of climatic conditions affect agriculture negatively. (Non-agriculture lecturer 3, male, TCE)

The negative image is also attributed to real issues like the aridity of the country and the concurrent impact on agricultural activities.

Agricultural teachers' and students: Negative responses

A little over a third of the responses from agricultural teachers (40 percent see table 6) and agricultural students (39 percent, see table 7) were negative. The negativity of responses about agriculture education originates from various sources both within the educational contexts and from the society.

Economic factors

One factor that contributes to the negative image is the farmers' misappropriation of funds the government provides to support agricultural activities. One agriculture student expressed this reality by saying: "*our government comes up with schemes to support agriculture, but we are not using them to address the agricultural projects at all*" (Tertiary student 3, male, BCA).

Agricultural graduates expressed the same view as some non-agricultural respondents

regarding the Botswana Agricultural Marketing Board's low prices for agricultural products that discourage many farmers from considering agriculture as of any economic value.

The Botswana Agricultural Marketing Board prices are too low, that is what farmers in Botswana feel. The Botswana Agricultural Marketing Board buys at low prices and then later re-sells at higher prices. (Graduate 5, female)

Prices of agricultural products that are low reinforce the negative image upon producers because they invest their time and money only to be rewarded with low prices and later their product is sold to them at exorbitant prices. Even though this may be negative, it could be attributed to the government's change of strategy from food self-sufficiency to food security (Sigwele 1993, Nilsson 1993).

One related issue that was identified by one teacher who had resigned from teaching agriculture is that forms of negative images emanate from the present political climate and the way the ruling government is running the country. The negative image of agriculture education is reflected in the ministry's under-appreciation of human resources for agriculture in Botswana. He also felt that the Ministry was held in low regard:

The ministry of agriculture is considered a very simple ministry and a non-mattering ministry. You can see that it is given the lowest of attention . . . That even in the Ministry of Agriculture, they are some of the lowest paid. (Resigned agriculture teacher 1, male)

Social factors

Many teachers in secondary schools had a negative image of agriculture education because they approached agriculture from the general societal view. Illustrating this misconception, many individuals described agriculture in Botswana in simplistic terms, not recognising the myriad aspects agriculture in Botswana really entails. One of the teachers had this to say:

A big misconception with those who do not have an input in agriculture is they see it as tilling the land, which is all they see. (*Agriculture teacher 2, male, Kgari Sechele Secondary*)

Another teacher in the same focus group reiterated the negative image by expanding on what his colleague said:

They have a myopic view of agriculture as a food production thing only. More than that, they forget there are other aspects of agriculture, which do not necessarily involve going to the field and things like that. (Agriculture teacher 1, male, Kgari Sechele Secondary).

Tertiary students also exhibited similar prejudices and misconceptions about agriculture because agriculture is considered a practical subject that *'soils their hands'*. Therefore, there is a bias towards white-collar jobs as a sign of high status in society. In contrast, blue-collar jobs are seen as low status. One tertiary student states: *"Those not doing agriculture consider it a "dirty subject". It is clear it is a dirty job, but they do not examine it deeply enough"* (Tertiary student 1, male, TCE). Another teacher responded similarly, still reinforcing the same theme said: *"They tend to view it in simplistic terms, just like the growing of crops and rearing of animals"* (Agriculture teacher 4, male, Kgari Sechele Secondary). Agricultural teachers feel that students regard agriculture as a *'dirty subject'* because it is labour intensive and students spend time in the garden watering and cultivating their crops. That agriculture is connected with hands-on activity, however, is the reality of agriculture around the world including developed countries, no matter the degree of technology involved.

Educational factors:

Bias for white-collar occupations

There exists a bias towards white-collar occupations in Botswana. Related to the bias for white-collar jobs is the perception that agriculture is labour intensive and tiresome. Some students have chosen agriculture only because they have to survive in the future after their studies. Therefore, they do the course without commitment. One of the students was quite clear about why she dislikes her career: *"Agriculture is a tiresome job, as it requires more effort to do"* (Tertiary student 4, female, TCE).

This notion that agriculture is tiresome could be related to the colonial thinking that blue-collar jobs are for the less academically inclined. A teacher who had resigned illustrates this point:

It is still hooked on to the old thinking that practical subjects like agriculture are still considered appropriate for people who are not gifted 'upstairs'. This idea emanates from the colonial mentality. The colonial thinking is that if you are intelligent you must have a white-collar job; if not, you are going to have a physically laborious job. (Resigned agricultural teacher 1, male).

The colonial legacy even insinuates itself into teachers' relationships within the school in offensive nicknames used by non-agricultural teachers such as, *'Garden people'* (Resigned agricultural teacher 4 male). Headmasters often regard agricultural teachers as teachers who dodge their teaching tasks by taking students to the garden. The same teacher who had resigned made a similar observation that is related to being called odious names: *"When one is at the garden, they say, 'That one is always at the garden.' They do not consider the fact that it is a requirement"* (Resigned agriculture teacher 4, male).

Students' agricultural identity

Another point agricultural teachers made was that students were already familiar with agriculture thus they consider taking agriculture again at senior school a waste of time. Let it be noted that about 80 percent of the people in Botswana live in the rural areas (National Development Plan 8: 1997/98 – 2002/03) and are dependent on agriculture for their livelihood. One of the teachers stated:

Students are quite familiar with agriculture from primary to junior school, but when they come to senior schools there are so many subjects to choose from. (Agriculture teacher 2, male, Lobatse Secondary)

Even though some of the students come from farming background, this teacher commented that students feel they cannot 'waste time' with what they already know. Since agriculture is viewed simplistically, there is a propensity for students towards white-collar jobs. A tertiary student remarks about this preference by simply saying that: "*Most Batswana prefer white-collar jobs than blue-collar jobs*" (Tertiary student 1, male, BCA).

The emphasis on the theoretical pedagogical aspect in agriculture presents a negative image that has been identified by one professional as "*bookish*". This description has connotations for white-collar training preference. This lecturer commented on the problem:

People are very negative. People I have met who are employers of our graduates do not have much respect for our graduates because they are not very productive in the sense that they are not practically oriented. (Tertiary lecturer 1, male, BCA)

The type of training offered by agricultural institutions in Botswana also reinforces the negative image because of a lack of emphasis on the practical experience that will benefit students in their learning for their career. This critical observation was voiced by one of the lecturers:

The kind of training that we give here—I mean you can't teach a skill in the classroom. What we are doing is more of demonstrations than practicals meant to equip students with the skills, and expect them to be able to perform out in the field. (Tertiary lecturer 2, female, BCA)

Another emphasis on the negative image is fostered by the apparent lack of backyard gardens in villages in spite of the fact that some of the students have completed agriculture in secondary schools. It seems that theory is seldom translated into practical application. One of the teachers' points to this discrepancy in a negative rhetorical question: "*I am sure that there must have been at least one child who has gone through a junior certificate agricultural programme in this village, but how many backyard gardens would you find?*" (Tertiary lecturer 2, female, TCE).

Students pointed to the reluctance that graduates display in wanting to start agricultural projects, preferring to be employees in different fields in agriculture. This is an educational issue of a different nature from that revealed by the teachers. Some of the graduates prefer teaching or lecturing to working in agriculture per se. One agricultural student articulates this preference:

It does not help even if agriculture is taught in tertiary institutions. When they finish none of them engage in agricultural enterprises. They all want to be employees in different fields. If they are in agriculture, it is either to become teachers or lecturers; they don't like to be self-employed. (Tertiary student 4, male, BCA)

It is interesting to note that there is no official policy on the status of agriculture (as a school subject), so this is left to the discretion of the school. Agricultural teachers in one of the secondary schools visited felt that the school administration encouraged a negative image of agriculture education by the structural barriers they had in place. For example, in this school, agriculture is not regarded as a science but as a practical/vocational subject, like Design and Technology and Home Economics. However, in other secondary schools

visited, agriculture is considered as a third science, such that students who take the pure sciences are not encouraged to choose agriculture as an option because it would be redundant and burdensome. One of the teachers points out why agriculture is regarded negatively by the administration:

The administration encourages this negative image because they regard it as a low status subject. If they consider it as a science, they wouldn't be doing what they are doing now. They force every student, particularly the double sciences, to take agriculture. (Agriculture teacher 3, female Lobatse Secondary)

This is a problem because some of these students would not pursue agriculture at tertiary institutions, for they cannot get places at either Botswana College of Agriculture (BCA) or in Swaziland because of their low academic performance.

Political Factors

An agricultural graduate believes the negative image is connected with political factors. The recognition that farmers have come to depend on government schemes has introduced the dependency syndrome with its negative social impact. She believes the government has allowed the society to be too dependent on government handouts. This graduate expressed the image thus:

It is political, and I take it that the politicians have caused all these problems. The government has been spoon-feeding the nation with schemes such as Accelerated Rainfed Arable Program (ARAP) this resulted in farmers being dependent on the government and not doing anything themselves. (Graduate 4, female)

A measure of independence is required so that enterprising farmers could emerge without dependence on government schemes. These schemes have in the past been misused at a great cost to tax payers' money.

Environmental Factors

The negative perceptions of agricultural education were largely related to perceived shortcomings in agricultural practices in Botswana. The unpredictable climatic conditions are seen as making agriculture a difficult occupation in Botswana. The climatic environment in Botswana is semi-arid to arid and is characterised by endemic droughts and unpredictable rainfall. One of the students pinpointed this problem:

Personally, the way I look at agriculture, eventually it would not have any meaning when I consider what is happening. Look at, for example, families that are engaged in agricultural activity. They are few. This is caused by the unpredictable climatic conditions. (Tertiary student 1, male, BCA).

Teachers feel correspondingly that in addition to external natural factors affecting agriculture, there is a concern over the wastage of resources without any meaningful change in the agricultural sector. This leads to hopelessness for those involved. One lecturer expressed this concern: *"We are investing so much in agriculture, but we are getting so little. I think the people generally are beginning to say, 'what's the use?'"* (Tertiary lecturer 2, female, BCA).

In sum, agriculture is viewed negatively because of the realities of agricultural teaching and practice in Botswana. The feeling that the teaching of agriculture is dominated by theoretical assessment contributes to the negative image. Climatic conditions that prevail in Botswana are also not conducive to agricultural practice and make people despondent about its future. Economic factors, particularly negative government policies contribute to the negative image of agriculture.

Agricultural teachers and students: *Positive responses*

(BCA under-graduates and graduates, tertiary lecturers and secondary school teachers and resigned teachers)

The themes that emerge from agricultural students and teachers indicate that agriculture is viewed positively to the extent it offers meaningful economic and social advantages to either the respondent or the country. In this section, I start with the agricultural students and teachers because they have the most positive views about agriculture education. A little over a third of the students (39 percent, see table 7) and of the teachers (34 percent, see table 6) had positive responses.

Economic Factors

Agriculture is seen as positive generally because of its crucial role in the economy of Botswana. There is a desire for the sustainable use of resources for food production. One of the students said that: *"Agriculture plays a major role in the economy of this country. We can cut the importation of food from other countries. Agriculture is very good because the resources are renewable"* (Tertiary student 5, male, BCA).

Another student emphasised the economic theme that the practice of agriculture contributes to the country's economy, and people should be encouraged to participate in agricultural activities. He adds another aspect to the theme: *"Agriculture is important because we feed from it. We get clothes from agriculture . . . Botswana should be encouraged to engage in agricultural activities"* (Tertiary student 1, male, BCA).

Agricultural teachers also shared a positive, economic theme with the students about agriculture in Botswana. These responses focused on benefits either to the students or the

country as a means to increase local food production. An agricultural teacher who had resigned sees agriculture as Botswana's means of survival, "*We are saying agriculture is survival, a way of living*" (Resigned agriculture teacher 1, male).

Agriculture is considered as basic to Botswana's survival in terms of food production.

Another resigned agricultural teacher voiced the reality:

Ultimately I want to believe that as students acquire the necessary knowledge in agriculture they will be able to produce enough food. No one can negate the fact that it is through agriculture that we get our food.
(Resigned agriculture teacher 2, male)

Agriculture has also been considered positive in terms of employment opportunities it offers both in government and the private sector. One agricultural teacher expressed this observation: "*We know there would be lots of opportunity; we can work with the government and with the private sector*" (Agriculture teacher 2, male, Mater Spei Secondary School).

Agriculture is positive because it is assumed that it produces employment opportunities and is the mainstay of the economy of the country. The expectation that with skills in agriculture Botswana can produce its own food and cut on imports is the main thrust that contributes to it being regarded as important.

Social Factors

Agriculture was seen as challenging and intricately tied with Botswana's day-to-day activities whether students are doing the subject or not. An agricultural student expressed this cultural heritage thus:

Agriculture is a challenging career, but the interesting thing is that everything that you are doing is what is done in day-to-activities. You may not be taking agriculture as a subject, but what you do outside is agriculture.
(Tertiary student 3, female, TCE)

The fact that it is appreciated by the society can also be witnessed in backyard gardens in some families. In addition, a large number of farmers compete in regional and national agricultural shows. This is an observation expressed by one of the students:

I think farmers or people in our society do really appreciate agriculture as you see some of them are making plots in their homes. This shows interest in agriculture. During national exhibitions, they go there and show what they have . . . (Tertiary student 2, male, TCE)

Educational Factors

One of the graduates considered that agriculture has a positive image because its application goes beyond the work environment (employee context) and the school. The skills one acquires have been regarded as life-long and can secure a career beyond retirement, an observation expressed by an agricultural graduate: *"The knowledge of agriculture is life-long. I have a certificate in agriculture. Even when I retire, I can select a project in agriculture and do it . . ."* (Graduate 1, male).

A similar idea about a bright career after retirement was also pointed out by one of the agricultural graduates: *"It is good for me because I have made a decision that when I retire from the government, I can engage in agricultural activities because I regard it as a dynamic career"* (Graduate 3, female).

It is interesting to note that agricultural teachers regarded agriculture as only contributing to employment opportunities whereas students went beyond that when they brought up themes such as national identity and that agriculture is a satisfying career that is also appreciated by the society.

Non-agricultural teachers and students: *Positive responses*

Two positive responses of agriculture education emerged from these two groups based

on economic and educational themes. First, they regarded agriculture as the backbone of the country. Second, they felt agricultural teachers have to practise what they teach; they must act as good role models. Non-agricultural teachers held 42 (table 8) percent of the positive responses; agricultural students and graduates held 39 percent (see table 8) and the least were the non-agricultural students with 20 percent (see Table 6).

Economic Factors

It is clear that practicing commercial agriculture is more profitable than subsistence agriculture and contributes to the positive image of agriculture. A non-agricultural teacher asserted this claim: *"People who practice it on a large scale make a lot of money, and at that level, I do not think anyone can consider it as a low status job"* (Non-agriculture teacher 2, male, Mater Spei Secondary School).

In addition, if students are made aware that agriculture is a business and not merely a subsistence activity, it will be financially beneficial for them, as one non-agricultural teacher claimed: *"Agriculture is a career in the service provision industry, and when you provide a service, it's high class"* (Non-agriculture teacher 1, male, Moeng College).

Non-agricultural students also agree with the teachers that it is the backbone of the economy, and it cannot be ignored. Agriculture was recognised by one student as good business and the understanding was expressed thus: *"It is a vibrant business because almost everyone depend on agriculture. You can make it a business"* (Uni student 1, male).

The positive image is seen from its contribution to the economy of the country. One non-agricultural teacher strengthened the argument about the role of agriculture in the economy:

I am saying that it has been playing and should continue to play a very,

very strong role in our GDP because the type of society that we live in is one that lends itself to such kind of income. (Non-agriculture teacher 5, male, Mater Spei)

Educational Factors

A non-agricultural teacher has a very positive image of agriculture, role modelling his passion when he practices urban agriculture. He believes that role modelling can accentuate the positive image of agriculture. He described this as the application of theory into reality by doing what agricultural teachers are failing to do:

I am not a teacher of agriculture, but would like to invite you to my backyard garden and you would see the difference between teachers who have studied agriculture and the ones who practice it. (Non-agriculture teacher 5, male, Mater Spei Secondary School)

In summary, according to respondents interviewed, the status and categorisation of agriculture in educational settings is not clearly defined. It is not clear whether it is a science or a practical subject. The lack of definition contributes to agriculture being looked down upon in schools by teachers and students. One teacher who had resigned argues positively that agriculture deserves to be categorised as a science because it draws on a variety of pure sciences like Physics, Chemistry, and Biology. This former teacher suggests that it is even more taxing because it has to be applied. He states:

Agriculture is a science . . . because if you are talking about chemistry you can still talk about applied chemistry, but in agriculture we are taking all the biology, all the chemistry, all the physics, but more than that, the immediate application of these things . . . the application which really is more difficult . . . (Resigned agriculture teacher 1, male)

Agriculture was viewed positively because of its contribution to the economy. There was a view that agricultural teachers can enhance its positive characteristic if they can be role models who practice what they teach and show students that agriculture is not only a

subject, but also that the skills acquired can be useful if they are applied appropriately.

Agricultural teachers and students: *Mixed responses*

Mixed images were categorised according to respondents' contrasting images about agriculture that is both positive and negative simultaneously. They felt the image depended on the context: who practised it and where it was practiced. It also depended on the level of responsibility of an agricultural worker. See table 6 for percentage responses: 26 percent agricultural teachers (see table 6) and 22 percent agricultural students and graduates held mixed images of agriculture education (see table 7) and 20 percent non-agricultural students held mixed responses.

The following are the categories of mixed images that have emerged from agricultural teachers and students: educational issues, socio-economic issues, and technological issues. I start with the agricultural teachers and students because more of their responses were categorised as mixed as shown in Table 6: agricultural teachers 26 percent and students 22 percent.

Educational Factors:

Role Models

The mixed image shows two contrasting issues emerging in relation to agriculture. Agriculture teachers are regarded as misplaced-role-models, for they do not apply their agricultural skills in their backyard gardens. The society appreciates agriculture but on the other hand, they do not practice "*real agriculture*" (Resigned agriculture teacher 3, male). Agricultural practice can be seen as the backbone of the nation, but the society does not practice agriculture that is viable and robust enough to feed the nation. Production is based on the subsistence mode that is why this retired teacher said it is not '*real agriculture*.'

Another concern is that while agriculture is regarded as important and appreciated by the society, at the same time, it is not developed through modern technologies. One of the teachers who had retired expressed this observation: *"The society, yes it appreciates agriculture, but it does not practice real agriculture"* (Resigned agriculture teacher 3, male).

Although these teachers often have rather negative images of agriculture education, they encourage their students, and show them that there are opportunities to be gained by taking agriculture as a career. This teacher encourages students positively by stressing that: *"Nevertheless, in class, we encourage them that they can venture into projects like poultry production, vegetable production, and others"* (Resigned agriculture teacher 2, male).

Agricultural teachers have made comments on the educational issues they face in their teaching and in the practice of agriculture in general. The students tended to concentrate on the career aspects and the potential importance of agriculture to them as a livelihood.

Educational Qualifications

The issue of educational status as seen by teachers as mixed is dependent upon the level of education one has achieved. Educational qualifications are seen as conferring status to the one who holds the highest qualification. The one with a Diploma considers himself or herself better than a Certificate holder and a Degree holder better than both a certificate and a diploma holder. The qualification vicious circle complicates the mixed image. One agricultural teacher brought the issue of qualifications to the fore by making it clear that: *"It is like when you have a diploma or a certificate, you treat it as low status, but when you are up and see all the opportunities you can get, you find that it is high status"* (Agriculture teacher 3, male, Mater Spei Secondary).

This tension is because of employment opportunities for these groups of graduates. The certificate holder is paid less and the other two groups regard the job that they do as low status. Certificate holders employed in the field in agriculture are called agricultural demonstrators, they advise farmers in rural areas about agricultural practice. Degree and diploma holders work in big villages as District Agricultural Officers and earn much more than certificate holders.

"Agriculture is considered not only a subject, but also a business" (Agriculture teacher 2 male Kgari Sechele). The agriculture teacher who said this was explaining his convictions about agriculture to a non-agriculture teacher who did not see agriculture as a business. This non-agriculture teacher's image of agriculture was negative, as he only considered agriculture as an activity for peasants. The agriculture teacher had this positive response: *"I was saying to him, students who do agriculture do accounts; he was asking, what do they need to know about that? I said agriculture is a business"* (Agriculture teacher 2, male, Kgari Sechele).

Mixed images are based on the dilemmas agriculture has to deal with. Agricultural demonstrators are sent to advise farmers in the field while those with higher qualifications like BSc in Agriculture are assigned white-collar jobs in the districts offices. This is a dilemma because the least educated are placed at the forefront of agricultural extension services and those more qualified are assigned administrative work. The colonial legacy is evident in this kind of set up and goes on to reinforce the perception that agriculture is low status and blue-collar occupation suitable for the less educated.

Dual Perceptions of Agriculture Education

The dual images arise because of ignorance about agriculture. One of the teachers sees agriculture as a simple subject, which can only be taken by dull students. The educational issue was expressed to reveal the negative mixed image:

What I think is that to them agriculture is a very simple subject. It is only when they get into it that they understand that agriculture involves almost all disciplines, and people are thinking that it is so easy they just lump even the dullest of students into it and say, "Take agriculture." (Agriculture teacher 2, male, Kgari Sechele Secondary)

One teacher who had resigned recognises that the mixed image of agriculture is related to a perception of its simplicity and that an intelligent person ought not to waste time on it. This teacher argues that intelligent students' choices are pre-empted by those (the school administration) with the mixed image. This is how he expressed that attitude:

Now, if you are a good thinker and an intelligent person, people are thinking of other areas for you because agriculture is simple. What is difficult about cultivating the soil and throwing some seeds in the soil and watering them? (Resigned agriculture teacher 1, male)

Even though agricultural production is on the decline in Botswana, this does not dampen the fact that some students perceive agriculture as a good career. One of the graduates in agriculture states: *"The fact that agriculture is declining in Botswana can also be seen as providing a negative image, but it is a good career"* (Graduate 2, male).

Because of students' desperation when looking for suitable careers, some choose agriculture not because they like it, but because it would help them earn a living in spite of the problems it presents. They have chosen agriculture as a last resort. This is how this mixed image is expressed by one of the respondents: *"Even though it is a dirty job, I just do it to for the sake of getting money at the end of the course . . . life is money, as you know"* (Tertiary student 3, male, TCE).

Agricultural students and teachers have different perspectives on the educational issues. The teachers see a conflict; they see agriculture as simple and therefore for dull students, whereas students recognise that agricultural production is on the decline in Botswana but offers good careers in spite of being a 'dirty job.'

While some students consider agriculture a simple subject that could enhance their grades, they enjoy the theory aspect, but not the practicals due to their labour intensity.

Another teacher had this to say about the situation:

Like some of my students, some of them take it as an easy subject. They don't seem keen on the practical aspects. When it's time for practicals, most of the girls complain. Even the boys don't like the practicals. (Agriculture teacher 1, male, Kgari Sechele School)

The nature of agriculture teaching in secondary schools involves some work in the garden, which the students do not like. Because of the overall nature of our education, students are expected to be clean (wearing clean uniforms), but they get dirty as they engage in agricultural activities. Therefore, they regard agriculture as "dirty". Sometimes students even regard this subject as a cause for punishment. One teacher expressed this dilemma thus:

We encourage students to be clean. Suppose that the first three periods of agriculture we go to the garden and then at break time there is inspection for cleanliness. Therefore, students are going to be punished for being dirty because of the work involved in the garden. (Resigned agriculture teacher 2, male)

The mixed image of agriculture is even evident among agricultural teachers who do not practice what they teach. This tie well with the complaint that there is a lot of theory taught with minimal practical skills from training institutions. Consequently, even the teachers in schools follow this same model of teaching. The teachers ignore the crucial place

agriculture has for Botswana's survival. One teacher who had resigned expressed this issue ironically:

We are saying agriculture is survival, a way of living, but the agricultural teacher runs to the shop to buy even the smallest leaf of spinach. This is a shame to the profession. The professional, the person with a Masters' degree in Horticulture, is the fastest to go and compete for the smallest leaf of spinach . . . (Resigned Agriculture teacher 1, male)

Still related to educational issues is the general ignorance that exists about what agriculture involves. The narrow-mindedness about agriculture has been expressed in an observation that people take it for granted, even though they are dependent on agriculture for food. This is one agricultural graduate's observation: *"People forget that even the food, the meat that they are waiting to be served is all because of agriculture. That is why I say people do not understand what agriculture is"* (Graduate 3, female).

Agriculture education presents a dual image that presents the good and the bad aspects. Teachers consider it a simple subject that has to be taken by dull students, but students consider it necessary for all students even though it is labour intensive. Even though agricultural teachers acknowledge that it is important, it is surprising to find that instead of being role models, they are not because they compete for imported foods in the market place.

Agricultural Students and Teachers: *Negative Responses*

The issue of educational status as seen by teachers as mixed is dependent upon the level of education achieved by individuals. Educational qualifications are seen as conferring status to the one who holds the highest qualification. The Diploma holder considers him or herself better than a Certificate holder and a Degree holder better than both Certificate and Diploma holder. The qualification vicious cycle complicates the mixed image of agriculture.

One agricultural teacher brought this issue to the fore by making it clear that “ it is like when you have Certificate or a Diploma, you tend to treat it as low status, but when you are up and see the opportunities you can get, you find that it is high status” (Agriculture teacher 3, male, Mater Spei Secondary).

This tension is related to employment opportunities for these groups of graduates. The Certificate holder is paid lower than the other two groups. Subsequently, the Diploma and the Degree holders regard the Certificate qualification as low status. Certificate holders are employed as agricultural demonstrators and have to advise farmers in rural farm areas in agricultural practice. Degree and Diploma holders work in big villages and towns as District Agricultural Officers and earn more money than Certificate holders.

“Agriculture is considered not only as a subject, but also as a business” (Agriculture teacher 2, male, Kgari Sechele). The agricultural teacher who said this was explaining his convictions about agriculture to a non-agriculture teacher who did not consider agriculture as a business. This non-agriculture teachers’ image of agriculture was negative, as he only considered agriculture as an activity for peasants. The agriculture teacher had this positive response: “I was saying to him, a student who has chosen agriculture does accounts; he said, what do they need to know about that? I said because agriculture is a business” (Agriculture teacher 2, male, Kgari Sechele).

Negative images are based on the dilemma agriculture has to deal with. Agricultural demonstrators are sent to advice farmers while those with higher qualifications, like the BSc in Agriculture, are assigned administrative work that is perceived as white-collar. This is a dilemma because the least educated are placed at the forefront of extension services whereas those more qualified to be in the forefront to deal directly with farmers are left to do

administrative work. The colonial legacy is still evident in this kind of administration and reinforces the perception that agriculture is low status and blue-collar occupation suitable for the less educated.

Social Factors

The mixed image responses of agriculture education are attributed to socio-geographical locations in Botswana. Some ethnic groups like Bangwato, Bakgatla and Bangwaketse are pastoralists, who attach great importance to cattle production whereas some ethnic groups like Bakalaka, in addition to cattle production, may also, attach importance to crop production. The latter ethnic (Bakalaka) group does not have the three-settlement-system like the other groups. The three-settlement-system refers to the home (Legae) in the village, the lands where ploughing is conducted (Masimo), and another place where cattle are kept (Moraka). This ethnic group keeps everything in one location because of the scarcity of land in their area. This background is necessary to understand why different ethnic groups attach importance to different aspects of agriculture. One agricultural lecturer expressed this observation thus:

The image of agriculture varies from one group to another in Botswana. Most of the Setswana-speakers are mainly pastoral people, so the image of livestock production is seen as very important so that the people in that area have an image of crop production as well. (Tertiary lecturer 7, male, TCE)

Agriculture here receives a mixed image because of different ethnic backgrounds and what these groups deem important in their lives.

Non-agricultural teachers' and students: *Mixed Responses*

Two issues that emerged from the mixed responses of non-agricultural teachers and students were individual career preferences and the practice of agriculture generally. Some

felt that the mixed image is dependent upon individual personality traits.

Educational Factors: Career Potential

They expressed this by suggesting that individuals choose careers based on individual choices and preferences. Differing agricultural practices also made a difference to the general image of agriculture; the traditional practice of agriculture is regarded as low status while commercial farming is regarded as a high status occupation. For example, non-agricultural teachers perceived agriculture in the context of the kind of agriculture being done: *"If you are going to do the art of agriculture itself, for example, rearing cattle and the like, it's regarded as low class in our society"* (Non-agriculture teacher 1, male).

Agricultural Practice

Agriculture is regarded as low status in spite of the fact that Botswana is highly dependent on food from other countries. This attitude emanates from the youth who seem to have a different agenda from their parents who still hold a positive image of agriculture in spite of poor yields. One non-agricultural lecturer expressed the problem:

Although we are highly dependent on food production from other countries, agriculture is still held with little regard. Elders have more positive attitudes than the youth. Probably the youth have evaluated the agricultural situation in Botswana and realise there is little yield. (Non-agriculture tertiary lecture 4, female, TCE)

Some students gave a mixed response because they felt the image was dependent on a person's preferences and personalities. This is how the idea was expressed by one of the students: *"Personally, I think it depends on the personality of individuals, what ones goals are, and what one wants to achieve in life. Whatever I see as dirty or negative, the other person would regard differently"* (Uni student 2, female).

These groups did not have similar responses as evidenced by their emphasis; the

teachers were more concerned about the practice of agriculture, whereas the students were more concerned about career preferences in agriculture.

Discussion

Agriculture Education: contextual interpretations of responses

It is clear from the responses that the images of agriculture education are derived from the immediate contexts of the respondents. The images presented were negative, positive and mixed and can be attributed to endogenous and exogenous factors that help define the images of agriculture education. Some of these are based on erroneous information leading to prejudice; however, most of the images are based on the reality of agricultural practices and the challenges they present in Botswana.

Agricultural teachers and students see agriculture as playing a major role in the economy of the country, a view shared by respondents not doing agriculture. A career in agriculture is regarded as life-long, offering dynamic career prospects even after retirement.

Some respondents saw agriculture as negative because of the harsh climatic conditions that are not conducive to the practise of agriculture in Botswana. However, some of the non-agricultural teachers had negative images because of misinterpreting the objectives of the Revised National Policy on Education. One of the goals of the policy is “. . . to prepare Batswana for the transition from a traditional agro-based economy to an industrial economy that the country aspires to” (The Revised National Policy on Education 1994:5). This broad objective makes it clear that no aspect of our education will be ignored. Science and technology are emphasised in order to achieve the stated objective. However, the danger with this objective is that it can be misinterpreted by some as implying that agriculture will have to be pushed off the agenda for the development of the country. This already happens

in schools because some of the administrators there tend to think that agriculture is for poor performers.

The perceived lack of support for subsistence farmers by government is also another misunderstanding by some respondents. There are schemes provided by the government supporting subsistence farmers. The Ministry of Agriculture has schemes like Accelerated Rainfed Arable Program (ARAP) and Arable Lands Development Program (ALDEP) that support farmers during the ploughing seasons and sometimes during droughts by providing farming implements and money to pay for hiring of tractors for ploughing. However, many subsistence farmers may still complain that the subsidies are not enough.

The negativity shown by agricultural teachers does not really stem from the fact that they are not interested in the subject themselves, but from what they regard as external forces that are brought to bear on the subject. Literature supports this view as shown by studies carried out by Mallory and Sommer (1986) in the Australian context. This study reveals that students have limited perceptions of potential career opportunities that exist in agriculture. While there may be fewer opportunities for courses in agriculture in Botswana in comparison with opportunities in developed countries like Australia, there are still more opportunities than students generally perceive. Inadequate career counselling also exacerbates this problem. Orthel, Sorensen, Lierman & Riesenber (1989 cited by Cecchettini et al. 1992) did two studies that also reveal the same conclusion. These two studies reveal that students have a limited perception of what agriculture could offer.

One other difficulty related to what all the teachers interviewed say is the indecisiveness and lack of consensus as to whether agriculture is a science or a practical subject. Science subjects are regarded as high priority areas by some school administrations, placing pressure

on agricultural teachers to convince students that agriculture is equally important and a high priority area.

The negative image of agriculture is made worse through new policies allowing foreign labour in the farming sector. The government is discussing importing cheap unskilled farm labourers from Zimbabwe (Botswana Daily News, 9/10/2001 No. 189). The move is prompted by the low wages that farm labourers are paid on farms and Botswana no longer want to accept this. They can work as farm labourers, but the failure by government to protect unskilled labour is still a problem that has to be addressed before they start importing migrants for this work. One lecturer pointed out his concern about this policy, which he feels will inevitably destroy the image of agriculture in Botswana:

One minister was reported to have said that soon they are considering allowing foreigners to come and work here in agriculture in Botswana. It's like the government— Somebody somewhere in government has given up on us Botswana. (Tertiary Agriculture lecturer 2, female, TCE)

Agricultural teachers have been blamed for not applying skills they have learnt to reinforce their students' understanding and practical application of agriculture by emphasizing mostly theoretical aspects. Shavhvali condemns "theoretical knowledge" as the dominant strategy that "only increases higher education graduates' information phenomena" (1997:196). Agricultural teachers as well as non-agricultural teachers have also denigrated this kind of strategy.

The economic impact of agriculture is seen in terms of low prices for agricultural produce. These discourage farmers from engaging in productive agriculture and contribute to its negative image. Offering low prices for the major cereal crop lowers the image of agriculture because farmers exert themselves and do not get any profit from producing

sorghum. To achieve agricultural advancement, Anderson (1974) provides a list of factors that may improve the image of agriculture. The factors that he lists are economic incentives and a dependable marketing system. In Botswana, these two factors are not well established and have been discussed by the Israeli Consultants (TAHAL) in the National Agricultural Master Plan for Agricultural Development. The Botswana Agricultural Marketing Board (BAMB) does not offer competitive prices for farm produce particularly sorghum, which is the major crop. The consultants reported that farmers also complained about the network of Botswana Agricultural Marketing Board that in some areas farmers have to travel long distances to sell their produce.

Socially, the preference for white-collar jobs over blue-collar ones contributes to the negative image. It is a reality in many countries that blue-collar jobs are tiresome and attract low status and low rewards. However, this perception is context-based because in developing countries it may be linked to colonialism. In the United States the contextual linking of agriculture to low status is revealed among African-Americans who associate agriculture with their "past slavery and plantation heritage" (Morgan 2000: html document). Literature shows that developing countries have long associated manual labour with low status, and students have thus developed a bias against blue-collar jobs because of the design of education in developing countries (Coombs 1968, Blaug 1980). Developing countries regard education " . . . as an escape route from the low social status of manual labour" (Coombs 1968: 94) and as "a flight from farming" (Blaug 1980:148) by parents who regard education as the only avenue to better paying jobs and status. Coombs' statement, although made over three decades ago, is still valid in most developing countries in the 21st century and is reinforced in schools in spite of some educational reforms and

programmes governments implement to change the situation.

One of the reasons why agricultural occupations receive low status is what Machete (1990:310). argues as the “misconception among members of the society of the nature of tasks involved in such occupations. An occupation in agriculture is often regarded as ‘dirty-hands’ career meant for uneducated men” He further ties the perception that agriculture is “dirty-hands” with the failure of agricultural education to attract high quality students for degrees and the “lower proportion of females in the faculties of agriculture” (Machete 1990:311) in developing countries, particularly in South Africa.

Mixed images responses arise because of both the positive and the negative aspects of agriculture. The practice of agriculture is seen as dependent upon individuals who prefer careers in agriculture even though agricultural production is on the decline (NDP 8:1997/98 – 2002/03). This is still related to the conflict between white-collar and blue-collar jobs. Some students tend to choose a career in agriculture even though it is associated with low status, whereas others have an inclination to white-collar jobs that are considered high status and high paying.

The Ministry of Agriculture pegs financial rewards to qualifications. Degree and Diploma holders earn relatively more than certificate holders with different levels of responsibilities. A certificate holder is an extension agent who works in the field with farmers whereas the Degree and Diploma holders are stationed in offices in towns and big villages. These higher degree holders see themselves as superior to Certificate holders.

In the same way, the type of agriculture practised yields different images. For example, commercial agriculture was reported as profitable and confers high status, but traditional farming was not regarded as profitable and was perceived as low status. The younger

generation is not committed to agriculture like the older generation even though the nation is dependent on food importation.

The three images that have been discussed so far show the weaknesses and strengths in the teaching and practice of agriculture in Botswana. There are educational implications arising from these images for curriculum planners and agricultural development in Botswana.

CHAPTER 4

ENHANCING THE IMAGE OF AGRICULTURE EDUCATION

Introduction

The aim of this chapter is to articulate strategies that interviewees provided about changing the image of agriculture education in Botswana. Two questions were asked: 1) *What strategies may impact on or change the image of agriculture?* 2) *Should agriculture be an elective or compulsory?* These questions were asked of all the groups.

The rationale for asking the respondents to articulate their strategies was to solicit ideas from the groups about possible solutions to the problems they raised about the image of agriculture in Botswana. I felt it would be beneficial to tap into the imagination and thoughts of interviewees about the strategies that they thought were important. By analysing their responses, a variety of solutions emerged. These ideas may assist curriculum planners with strategies to improve the agricultural curriculum. For example, respondents' comments on whether agriculture should be compulsory or elective may provide planners with possible solutions to this issue. They may also assist policy makers to devise strategies to improve the image of agriculture.

As in the previous chapter, responses were grouped accordingly: 1) agricultural teachers, resigned/retired agricultural teachers, tertiary agricultural lecturers, and agricultural students from tertiary institutions; and 2) non-agricultural teachers, tertiary non-agricultural lecturers with non-agricultural students from the university. The strategies for

each group will be discussed separately. This will show the diversity of strategies suggested by the interviewees. A particular strategy may overlap between the groups but by discussing it within group responses, slight differences between these two groups can be discerned. Then I look at the second question, whether agriculture should be compulsory or elective.

Strategies: Advancing Agriculture Education

Table 10 shows that nine (9) agricultural teachers (79 percent responses) and nineteen (19) students (71 percent responses) felt that curriculum restructuring should be considered as a main strategy to improve agriculture education. This was supported by three (3) ,see table 13, non-agricultural students (75 percent of responses). Only one non-agricultural teacher mentioned this strategy. Five non-agricultural teachers (73 percent responses) considered economic restructuring as their preferred strategy. Five agricultural students (29 percent responses) also gave support to this strategy. Only four agricultural teachers (11 percent responses) mentioned this strategy (see table 10). A few mentioned changing the image of agriculture education.

Table 10 Strategies to enhance agriculture education

Question	Agriculture Teachers		
	No. of Responses	% Responses	No. of respondents
What strategies may impact on or change the images of agricultural education?			
Curriculum restructuring	22	79%	9
Economic restructuring	3	11%	4
Image change	3	10%	3
Totals	28	100	16

Table 11. Strategies to enhance agriculture education

Question	Agriculture Students		
What strategies may impact on or change the images of agricultural education?			
	No. of Responses	% Responses	No. of respondents
Curriculum restructuring	12	71%	19
Economic restructuring	5	29%	5
Image change	0	0%	0
Totals	17	100	24

Table 12 Strategies to enhance agriculture education

Question	Non-Agriculture Teachers		
What strategies may impact on or change the images of agricultural education?			
	No. of Responses	% Responses	No. of respondents
Curriculum restructuring	1	7	4
Economic restructuring	11	73	5
Image change	3	20	2
Totals	15	100	11

Table 13. Strategies to enhance agriculture education.

Question	Non-Agriculture Students		
	No. of Responses	% Responses	No. of respondents
What strategies may impact on or change the images of agricultural education?			
Curriculum restructuring	3	75%	15
Economic restructuring	0	0%	0
Image change	1	25%	9
Totals	4	100%	24

Agricultural students and teachers

Curriculum restructuring

Agricultural teachers and students felt that curriculum restructuring could improve the image of agriculture in educational institutions. One dominant theme that emerged is that agriculture should be taught appropriately with more emphasis placed on the practical aspects of agriculture without compromising the theoretical aspects. One of the tertiary lecturers felt that practicals must be given the dominant role they deserve in the practice of agriculture. She expressed her views clearly by saying: *“Incorporate the practicals in the real sense, giving them the attention they deserve . . . that would transform things”* (Tertiary lecturer 2, female, BCA).

Another retired teacher expanded this theme further by pointing to the fact that the restructuring of the curriculum must start right from training institutions so that the practice of *“real agriculture”* can be tangible and profitable. This is how the strategy could be put to work:

Being realistic by practising proper agriculture . . . if you ask an agricultural teacher to castrate a bull, very few of them can do it . . . so while they teach, they do much more talking than demonstrating, and if they cannot demonstrate, then it's obvious they cannot teach the youth how to do the hands-on. (Resigned agriculture teacher 3, male)

The observation that the present system is inundated with theory was a clear message; however, another important point was that practicals should not be the end in themselves because students may perceive them as a form of punishment. One of the teachers who had resigned suggested that:

We need to lay emphasis on the practicals, but practicals in agriculture should not be mere punishment by being in the sun and in the garden. However, the present system where practicals mean growing a legume, a root crop, looking for pests and cultivating is too simplified an approach. We must recognize that we must go into the labs and do exciting experimental work in agriculture. (Resigned agriculture teacher 1, male)

It was felt that knowledge must be translated into practical skills so that recipients of education would be able to demonstrate and apply the skills appropriately in agriculture. This teacher ended with an equally important point that something exciting and innovative is needed.

Agricultural students agreed with teachers that curriculum restructuring is a necessary strategy that could lead to improvement. One of the graduates felt that it is the responsibility of the Ministry of Education to provide practical-oriented training, but the Ministry must be aware that not all students will become farmers. She suggested that: *"Students in secondary schools should be attached to prominent farmers who practise modern agricultural methods. Then students can see that agriculture is worthwhile, and they can develop an interest in it"* (Graduate 4, female).

This would be an interesting approach because the strategy is not currently used in secondary schools, but it is used in tertiary institutions (BCA 2000-2001 Prospectus). In

BCA it is called field Practical Training (FPT) where students are attached to farms so that they could gain needed practical application of agricultural knowledge. However, it has been observed that students have often complained that FPT is a waste of their time because they do not gain useful practical experience as some of the farmers treat them as a source of cheap labour. Indeed, this can engender interest for students' agricultural career aspirations.

The idea of accumulating knowledge that will not be useful to farmers was criticised by agricultural teachers. One of the lecturer's in agriculture felt that this should be abandoned for practical knowledge. He commented that: *"There is a lot of knowledge that is just esoteric to Botswana's standards. We have to abandon this and look for applicable knowledge"* (Tertiary agricultural lecturer 7, male, TCE).

This teacher explained that the present assessment system (BCA Prospectus) allocates more weight to theory (60 percent) than practicals (40 percent). Consequently, students would not be worried by the fact that they have not been able to master a particular practical skill, knowing that they would not fail.

One agricultural teacher who had resigned suggested the project approach as a strategy that would help make agriculture exciting. Then students may view agriculture as an exciting subject just like Chemistry and others. Even though the project approach has been implemented in secondary schools, the feeling was that teachers should approach it with excitement, interest, and imagination so that students could be motivated and understand why they have to do certain laborious activities in the garden. The teacher articulated this strategy:

Students must appreciate that it is not the teacher who wants them in the garden; it is the kind of project that they cannot complete unless they have tested A or B. Things must be challenging and comfortable enough and not

solely dependent on physique. (Resigned agriculture teacher 1, male)

The feeling that agricultural practice in Botswana must be hands-on has been pervasive among teachers. One teacher who had retired indicated that training institutions have to train students such that they will be able to do their work properly. He suggested that agricultural demonstrators:

Need to be taught practically and do things practically. For instance, if each one of the agricultural demonstrators is each given at least a hectare to produce different types of crops in different seasons and be able to use all the equipment the farmers will be handling there. (Retired agricultural teacher 3, male)

This kind of strategy will not be realistic because training institutions have constraints of land and equipment. However, the Botswana College of Agriculture has implemented a somewhat similar project called Student Enterprises Project (SEP) in an attempt to address this gap. The students are given funds to run some entrepreneurial enterprises in which they sell products they have produced for a profit. It is hoped that when they finally graduate they would apply for loans to establish similar projects if they fail to be employed.

The educational system in Botswana has to cater for and absorb those students who have done agriculture and failed to get admission into institutions of agriculture. The teacher who suggested this felt there was a shortage of specialised institutions that could offer courses in agriculture up to certificate level: *"The nation needs a number of agricultural institutions that would train form five leavers in specialised areas in agriculture. These intermediate colleges must be created to absorb those who would not have the opportunity . . ."* (Tertiary lecturer 7, male, TCE).

One teacher felt that adult service centres must be created to cater for those who have retired and would like to engage in agricultural practice. These people must be provided for

and this suggestion could give the government an innovative strategy to address some of the problems in agriculture: *"Now, if I want to get some basics in the operation of machinery, where do I go? Apparently, there is nowhere that I can be serviced."* (Tertiary agriculture 7, male, TCE)

In addition to practical-oriented agriculture, graduates felt that at present admission requirements into an agricultural institution like Botswana College of Agriculture (BCA) require good passes in Mathematics because agriculture is regarded as a science. One of the graduates felt that the stringent requirements must be relinquished for students who took agriculture as a core so that they could upgrade their skills in agriculture. She suggests the following restructured strategy:

The standard of maths must be reduced to accommodate those who do agriculture and have a passion for it. When a student has passed agriculture with good grades and maths with a 'Pass' they should be allowed admission into agricultural institutions, just like English which is not a pre-requisite for admission into the Faculty of Science. (Graduate 2, female)

Reviewing admission requirements to cater for students who have good grades in agriculture but with poor science or Mathematics grades was another strategy mentioned. In the quotation above, English was used as an example since it used to be a pre-requisite for admission into university and other tertiary institutions, but was not required for science-based courses. Many students who opted to continue with the sciences did not have good grades in English, but the requirement was waived for them.

Non-agricultural students and teachers

Economic restructuring

Instead of placing emphasis on practical skills, non-agricultural students felt that

knowledge about agriculture must be made accessible and relevant. Whereas non-agricultural teachers felt that practical skills are imperative to make agriculture meaningful to students and the community, students felt that the general strategy has to be based on the provision of relevant information about agriculture, its importance to the nation and potential career prospects.

One of the students suggested that the situation of ignorance about what agriculture could offer must be addressed, *"if re-packing of information was undertaken"* (Uni student 1 male). This student felt that the way agriculture was presented to them at secondary school should be reviewed and then presented differently. One of the students reinforced this way of thinking by asserting that: *"Initially, what I think should be done is more information should be given to the masses. That is, in terms of enlightening them on the career prospects from agriculture, otherwise nothing will be achieved"* (Uni student 3, male).

One non-agricultural teacher felt that practical skills must be incorporated into the society to make the school and community open, thus getting rid of the isolation of the school from the community. He felt that the students' projects should be conducted within the community expressing the applicability of agriculture. This is how the strategy was presented:

Allow students to do their projects at home and the teacher should go out to assess what they are doing so that it is not only meaningful to students, but also to their parents and neighbours. It would now be within the community because the school is secluded. When they do it here, there is discontinuity. They do not see it as part of their lives. (Non-agriculture teacher 3, male, Mater Spei Secondary)

Among the groups, the dominant strategy that emerged centred on the crucial role that hands-on experience can have on the teaching of agriculture in educational institutions. They also mentioned changing admissions policies.

In this section, non-agricultural teachers' (38 percent responses) will be discussed first because they have suggested more strategies than agricultural students (16 percent responses) and teachers (6 percent responses).

Non-agricultural teachers and students favoured economic restructuring being used to boost the agriculture education. It is surprising to find that agricultural teachers did not support economic restructuring as much as other groups. Non-agricultural students did not mention economic restructuring as a strategy.

The non-agriculture teachers placed emphasis on agriculture as crucial to economic development of Botswana. They noted that Botswana is heavily reliant upon neighbouring countries for food, even for basic food, like tomatoes. Agricultural teaching was therefore linked with the improvement of food production to reduce food importation and boost employment. Once again, non-agricultural teachers reverted to the negative effects that theoretical teaching has on agriculture.

One teacher argued that agriculture must aim at producing tangible results so that students could be attracted to it. Students in secondary schools must be engaged in production not in theories about production. This is how the envisaged strategy could be implemented:

It is possible for the students to observe the income themselves, like selling their produce, unlike when you say: "You can grow crops, you can make profit, and you can have a farm." That should not be the kind of thing; the income must be made observable, so that when they grow up they would know that agriculture is a profit making activity. (Non-agriculture teacher 3, male)

Non-agricultural teachers felt that the practice of agriculture could be improved if subsistence agriculture is transformed into commercial agriculture that could be achieved by forming syndicates. The move would enable them to secure loans and engage in bigger projects. One teacher suggested that: *“I think one of the things we could do is to form syndicates. So that if they go into commercial farming, they could secure substantial sums of money from banks and can venture into bigger projects”* (Non-agriculture lecturer 4, male, TCE).

Self-employment was considered as one viable strategy that has not been exploited by those who have agricultural skills. The dominant thinking has been that the job market was ignoring the possibility of starting agro-businesses. This strategy, observes one non-agricultural teacher, could reverse this type of thinking for a better future: *“This is one sector where we have many opportunities especially if we consider self-employment because our thinking all along has been that one has to be employed by the government”* (Non-agriculture lecturer 2, male). This strategy shows that agriculture was only taught as a subject without showing its versatility. Instead of doing it solely for employment purposes, students can be introduced to the reality that this training can lead to a range of other jobs. In Botswana College of Agriculture (BCA), they have introduced what is called Student Enterprises Projects (SEP, Internal memorandum 2000) so that students can gain some entrepreneurial skills. They can initiate projects that can generate self-employment prospects after graduation if they fail to secure employment.

Agricultural students and teachers

Image change

Agricultural students and graduates felt that the government should improve the

infrastructure that is currently available so that the practice of agriculture can be economically attractive to those who want to start a career. They felt that the government must play a pivotal role in this regard. One of the graduates felt strongly that:

The government must provide infrastructure to farmers. For example, the production area along the Limpopo River, farmers there do not have access to electricity and have poor roads. The youth would not want these poor roads. Since individuals cannot provide these, the government must provide these to encourage them. (Graduate 3, female)

One of the graduates also felt that government's involvement is necessary to encourage all those who are interested. For example, government could provide subsidies for farmers to purchase farming equipment, like what is done in South Africa and Zimbabwe. This strategy could assist the declining image of agriculture in Botswana where no subsidies are available. Let it be noted that the government is providing other programmes that farmers have access to which assist in this regard. The elaborate strategy was presented thus:

Currently if you are a farmer and interested in agriculture you don't have any form of subsidy. You have to fend for yourself; you have to secure a loan from a bank. However, in other countries, like in South Africa if you buy a tractor there is a subsidy, say 15 percent. So if we can think along that direction it would be an improvement. (Graduate 2, male)

Agricultural teachers mentioned that agriculture should be treated as a business enterprise without elaborating how this could be achieved in practice. One of the agricultural teachers remarked, *"I think it will be necessary whereby farming can be seen as a business undertaking"* (Agriculture teacher 3 male Kgari Sechele Secondary). Another teacher suggested that government schemes could be introduced in schools so that: *"It can be easy for the students to go into business later."* This suggests the practice of agriculture as a continuous activity that could be integrated into the study of other subjects like Business Studies. One retired teacher takes this theme further and argues that agriculture

should not be taught only as a subject: *"It should be impressed upon the teachers as they teach the subject that they can make a whole lot of difference to the economy of the country"* (Resigned agriculture teacher 3, male).

Even though some lecturers noted that agriculture should be treated as a business, obstacles have to be removed first so that those who are interested in agriculture might feel secure. The lack of minimum wage legislation is one of the obstacles that has to be removed. One of the lecturers voiced this concern: *"Agriculture is a business after all, so why not treat it in accord with industry. It is part of industry. Agriculture should have the same legislation when it comes to minimum wages"* (Tertiary lecturer 7, male TCE).

One other obstacle in the practice of agriculture involved the issue of low prices that are offered to subsistence farmers by the major buyer of their produce. The implied strategy here is that prices have to be competitive. The lecturer stated that: *"You will find that even the BAMB (Botswana Agricultural Marketing Board) takes advantage of them"* (Agriculture Tertiary lecturer 5, male TCE).

The general theme among these respondents is that agriculture has to be taught for the economic development of the country. This is in consonant with the Revised National Policy on Education (1993).

Changing the image of agriculture education was a strategy mentioned by non-agricultural students (25 percent responses) and teachers (20 percent responses) refer to tables 12 and 13, and least favoured by agricultural teachers (11 percent responses) refer to tables 10 and 11 and not supported at all by agricultural students (0 percent responses). There was a feeling that something had to be done to revive the current image of agricultural practice in schools and in the society.

Non-agricultural students and teachers

Non-agricultural students felt that more information and technological innovation must be used in order to bring about a change of attitude towards agriculture. One of the students felt that image change could be brought about by: "Using more machinery than being labour intensive, this can attract us. Driving a tractor is better than using a plough pulled by donkeys" (Uni student 3, male).

Another image change could be brought about by a change of attitude within the society. One of the lecturers argued that Batswana are not used to selling like some other ethnic groups: "The problem again is that selling is not part of our culture" (Non-agriculture lecturer 1 female). This was in response to another lecturer who said that Batswana could sell agricultural products they produce from their backyards so that they could make a living. One other lecturer suggested that a change of attitude was necessary by stating that: "If we say to ourselves, we are consumers and not producers and we let this be in our minds then we shall remain so. Therefore, there is a need for a change of attitude" (Non-agriculture lecturer 3, male, TCE).

In sum, introducing technological changes to agriculture and a change of attitude in society were seen as strategies that could bring some changes to the image of agriculture in Botswana.

Agricultural teachers

Agricultural teachers also felt that changing the attitude of professionals in the field could bring image change. One lecturer emphatically felt that: "*There must be a reorientation on the part of people who are practising agricultural education . . . people must accept their responsibilities*" (Tertiary lecturer 1, male, BCA).

Another lecturer felt the same as the previous one that agricultural educators must demonstrate that they have a passion for the subject: *"We have to model so that students could see we're doing this with passion, and we believe in it. However, it's like what we are doing is like 'It's by the way thing' (Tertiary lecturer 2, female, BCA).*

Image change can be engendered by a sprit of commitment and a change of attitude from the professionals so that students could see that they have commitment to what they teach.

Alternative strategies

Agricultural students felt that hindrances in agricultural production must be removed. One student felt that proper records must be kept whenever a farmer is engaged in agricultural production:

In Botswana, we have a problem of producing without records. Most farmers produce without records . . . If our farmers could be encouraged to keep records and determine whether they are making profits or not, this would help. (Tertiary student 3, male, BCA)

Another student felt that students must be treated equitably when they want to secure loans for projects when they complete their studies:

We must be given loans and treated as beginners in agriculture. Just as the Ministry of Education provides us with loans which we will repay. The government must treat us as students and not compare us with already established farmers who have security for loans. We must not be hindered by security that is required against the loan. (Tertiary student 1, female, BCA)

Similarly, one of the teachers felt that streaming students must be eliminated so that all students could have the opportunity of choosing agriculture. This teacher feels that the image could change: *"Agriculture should be left open for the students to choose; students should not be compelled to do the pure sciences only. The idea of streaming high*

performers in science subjects to do the pure sciences should be dropped and students allowed to choose" (Agriculture teacher 3, male, Moeng College).

In sum, it is now clear that teachers and students have different strategies that could be used to improve the image of agriculture. Teachers emphasised changing aspects of instruction, whereas students stressed changing the practice of agriculture.

Discussion of Strategies

It is clear that agricultural teaching and practice in Botswana suffer from structural defects that need to be addressed. Hands-on experience is needed for both the teachers and students. It has been reported that the current teaching of agriculture does not address practical skills by giving more weight to theoretical assessment than practical assessment (*BCA Prospectus*). At BCA, practicals account for 40 percent of assessment and theory accounts for 60 percent. It is therefore, clear that the dominant strategy at BCA is "knowledge for knowing", not knowledge for doing or practical acquisition. The emphasis on the theoretical assessment is not apparent in the secondary school syllabus even though teachers suggested that emphasis must be practically-oriented. The three syllabi, primary school, junior secondary and senior secondary, emphasise practical skills as well as theory. However, during interviews agricultural teachers were critical of the knowledge for knowing. This raises questions about the delivery of the subject. Do agricultural teachers undermine what they should be doing or are they experiencing resources problems? Alternatively, do they lack the professional competency to carry out practical experimentation?

It may be that a change in the attitude of professionals could help improve the image of agriculture. Students would like to see great improvements in the practice of agriculture in

the form of technological innovations. The practice of agriculture in Botswana is both commercial and traditional. Subsistence farmers use draught power and tractors to harvest. Students obviously prefer farming that uses technological innovations because it is not as labour intensive as traditional agriculture.

Secondary school students would like to have more information about possible careers in agriculture. Greater awareness of agricultural careers is beginning to occur through Career and Guidance that is charged with the responsibility of advising students on careers by inviting professionals from agricultural institutions.

Agriculture as an elective or compulsory subject

The second question was: *Should agriculture be an elective?* The rationale for asking this was to find out how the groups viewed compulsory agricultural education and why. The majority of agricultural teachers (86 percent, see table 14), agricultural students (64 percent, see table 15), non-agricultural teachers (64 percent, see table 16), and non-agricultural students (60 percent, see table 16) felt that the best strategy is to make agriculture compulsory in secondary schools.

The groups advanced various reasons for both strategies. Some of the reasoning was based upon economic issues and others on philosophical educational aspects.

Table 14. Should agriculture be an elective?

Question	Agriculture teachers and lecturers		
<i>Should agric be an elective?</i>			
	No. of Responses	% Responses	No. of respondents
Compulsory	18	86	18
Elective	3	14	3
Total	11	100%	21

Table 15. Should agriculture be an elective?

Question	Agriculture students and Graduates		
<i>Should agric be an elective?</i>			
	No. of Responses	% Responses	No. of respondents
Compulsory	9	64	9
Elective	5	36	5
Total	14	100	14

Table 16. Should agriculture be an elective?

Question	Non-Agriculture teachers and lecturers		
<i>Should agric be an elective?</i>			
	No. of Responses	% Responses	No. of respondents
Compulsory	3	60	3
Elective	2	40	2
Total	5	100	5

Agricultural teachers and students

Compulsory

One of the secondary school teachers felt agriculture should be compulsory because of the agricultural heritage of the country and because the country lacks skilled human power in agriculture. This is how he expressed his opinion: *"Based on the Botswana context, I would say agriculture should be compulsory because Botswana is a farming nation and as such, we need trained personnel in agriculture"* (Agriculture teacher 1, male, Mater Spei Secondary).

Others felt making it compulsory will improve the image of agriculture in the country because it may mean having to reward the students more after graduation. This is how the teacher expressed his opinion:

If you want to change the image or perception of the nation towards agriculture, it should be compulsory. Then it would signal something to the people and they would give it high status . . . then it means you have to pay more to attract them to it. Then the image will change and Batswana can see agriculture as a thing for the nation. (Agricultural teacher 3, male, Moeng College)

One of the lecturers clarified that agriculture should be a core subject at junior and an option at senior school. She expressed it like this: *"I think it's important that its core, especially at the early stages, so that we have a general background at a lower stage. Then it becomes an elective or an option later"* (Tertiary lecturer 1, female, BCA).

Agricultural students felt that agriculture should be compulsory from primary school to secondary school for economic and educational reasons. Making it compulsory just like Mathematics, English, and the sciences can activate the acquisition of skills and the capacity to feed the nation. One student brought the acquisition of agricultural skills to the fore by

suggesting self-employment: *"If a student has been taught most of the skills in agriculture and drops out of school, he/she can have a garden and sell his/her own produce"* (Tertiary student 5, male, BCA).

They also suggested that students who are not able to continue with their education could benefit a lot from it by opening small agro-businesses and reduce the problem of unemployment among dropouts: *"When considering junior certificate students, we have experienced a high level of dropouts that is where we need the more practical aspect of agriculture. These students can benefit a lot from agriculture by opening up some related enterprises"* (Tertiary student 1, male, BCA).

One of the lecturer's shared a similar feeling with the students that it should be compulsory from primary school so that students could be prepared psychologically at a young age building a philosophical foundation of education. The strategy does not only focus on the extrinsic rewards like what has been revealed previously. This is what the lecturer has to say:

It must be compulsory from primary school because that is where you mould your students because we are dealing with a particular attitude and you have to put the attitude into the student. In standard one (year one), they are out there doing something with the soil and get the feel of the soil. That is important in a country like Botswana, which has a livestock tradition. *(Tertiary lecturer 6, male, TCE)*

This strategy could prepare the pupils from a young age to appreciate and get interested in agriculture and prepare them psychologically for agricultural challenges as they grow older. There is an educational justification for agriculture teaching from primary to secondary school even though there may be challenges along the way.

Non-agricultural students and teachers

According to the two non-agricultural groups, agriculture is tied to the economic survival of individuals and the country, and so it has to be compulsory. Students feel that agriculture has to be compulsory for economic rewards for the individual and the country. One student said: *“Primarily, we rely on agriculture for food and everything . . . we have to have that background in agriculture so that those who can't proceed to secondary education or tertiary level, at least they have some skills for survival”* (Uni student 3, male).

Some of the lecturers concurred with this view. One of them suggested a similar idea that agriculture should be compulsory so that students can appreciate the skills that pertain to their lives. *“Maybe to a certain level, it has to be a core subject at Junior Certificate level where students are made to appreciate the importance of agriculture. The other consideration should be unemployment”* (Non-agriculture lecturer 2, male, TCE).

In sum, the dominant theme is making agriculture compulsory so that students can gain skills that they can use effectively in society. Though some respondents advocated that agriculture be compulsory from primary school, it is worth noting that it is already a core subject in primary schools and junior schools. The difference would be to make agriculture compulsory at senior secondary school level.

Agricultural students and teachers

Elective/optional

The general reason given for making agriculture an elective was that forcing students to do what they do not want would be a violation of students' rights. Further, students may just take agriculture without a commitment and fail to internalise the skills.

Agricultural students (36 percent of respondents, see table 15) and teachers (41 percent) felt that agriculture should remain as an elective to cater for students' preferences and aspirations. The theme is that students' preferences must not be repressed. It is interesting to note that this group is not concerned about economic issues as are non-agricultural teachers and students.

One of the students felt that it would be good to make it an elective at senior school because the students at that level are mature and would be able to make a good choice:

It should be optional at senior school. The students would be given the opportunity to make a conscious choice and would develop interest in the subject. If it's imposed on them they may not see the value of agricultural activities. (Graduate 4, female)

One of the teachers also recognised that the education system must consider student choice as vital in order to have enthusiastic students and students with the right attitude:

I think it should be made an elective because if it is made compulsory for all students, some students may not like the subject. Therefore, no matter what a teacher does, those who do not like the subject would be there only as "passengers", not participating. It is better left to those who are interested in it. (Agricultural teacher 4, male, Moeng College)

Students also felt that subject choice must be left with them to cater for what they like. This is how one of the students emphasised this point: *"It should be optional so that we could cater for students' varied interests. We should be given a choice"* (Tertiary student female 3, TCE).

The overriding concern here is to give students the choice to do agriculture as forcing it may impact negatively on their commitment to the subject. There was agreement among these teachers and students that agriculture should be a core at lower levels and an option in senior schools.

Non-agricultural students and teachers

They felt personal preference must be taken into account because not all students would like agriculture. This is how one student made a defence to have agriculture as an optional subject: *"I saw agriculture as a dirty subject therefore; we have to have the mandate to choose, not be forced to do it"* (Uni student 4, male). The non-agriculture students (40 percent, see table 16) and teachers (36 percent, see table 16) mentioned similar ideas but seemed more adamant about having a choice not to do agriculture.

One of the teachers also felt that students should not be forced into agriculture as it may have a negative impact on students' enthusiasm, commitment and democratic rights. He stated: *"As much as we want agriculture to come to the surface, we should not impose it on them. We should allow them to make their choices and encourage them to follow that kind of career"* (Non-agriculture lecturer 3, male).

Hostile climatic conditions that do not favour agriculture were cited as another factor that should make agriculture an elective: *"I mean looking at the climatic conditions; it's very difficult these days. There are long periods of drought . . . we will not be able to carry out agricultural activities"* (Uni student 2, female).

According to these two groups, agriculture should be optional because students must be allowed to choose what they want. Climatic conditions that are not favourable for agricultural activities must also be considered as an obstacle. These arguments are valid but they do not take into account that other subjects are compulsory like English and mathematics, and still many students perform well in these even if they may not like them.

Should agriculture be compulsory or elective?

Agriculture in Botswana is taught as a core in primary schools and junior schools. Students are given the opportunity to choose whether they want to continue with it in senior schools. However, according to what has been gathered, some teachers indicated that some students are forced into agriculture based on their poor performance. It seems logical that students should be allowed to choose what they want at senior school because all of them have some agricultural experience from primary and junior school. The majority felt that agriculture should be an elective at high school and only compulsory at primary school. They felt that students at high school must be given the choice to choose whether they want to take it as an option or not. The logic behind this was that students have varied career interests that should be catered for.

It is however unreasonable to conclude that if agriculture is made compulsory, students may not be committed because other subjects are compulsory and yet students' performance is good. Subjects like Mathematics and English are compulsory yet students still show commitment and perform reasonably well.

CHAPTER 5

SECONDARY SCHOOL STUDENTS' CAREER OBJECTIVES

Introduction

The aim of this chapter is to determine what secondary school students in Botswana felt about agriculture as a career. Two groups of students were interviewed: agricultural and non-agricultural students. The ages of these students were between 16 and 20 years. The aim of the interviews was to understand fully how each group views agriculture and why. The analysis of the groups' responses shed light on agriculture_education in schools and why there are insufficient numbers of agriculture students. Three questions were used for these two groups of students. This chapter explores the choice of agriculture as a subject, as a career, and whether agriculture is seen as an important subject.

Choice of agriculture as a subject

There were twenty-four (24) students interviewed from four secondary schools. Twelve took agriculture and twelve did not take agriculture. The questions asked were: "Why did you choose agriculture as a subject? And, why did you not choose agriculture as a subject?"

Table 17. Secondary school students' subject choice (respondents)

<i>Agriculture students.</i>	
<i>Why did you choose agriculture as your subject?</i>	
<i>Positive reasons</i>	<i>12</i>
<i>Total respondents</i>	<i>12</i>
<i>Total</i>	<i>12</i>

Table 18. Secondary school students' subject choice (respondents)

<i>Non-Agriculture students.</i>	
<i>Why did you not choose agriculture as your subject?</i>	
<i>Negative reasons</i>	<i>12</i>
<i>Total respondents</i>	<i>12</i>
<i>Total</i>	<i>12</i>

Tables 17 and 18 show a polarised response trend for both groups of students. The agriculture students gave (100 percent of respondents) positive responses indicating that they have a positive image of agriculture as a subject. The non-agriculture students gave (100 percent of respondents) negative responses indicating they have a negative image of agriculture as a subject. In this section, I will start by presenting and discussing the responses of agriculture students and then will present and discuss the responses of non-agriculture students.

Agriculture students

Positive reasons

Students taking agriculture courses revealed that they have chosen agriculture because it is an easy, interesting, and enjoyable subject. This is what one of the students said: "*I chose it because it is not as difficult as other subjects*" (Agriculture student 1, male, Lobatse Secondary). One student indicated that he likes agriculture because it is easy to understand:

"It is a subject that I understand more" (Agriculture student 1, male, Kgari Sechele Secondary).

Some students believed that agriculture has many career potentials. This was unlike the University of Botswana students who indicated a limited understanding of career potentials in agriculture or a belief that there are relatively few career opportunities in agriculture. One of the students explains why she chose agriculture: *"I chose agriculture because there are many careers, like careers in agricultural research and veterinary medicine. I have an interest in one of these careers"* (Agric student 2, female, Kgari Sechele Secondary).

One student added that he chose it because he realised that there was a lack of agriculture teachers in Botswana: *"I felt that in schools, more especially in senior schools, we lack agriculture teachers. Therefore, I have to continue with it"* (Agriculture student 5, male, Kgari Sechele Secondary).

Family background in agriculture also influenced and motivated some of the students to choose agriculture: *"I chose it because it is practised at home. I wanted to learn the skills so that I can help my parents because they are only familiar with the traditional methods of agriculture"* (Agriculture student 2, male, Moeng College). Another student found motivation in her family farming background and she added:

Most of my relatives are engaged in agribusiness. They motivated me to do agriculture. In addition, I chose it because I like it. (Agriculture student 4, female, Moeng College)

Acquisition of skills in agriculture was also deemed crucial for one to be able to engage in agribusiness after leaving school: *"I chose agriculture so that I could acquire skills and, I would be able to use what I learnt from school to engage in agro-business like poultry production"* (Agriculture student 1, female, Moeng College).

Some of the students chose agriculture because they had taken agriculture at junior school, were good at it, and consequently they felt they would again pass the subject at senior school. One student confidently said: *"I was very good at it at junior school; therefore, I felt it would be better to continue with it. I may even pass the subject with better grades"* (Agriculture student 4, female, Lobatse Secondary).

One of the students chose agriculture because a career in agriculture can enhance her economic status and her standard of living. She felt having a farm and producing vegetables would enable her achieve her objectives: *"I chose it because by taking it I could have a better standard of living. I could have a farm and produce vegetables and thus have a better standard of living"* (Agriculture student 4, female, Kgari Sechele Secondary).

These positive responses indicate how these students demonstrate awareness that agricultural teaching in schools is geared for the improvement of the students' lives as well as benefiting Botswana's future needs. They recognise that agriculture teaching is not an end in itself, but a means to an end. These careers would produce intrinsic and extrinsic benefits for them and the nation. These students were influenced by various images connected with the subject.

Non-agriculture students

Negative reasons

All the non-agriculture students who were interviewed (100 percent of respondents) gave negative reasons about not choosing agriculture as a subject. Themes that emerged can be grouped into two categories: structural barriers within the school system and intrinsic preferences (agriculture was not their preferred career choice).

Structural barriers within the school system were identified as factors that hindered some of the students from opting for agriculture. Two of the students interviewed, each from a different school, pointed to structural barriers within the school system that stream higher performing students into the pure sciences (mathematics, chemistry, physics and biology) and away from the combined sciences including agriculture. It is the culture of some schools to dissuade high performing students from taking agriculture.

Here are responses from these two groups of students: *"Most of us here are doing pure sciences and we're not allowed to choose agriculture by the Head of Options. When a student is doing pure sciences, he or she is not allowed to choose 'agriculture"* (Non-agriculture student 1, male, Moeng College). *"We are not offered agriculture in Mater Spei Secondary School when we do the pure sciences"* (Non-agriculture student 3, female, Mater Spei Secondary School).

Another structural factor that hinders students from choosing agriculture even though they may have had an inclination towards the subject is the school's capacity to enrol students for the subject. One of the students corroborates this: *"Initially I wanted to do agriculture . . . many students had opted to do agriculture. I was denied the opportunity to do agriculture by the school"* (Non-agriculture student 3, male, Lobatse Secondary).

In contrast to agricultural students who regard agriculture as an easy subject, non-agriculture students consider it difficult because of previous failure experienced at junior school. This student did not choose agriculture at senior school to eliminate the possibility of future failure: *"I did not choose agriculture because I did not pass it at junior school. Therefore, I thought I would have the same problems"* (Non-agriculture student 3 female, Moeng College).

Similarly, one of the students did not choose agriculture because of previous failure in agriculture, but not related to intellectual capability this time. His feelings are somewhat superstitious in nature: *"One thing that made me not choose agriculture is that I realised that I did not have the "green finger". Like at junior school I did not have a very good garden bed at all, that's why I was discouraged from doing agriculture"* (Non-agriculture student 2, male, Lobatse Secondary).

Career aspirations begin at this level (Year 11) in secondary school. Therefore, students would choose subjects based on what is consistent with their career objectives. Two of the students interviewed made this clear: *"Agriculture is not important for me because I want to be a Setswana teacher after completing my education"* (Non-agriculture student 2, female, Moeng College). *"I have a negative view towards agriculture. I don't really consider it as something to depend upon for my career"* (Non-agriculture student 1, male, Lobatse Secondary).

One of the students felt that the crucial reason why he did not choose agriculture was that they are never told the importance of agriculture in junior schools. For them agriculture is hard work and suffering. Non-agriculture students in the previous chapter have mentioned this problem: *"One point that has never been impressed on us is the importance of agriculture right from where we come from. What we know is that we have to go to the land and there life is hard. We suffer there because we have to stump sorghum and other things. Therefore, it is because of this attitude that most of us hold back"* (Non-agriculture student 1, male, Lobatse Secondary).

The students' choice of a subject at high school is influenced by various factors, some of which are institutional while some are based on career choice after high school completion.

Student's career aspirations in agriculture education

In response to Question 2, *are you going to choose agriculture/ farming as your career?* Three quarters (75 percent of respondents, see table 19) of the agriculture students responded positively while (25 percent of respondents, see table 19) the non-agricultural students indicated that they would not choose agriculture as a future career. Interestingly, non-agriculture students interviewed (50 percent of respondents, see table 19) stated that they would choose agriculture as a future career.

Table 19. Agriculture as a career (respondents)

Agriculture Students			Non-Agriculture Students		
Are you going to choose agriculture/farming as your career?			Are you going to choose agriculture/farming as your career?		
Yes	9	75%	Yes	6	50%
No	3	25%	No	3	25%
Uncertain	0	-	Uncertain	3	25%
Total Respondents	12	100%	Total Respondents	12	100%

Agriculture Students

Most agriculture students (75 percent respondents see table 19) indicated that they would choose agriculture as a career based on their academic performance and other factors. One of the students indicated the academic aspect thus: *"I will proceed with it if I pass, otherwise I will try other career options"* (Agriculture student 1, male, Lobatse Secondary). One added that: *"I am going to choose it because I would have acquired the skills"* (Agriculture student 2, male, Lobatse Secondary). Some indicated what field they would like to choose in agriculture. One student indicated: *"I would like to be a Vet"*

(Agriculture student 2, male, Mater Spei Secondary). One other student added:

I am going to choose agriculture as my career because agriculture is going to shape my life . . . I am going to follow a career in agricultural education because many teachers in agriculture are expatriates. Therefore, if we specialise in this field, we are going to fill the gaps. (Agriculture student 4, male, Mater Spei Secondary School)

There was recognition that an agricultural career can offset the effects of unemployment when one engages in self-employment in agricultural production: *"I am going to take it as my career because there is a problem of unemployment. I will try my best to produce crops and cattle and sell the produce."* (Agriculture student 2, female, Mater Spei Secondary School)

One student was influenced by his family's farming background. This is significant as many Batswana share traditions as farmers or pastoralists. One student expressed the cultural and family influence on his choice: *"I am going to choose agriculture because usually when we go to our cattle posts, you will find that there is a lot of farming. In addition, in our culture boys are the cattle herders, so I am going to choose it because it is beneficial"* (Agriculture student 3, male, Mater Spei Secondary School).

Agricultural student's choice of career is based on the positive aspects of agriculture to which the students have been exposed. Some of these aspects concern good academic performance, some are related to economic reasons, and others are related to cultural issues. Among these students, however, are those who are not certain whether they would take agriculture as a full-time career in the immediate future, but may do so as a part-time career. This is how one student expressed his position: *"I will be working and at the same time engaged in agriculture, doing it part-time"* (Agriculture student 6, male, Mater Spei Secondary). Those who are fully employed commonly practise agriculture part time in

Botswana. Culturally, a man's status is measured in the number of cattle he owns. This part-time agriculture work mainly involves the keeping of cattle and visiting the cattle post over weekends or when one is on leave. One student stated that he cannot choose agriculture as a career because he could imagine that the practice of agriculture as a business is fraught with many risks particularly the harsh environment marked by unpredictable rainfall. This is how he expressed his opinion:

To be a farmer would mean doing it as a business. When it is like that, it can be difficult because rainfall in Botswana is unpredictable and low. That is why I ask myself how those engaged in agriculture manage. Consequently, I would not choose agriculture as my career. (Agriculture student 3, male, Lobatse Secondary)

While choosing agriculture as a career is generally based on what students believe would be beneficial for them in the future, some students' career preferences were reportedly influenced by either cultural or environmental factors. In general, these students had positive reasons for choosing agriculture.

Non-agriculture students

In response to Question 2, *would you choose agriculture/farming as your career?* Half of the non-agricultural students (50 percent of respondents, see table 19) indicated that they would choose agriculture as a career, whereas one quarter (25 percent of respondents, see table 19) said they do not prefer agriculture as a career, and another quarter (25 percent of respondents, see table 19) were uncertain about it.

Students indicated that they would choose agriculture as a career to fulfil their career aspirations. One non-agriculture student said: *"Well, I want to do veterinary medicine, and I think doing agriculture at this stage would have been advantageous for me"* (Non-Agriculture student 3, male, Mater Spei Secondary). One added that he would like to take a

career in agriculture: *"Yes, I want to take it as my career even though I do not know in which field . . . like those students who were taken to Australia by Masedi Farms"* (Non-agriculture student 4, male, Mater Spei Secondary School).

Some of the students indicated that they would consider a career in agriculture based on other unfulfilled career conditions. Here is what one of the students said: *"I can choose a career in agriculture if my academic performance does not allow me to take my intended career"* (Non-agriculture student 1, male, Moeng College). For this student, agriculture is a 'fall back' position—undesirable, but there if the need should arise. Another student said: *"I could choose agriculture as a career if I am not successful in becoming a police officer. I would be doing agriculture as a self-employed farmer"* (Non-agriculture student 4, female, Moeng College).

Some of the students were focused on what they wanted to do in agriculture, whereas others were uncertain about their career choices and thus based their preferences on their academic performance after their final year in secondary school. There were also students who would not take agriculture as a career because they were averse to the manual labour involved and would choose it only as a last resort: *"I hate the labour part. I would opt for a career in agriculture if I fail"* (Non-agriculture student 5, male, Lobatse Secondary). One student continued this line of thought that manual labour is the problem and pointed to his bias for a white-collar career preference: *"The problem is the manual labour. For example, you cannot put a cow in a machine for vaccination and dipping; you have to do it with your own hands"* (Non-agriculture student 1, male, Lobatse Secondary). One student also indicated her preference for white-collar jobs; she would rather be a manager supervising others or a lab technician: *"I cannot be a farmer, but would rather be a manager . . . I want*

to be a lab technician . . . something to do with not going into the field" (Non-agriculture student 4, female, Lobatse Secondary).

Due to the declining agricultural production in Botswana and the lack of successful role models in the field, one of the students indicated that she would not choose a career in agriculture: *"Admittedly, I could choose a career in agriculture if I could see somebody in the field who inspires me. So far, I have not seen anybody who does. I can see some who are struggling and after a time their projects collapse. They always fail"* (Non-agriculture student 3, female, Lobatse Secondary).

One student indicated that she would not choose agriculture as a full time career because she had made up her mind up about her prospective career. She did not even want to consider another career.

A quarter (respondents) of the non-agriculture students indicated that they are prepared to be involved in agriculture as a career. It is important to understand that engaging in agriculture part-time in Botswana is the norm. Civil servants and other people gainfully employed practise part-time agriculture. Usually this work takes place over the weekends as these people go to their cattle posts or farms to check on their farm labourers. For example, one student wanted to take law, but her father expects her to know something about the management of their farm. *"Law fascinates me, and my father is like suggesting that I choose human medicine . . . my father owns a farm and sometimes he is going to expect me to take part in managing it, maybe I am going to do it part-time"* (Non-agriculture student 5, female, Mater Spei Secondary School).

Some of these students would consider agriculture as a career based on their performance. Others have decided against it because they hate the hard and risky work that

agriculture entails. There is also a bias for white-collar jobs that makes agriculture an undesirable career.

Is agriculture an important subject?

In response to Question 3, *is agriculture an important subject?* All the agricultural students (100 percent of respondents, see table 20) and the majority of non-agricultural students (75 percent of respondents, see table 20) responded that they considered it important. Respondents reported that taking agriculture was considered important for economic reasons and for the acquisition of skills. Agriculture was also considered a crucial element for the economic development of Botswana.

Table 20. Importance of agriculture subject (respondents not responses)

Agricultural Students			Non-Agricultural Students		
Is agriculture an important subject?			Is agriculture an important subject?		
Yes	12	100%	Yes	9	75%
No	0	0%	No	1	8%
Neutral	0	0%	Neutral	2	17%
Total	12	100%	Total	12	100%

Agriculture students

Agriculture students considered agriculture an important subject for economic reasons and the acquisition of agricultural skills. Here is what two students said:

I think it is important in the sense that right now we import most of our food from South Africa. Therefore, I believe it's high time we stop importing food; we don't have to continue with this. We have to raise our young people to do agriculture and produce enough food for our country
(Agriculture student 5, male, Kgari Sechele Secondary)

Another added, *"It is a source of employment. If we could take it as our career, we would learn more about it and then we can create employment later"* (Agriculture student 2, female, Kgari Sechele Secondary).

Agricultural students observed that the skills they have acquired can assist them in the practise of agriculture. They made the following observations:

As I have already said, agriculture is important. We rely on it because 85 percent of Batswana are farmers, and as farmers we have to learn how to take care of our farms; how to take care of our cattle. (Agriculture student 1, male, Mater Spei Secondary School)

I think agriculture is important because we're taught many things. We in turn help our parents at home to identify pests and animal diseases. (Agriculture student 2, female, Mater Spei Secondary School)

Agriculture teaching is crucial for the economic development of the country as students observed that it creates employment and it can help the country become self-sufficient in food production. These aspects are often assumed but often do not happen, particularly in developing countries. These are curriculum ideals that students have acquired because of taking agriculture. The acquisition of skills was also considered an important aspect for future development if they continue with a career in agriculture.

Non-agriculture students

Only 8 percent (respondents, see table 20) of non-agricultural students said that agriculture was not important and 17 percent (respondents, see table 20) were neutral in their responses about the importance of the subject. Socially, agriculture is considered an integral component of Botswana culture. Were it to disappear it would mean loss of cultural identity. Students made relevant observations, reflecting the importance of agriculture to the culture:

Agriculture is important because Batswana rely on it. So that if we ignore it, like I have said previously that I would not like to take it as my career, our culture would gradually disappear and that is not good. (Non-agriculture student 4, female, Moeng College)

Another said: It is important for Batswana because right now, if you don't have cattle you are a 'nobody'. It is important because it helps us a lot in our lives (Non-agriculture student 2, female, Moeng College)

Having the skills was also considered crucial for dealing effectively with agricultural projects in the future. Non-agricultural students perceived agriculture as providing employment. This is what two non-agriculture students said:

It is important to have the knowledge from agriculture, say for example, one wants to rear chickens. He or she has to have the knowledge; otherwise, it would be difficult to rear them. (Non-agriculture student 4, male, Moeng College)

Yes, I consider agriculture an important subject because it creates employment and decreases unemployment in Botswana. (Non-agriculture student 6, male, Mater Spei Secondary School)

It is important to recognise that Botswana relies heavily on revenue generated by the mining industry, particularly diamond mining, and that these are issues to think through in terms of the nation's continuing wealth. One student reasoned that our diamond-controlled economy has to diversify to agriculture:

. . . Agriculture is very important . . . we depend on diamonds that are non-renewable resource. They will eventually be depleted and once that happens our economy would decline . . . if we could have an efficient agriculture sector, the economy would improve. (Non-agriculture student 1, male, Lobatse Secondary)

Though almost all students considered agriculture important, one student was adamant that it was not important and was just a waste of time. He held a relatively popular view of education that after high school, students should proceed to university. This is an elitist way of thinking that could be traced to the colonial era, leading to the view that white-collar

careers are valuable and prestigious. This is how the student expressed himself:

It is just a waste of time. Agriculture is just a waste of time because when you opt for History and Development Studies you can go to tertiary institutions to do law. But with agriculture you will go to BCA and from there suffer if you have decided to establish some production because of the harsh climatic conditions that contribute more to whatever project you have. (Non-agriculture student 1, male, Lobatse Secondary)

Some students were neutral about this question because they had some conditions attached to their responses:

It depends. I mean you can study agriculture and then learn about hamsters. Most of the people here do not even like them. To say it is important depends on how the agricultural curriculum is drawn. Right now, I feel the curriculum addresses irrelevant topics, for example, pigs that are not easily marketable. (Non-agricultural student 3, male, Mater Spei Secondary School)

This student felt that agriculture could only be important if it addressed the local situation. In Botswana, for example, beef production is important because cattle traditionally confer status and economic power to the owner. Furthermore, cattle production also contributes significantly to the GDP and is second only to diamonds.

Anticipating agriculture as a future career prospect

All the students interviewed had been exposed to agriculture at junior secondary for three years because it is a core subject. Students' responses to the three questions reveal a common understanding of agriculture, but different orientations could be discerned.

Students who have decided to continue with agriculture generally perceive agriculture in a positive light. It is significant that many non-agricultural students also saw the importance of agriculture for Botswana. Many of these reported that they would be willing to take part in agriculture as some part of a formal or informal career path.

Agriculture students perceived agricultural teaching as a way to achieve economic

objectives for themselves and the country. In a similar study conducted by Mallory and Sommer (1986:15), "Students rated a career in agriculture highest in making a contribution to society and being one's own boss." Some students advanced extrinsic academic reasons for continuing with agriculture. Intrinsic reasons included enjoyment of agriculture because it was easy and could lead to employment creation and have career potential after year twelve.

Family background played a role in determining the choice of the students. Some of the agriculture students come from farming families and so felt that the acquisition of skills would assist them in maintaining their farming tradition. It is interesting that some of the non-agriculture students said they would be willing to be involved in agriculture, however, they did not think courses in agriculture were important for them. Future research could pursue this issue.

Some of the non-agricultural students indicated that they would not take agriculture as a career. However, some of them felt that they have been denied the chance to pursue agriculture because of structural barriers related to institutional timetabling and inadequate resources in the school. Others indicated they had been excluded from agriculture by having been selected to do the pure sciences, a streaming process that eliminates high performing students from agriculture. This allocation of subjects by the school has been corroborated by Duncan's (1985) study in Botswana. She found that selection is based on students' high performance at junior certificate. Students have a choice of other subjects, but for entry into the tougher sciences, science teachers or principals make the choice. Duncan (1985) states that these students have no choice because they are pre-selected for their courses by those assessing their records. As already indicated in previous chapters, pure science students are

not obliged to take agriculture. Some students indicated that they could not choose agriculture because it is challenging academically since some have failed it at junior school. Non-agriculture students have a negative view of agriculture as a subject because they see obstacles in continuing with agriculture as a career. For non-agricultural students exposure to agriculture at junior schools did not remove negative perceptions of agriculture education as a career, and this might be the reason why they did not take it as a subject. It is not clear whether all students not taking agriculture dislike the subject per se.

The second question regarding agriculture as a career choice produced similar responses from both the agriculture and non-agriculture students. Most of the students from both groups indicated that choosing agriculture as a career is something that is dependent on their academic performance. Some might take it if they had been successful at primary and junior school. Non-agricultural students indicated that they would take a career in agriculture if they failed in their first choice career. Some agriculture students would take agriculture as their career but were not yet decided which field they intended to pursue. However, some of the students from both groups have their chosen career and would therefore take agriculture only as a part-time career and for a range of reasons

Non-agricultural students who said that they would not take agriculture as a career indicated the recurring theme that has been discussed in previous chapters. Agriculture is seen as a laborious activity that does not have the desired status of a white-collar job. The work is difficult and open to environmental conditions that are often harsh and unfavourable. It is clear that an occupation in agriculture is low status. Machethe cites Hannah who argues that, "with a few exceptions, agriculture has little status, is not very well understood by the educated classes and by government workers in the developing

countries and is seriously handicapped by lack of trained personnel and the leadership necessary to make it move forward" (Machete 1990: 309).

A study conducted by Cecchetti, Sommer and Leising (1992) corroborated what the students in the study indicated as unfavourable conditions associated with a career in agriculture. In their study, Australian students indicated that a career in agriculture involves hard work outdoors, low prestige, and blue-collar status. Therefore, the finding that agriculture is hard work and is a blue-collar job is a trend that is shared by students even in a third world country like Botswana.

In their study to find out factors that influenced students to take vocational agriculture, Kortlik and Harrison (1997) cite other studies that show various factors as responsible. Family influence, parents and teachers, as well as personal factors, were among factors that determine students' career objectives.

These studies concurred with some of the findings that career objectives are based on what the student considered crucial in choosing a career objective. These appeared to be mainly economic and academic factors.

Choice of agriculture as a future career is obviously dependent upon variables that students are at times unable to control like economic and the harsh environmental factors. Some of the variables the students can control like deciding whether they would take agriculture as a career. Therefore, the image is partly determined by the student making a choice that is regulated by personal preferences whereas some factors are beyond the students' influence.

CHAPTER 6

EMERGING THEMES ABOUT AGRICULTURE EDUCATION

Introduction

The overall images of agriculture education from respondents could be summed up as diverse. The diversity is not surprising given both the varying factors that make agricultural work in Botswana difficult and the various stakeholders in the educational system in Botswana. The reasons for these diverse responses include a range of factors: social, educational, economic and historical.

This chapter discusses the different issues that emerged from the interview data and explores some of the possible reasons for these responses as well as the challenges they present. It begins with the reasons given by agricultural teachers who have resigned or retired, and then other respondents' analyses follow. Some of the issues include the tension between theory and practise in agricultural teaching, teaching agriculture as not challenging, exclusion from decision-making and name-calling of teachers by their colleagues. Issues from students and other teachers include; low prices for agricultural products; too much dependence on government schemes: reluctance by graduates to pursue agricultural enterprises after graduation; the lack of commitment to the career by students; a notion that a career in agriculture is "dirty"; and the perceived narrow career prospects in agriculture. The chapter concludes with a discussion of all the factors contributing to agriculture education in Botswana.

Agricultural teachers who have resigned/retired

Even though agricultural teachers who have resigned regarded agriculture as a good career they nevertheless realised that there were barriers in their careers that contributed to their resignation/retiring or looking for better jobs and improved working conditions. Some of the teachers interviewed did not resign so that they could begin new careers, but resigned to get better jobs in the agricultural sector. Only one teacher resigned to begin a new career and that was in publishing. Institutional barriers were identified as factors that led to their resignations, a factor also identified by a study conducted in Botswana by Subair and Mojaphoko (1999). In addition, their research supports the finding of this study that agricultural teachers resign because of a combination of factors, many of which are related to their working conditions.

One of the problems as identified by Subair and Mojaphoko (1999) included the lack of a career ladder, an issue raised by some of those interviewed. This problem is understandable because teaching careers in Botswana generally suffer from restricted career advancement. This is a challenge for younger ambitious teachers who have recently joined the field and desire further training in agriculture education before they could reach a certain age. They indicated that it is a major setback to wait for opportunities for further educational training. Table 12 shows the ages of teachers who have resigned from the teaching service and their current positions and teaching experience.

Table 21 Characteristics of Agriculture teachers who had retired/resigned:

Gender	Age	Current position	Number of years in the field
Male	26	Lab Technician, Agriculture	6 months
Male	27	Lab Technician, Agriculture	1 year
Male	27	Sales Executive, Macmillan	4 years
Male	33	Assistant Farm Manager	3 years
Male	39	Consultant, Agriculture	16 years
Male	47	Brigades Coordinator	23 years

It is unquestionable that extrinsic rewards play a crucial role in attrition in every field, and if other similar areas offer better salaries then it can be expected that teachers would leave the field for '*greener pastures*'. Subair and Mojaphoko's (1999) study revealed that remuneration is the number one factor that leads to teacher turnover in the field. In Botswana, teacher attrition occurs at a substantial rate of 4 percent per year (Subair and Mojaphoko 1999) given the shortage of agricultural teachers. This research also points to the importance of remuneration for agricultural professionals. It is interesting to note that agricultural teachers who leave the profession still think that agriculture itself is an important area for the country. They all spoke with the voice of dedicated professionals who are facing a range of structural challenges that means teaching in agriculture is no longer worthwhile for them. Many of these teachers indicated that organisational factors within the education system negatively affect the teaching of agriculture in Botswana.

It is also disquieting that one of the factors mentioned by novice teachers who have

resigned is the lack of challenge in teaching. Why does this occur particularly for the novice teachers? This question is not easy to answer because many variables could contribute to the lack of challenge in agricultural teaching. The lack of challenge also affects some veteran teachers and may be attributed to the inherent characteristics of teaching. The repetitive nature of teaching may contribute to the lack of challenge for the veteran teachers because they have been teaching for many years. However, these contrasts with the novice teachers who have been in the field for less than ten years yet are beginning to lose enthusiasm. Related to the lack of challenge, teachers complained of being excluded from the decision making processes affecting them.

Interpersonal relationships have been identified as a factor that can present a challenge for both teachers that have resigned and for those still in the profession. Other subject teachers use negative nicknames when referring to agricultural teachers. This is related to the nature of their teaching, with names such as, "*garden people*" and remarks such as "*those teachers stay in the garden.*" These kinds of personal relationships may further damage the desire by novice teachers to persist in the profession. However, veteran teachers may be accustomed to such negative attitudes and therefore no longer feel anything about them. This kind of attitude by other teachers may be presenting the bias for white-collar jobs in a veiled fashion that implies that agricultural teachers are worthless and cannot be as good as other teachers. However, the society in general, according to the respondents does not perceive agricultural teachers in this way. Teaching, regardless of the subjects taught, is regarded as a white-collar job with a lot of money attached to it.

All these issues signify that teachers who perceive agriculture as crucially important to Botswana's economic and social future are finding it difficult to remain in the profession due

to issues internal to it. Agriculture education is constructed and shaped by the environment in which the respondents live.

Economic factors

For these teachers, agricultural teaching was seen as isolated from the real world in which the students live. This may be a reason why they said that agricultural teaching is too theoretical to be of any value in the students' future lives. It is generally believed that education, particularly in a vocational subject like agriculture, should result in self-employment. However, for both those who dropout and for those who ultimately graduate, self-employment is not as easy as it is made to appear because these students face problems of access to loans and still lack experience in the agricultural industry. Research has never demonstrated that students who have agriculture as their career have the capacity for self-employment, this only remains an aspiration by curriculum designers for these students. Tertiary agricultural students who have challenged this aspiration found out that it was difficult to be self-employed immediately after graduation.

Social factors

Social issues were shown to play a significant role in agriculture education. The bias for white-collar jobs arose because of students' dislike for agriculture as a career because it was considered "*dirty*". Students associate agricultural work with the intensive manual labour they experience during practical training sessions. Similarly in the US, agriculture has been associated with slavery by the Black minority as indicated by a study conducted by Morgan (Morgan 2000: html document). In Africa, white-collar jobs are a mark of high status and this has been a theme corroborated by the data. It is difficult to encourage students into education that will lead to low status jobs.

Environmental factors

The harsh environmental factors that prevail in Botswana almost certainly contribute to negative images among students and teachers. The aridity and persistent droughts that plague Botswana make agricultural practice a risky enterprise that would only attract those who have the passion for it. In spite of the harsh climatic conditions, the image of agriculture should be enhanced for it to have an appeal for many students. Since students experience these conditions in real life outside the classroom and may not have solutions for the problems, they may feel that the harsh climatic conditions pose insurmountable odds. This may lead them to decide that they cannot waste valuable time in an agricultural career that would lead to failure in the future. Due to Botswana's agricultural context, that is, its dependence on nature to provide rain and its subsistence mode of production and its lack of appropriate technology to counteract the effects of drought, students who learn by vicarious reinforcement may be dissuaded from considering agriculture education as a valuable career. This situation is further reinforced by their role models in agricultural production. They would not want to share the same fate as other farmers who struggle in their work. Subsequently, non-agricultural students are convinced that agriculture work is futile and consider it a waste of time. This stance has negative implications for the present agricultural curriculum.

Educational factors

On the education front, teaching agriculture was viewed negatively because interviewees observed that the curriculum failed adequately to address how agriculture is taught. Many responded that agricultural teaching is theory-laden instead of being practically oriented. There is, however, a contradiction with what interviewees said and what the syllabi

indicated. This has been noted in previous chapters. The question that arises out of this situation is whether agricultural teachers are deliberately delivering too much theory to the detriment of practical work and contrary to the formal curriculum. If this is the case, this teaching could be undermining the stated goals of the curriculum. On the other hand, students feel there is too much practical training and as a result, they develop an aversion for agriculture. The tension between the expectations and practises of teachers and of students highlights a crucial curriculum issue that needs to be solved in the long term. Students suspect that teachers have lost curriculum direction by turning practicals into intensive manual labour that does not serve their expectations. Teachers are worried that practicals are not emphasised enough to justify teaching agriculture in any meaningful way. Teachers have a positive image about what constitutes adequate practical training and students have a pessimistic conception of practical training as they feel that they are being used as labourers.

A question that arises, because of the tension between theory and practicals, is how much practicals should be taught for vocational subjects like agriculture in schools that offer an elitist type of education. The involvement of teachers in curriculum planning is crucial since they have identified the discrepancy bias between theory and practicals. A balance between theory and practicals has to be set so that the tension that now exists could be resolved. However, at this point when this issue is still pending, teachers can do a lot more than lament the imbalance. This problem could also imply that agricultural teachers lack the proper skills for teaching agriculture.

Historical factors

One of the mission statements of "The Long Term Vision for Botswana" aims at empowering "citizens, to become the best producers of goods and services [and] produce

entrepreneurs who will create employment through the establishment of new enterprises” (A Long Term Vision For Botswana 1997:4). This is a vision Botswana is endeavouring to achieve by 2016 and is already embraced in much of the formally written curriculum. The rationale for the senior agricultural curriculum clearly makes the point that agriculture is an applied science that “students will learn through extensive practical experience of the basic principles and skills of agriculture” (Botswana General Certificate of Secondary Education Teaching Syllabus 2000: i). When teachers say that agriculture is a theory-driven subject they do not follow what is embodied in this document. It could be, however, that the document is so new that teachers have yet to include these imperatives in their curriculum. It could also imply that the teachers are constrained by resources so that they have to resort to emphasising theory more than practical aspects. Again, teachers may be ignoring the practicals because they are inclined to the theoretical delivery because of their orientation that is influenced by the colonial legacy and the harsh environment in which agriculture is offered.

Agriculture as a vocational subject is offered in an educational context that prepares students for university education. It is clear that many subjects offered stress theoretical orientations. The current curriculum approach already in effect encourages a learner-centred pedagogy that implies teachers should use various instructional approaches when teaching agriculture to meet the real needs of students. Practical teaching should be a significant part of these programs.

Why do agricultural teachers resign/retire?

Teachers who had resigned from agriculture gave responses that indicated that the agriculture education is both negative and positive. Some of these teachers have decided to

resign from the service because of factors that are intrinsic to the teaching profession generally. The following section explores in more detail these responses as they relate to this research. Teachers in agriculture know their field from a variety of perspectives and their responses are useful to the overall issues of this research.

A number of factors are associated with the attrition of teachers from the teaching profession and particularly in agriculture. Former agriculture teachers were interviewed to determine whether the factors related to their choices are in any way related to agriculture education.

In a study conducted by Subair and Mojaphoko (1999) on the attrition of agricultural teachers in Botswana, significant factors behind these teachers' choices were ranked. Subair and Mojaphoko found the following ranked factors to be crucial in teachers' choices: (1) remuneration factors; (2) interpersonal factors; (3) advancement factors; (4) professional factors; (5) working conditions; (6) administrative factors; and (7) autonomy. Some of the attrition factors are in agreement with this study. This correspondence of factors is important because teachers in both research projects considered them as contributing to agricultural teachers leaving the service. These factors are discussed in more detail below.

Remuneration factors

Usually, teachers resign because of a combination of factors. The following teacher stated that he resigned because of remuneration and professional factors:

I resigned because the people are not paying enough money. As an agriculture teacher with a Diploma one is paid P2800 per/month (\$700AUS), but when I compare with places like BCA one would earn over P3600 per month (\$900 AUS) the difference is just a lot. (Resigned agriculture teacher 5, male)

Remuneration certainly plays an important role in the retention of staff in any organization and teachers are not immune to the problem. Since this is a perennial problem in the field, measures have to be taken to improve the situation of agricultural teachers. The Ministry of Education has introduced incentives for students who have chosen to teach agriculture as a career. Consequently, when these graduates get teaching jobs they expect some monetary incentives to stay in teaching, but there are few to be found.

Some of the teachers who resigned indicated that they did so because they were not satisfied with their remuneration packages. Teachers in Botswana are paid according to the category of the degree they have. Teachers with a Bachelor of Science are paid two notches more than teachers with an Arts degree. This is an incentive to attract more students to study the "hard" sciences including agriculture since Botswana's educational development is characterised by a shortage of local science teachers. The National Development Plan 8 indicates that in 1996 the proportion of expatriate teachers was low at 17 percent in junior schools and high at 52 percent in senior schools for teachers' first teaching subject (NDP 8, 1997/98-2002/03:350). There is a problem that Botswana cannot supply an adequate number of teachers to even address the needs of the limited numbers of students entering the field on agriculture specifically (see table 22).

Table 22 Proportion of teachers in the science field in 1997 - 2003

Subjects	Number of locals		Number of Expatriates	
	Junior	Senior	Junior	Senior
Mathematics	555	87	31	163
Computer science	N/A	1	N/A	4
Science	N/A	5	N/A	9
Biology	N/A	36	N/A	33
Chemistry	N/A	14	N/A	55
Physics	N/A	20	N/A	
Combined Science	N/A	26	N/A	45
Integrated Science	384	10	148	13
Agriculture	381	37	111	65

Source: National Development Plan 8, 1997.

Remuneration packages play a vital role in attracting teachers to the job and these packages need to be reviewed regularly against similar competitive jobs in the private sector to enhance the image of agricultural education. Novice teachers have great expectations when they join the field for the first time, so they have to be financially induced so that teacher turn over is avoided even though it cannot be completely achieved.

Lack of challenge

One of the teachers resigned because of both a lack of challenge in teaching and finding a better paying and more challenging job in the private sector:

I was at the time feeling not challenged any more by the level of delivery I was doing then. I was teaching agriculture but with my experience I thought I could do better elsewhere. The curriculum challenges were not meeting my expectations. Secondly, I resigned because I found a more challenging and a better paying job. In the teaching profession when you are doing well, as I

was, the best thing they could do was to promote me to management, and I would lose track of my profession. (Resigned Agricultural teacher 1, male)

Another teacher responded: *"The second reason is that teaching is not challenging at that level"* (Resigned agriculture teacher 5, male). Another teacher who resigned similarly reported that: *"Teaching was getting routine and not challenging, not being invited to attend workshops and was boring"* (Resigned agriculture teacher 4, male)

Lack of challenge, boredom and low pay are genuine problems these teachers faced leading them to resign from the teaching profession. It therefore emerges that after a certain time teachers feel the need for mobility to break from the boredom they experience in the teaching profession. The point of boredom can come much earlier as indicated by the novice teachers, but for some teachers it can come later. The question that remains is how to make teaching challenging over time for the two groups of teachers. The dilemma comes when teachers know that promotion means being taken away from the profession to concentrate on administrative position in the school, thus effectively taking away someone who still has passion for agriculture. This situation may apply more particularly to veteran teachers.

Promotion is both helpful and unhelpful in this situation. However, the problem of wasting someone's professional training due to promotion has to be resolved because it is wide spread in other organizations too. For novice teachers this may not be a problem because they desire upward mobility quicker in order to be competitive with other graduates in different occupations.

Professional and interpersonal factors

Interpersonal relations and professional issues are some of the factors that caused one of

the teachers to resign. However, one teacher indicated that he was going to resign after attaining another qualification. This desire for other qualifications was echoed by one of the university students who stated that some of the agriculture graduates were just doing agriculture in desperation. The agriculture teacher who resigned said:

It was because I had a problem with my supervisor who was also my school head. I wanted to go for further studies; she did not want me to. I wanted to be promoted, she did not want me to. Therefore I resigned and joined the private sector. However, I was ultimately going to resign after getting the qualifications I wanted. I have always wanted to join publishing companies and more particularly, I am also an author and want to continue my writing.
(Resigned Agricultural teacher 2, male)

One teacher retired from agriculture because of personal reasons that are related to agriculture; he wanted to start an agricultural project and continue with his writing of agricultural books for schools in Botswana:

I retired from the service simply because I needed to be around here, around home and do my own thing . . . I really needed to be closer to home and plan to do some business. The other reason why I retired from the service is to write agricultural books with other writers. The environment here gives me the opportunity and time to write. (Resigned Agricultural teacher 3, male)

Conflicting personal and professional factors present a challenge to teaching because teachers have different desires and aspirations from their superiors. Interpersonal relationships in organizations have the capacity to influence careers negatively or positively.

Lack of career advancement

Career advancement and the lack of challenge are a combination of factors that cause teachers to resign. Some of these teachers are young graduates who want to progress quickly in their careers before they grow older and have family commitments. They also consider teaching agriculture as a hindrance to this. One teacher who resigned made this observation regarding professional development in schools:

There were various reasons I considered before I resigned. The first being promotions. It seemed it would take a long time for me to be promoted. Then I looked at the training schedule, they send people for training after five years and looking at my age, I would be much older by the time I am due for training. (Resigned teacher 4, male)

Teaching is one profession that has limited positions for ambitious young teachers. Promotions do not usually occur before the first two years of probation and confirmation in the job, whereas in other governmental departments and the private sector, this time is usually short (six months or up to a year) and promotion may follow whereas the teacher has to wait for much longer. This is a cause for disappointment and negativity about teaching for some teachers. Further training also may take longer for a teacher. After probation it may take five years, whereas in other organizations the time is usually shorter depending on the abilities of the individual. The image of agriculture is again negative because of all these set backs associated with it even though these set backs are prevalent in other government departments, but absent in some departments and some areas of the private sector.

Bad working conditions

The other teacher who resigned made it clear that he sought work where conditions are far better: *"I resigned because I was looking for a better place to work. Actually, I was looking for greener pastures. I came here (BCA) because I was looking at the chances of up-grading my qualifications and learning a lot more"* (Resigned agriculture teacher 6, male).

Better working conditions imply better pay and, a chance for further educational opportunity in the near future. These conditions are not readily realised in secondary school teaching and therefore teacher attrition occurs due to these two factors.

Agricultural teachers who have resigned are clearly not happy about the profession and show it by joining sectors that promise new and better challenges, career progression within reasonable timeframes and better payment. As they have indicated in the interviews, having to wait for further training is a significant problem. Even though they have resigned these people regarded agriculture as a good career. They nevertheless realised that there are barriers in the career that have led to their resignation/retiring for better jobs and improved working conditions.

In a country where agriculture production is low, it is crucial that teachers be retained so that they can contribute to the teaching and promotion of agriculture in the nation's economy. I hope that these teachers will encourage their students to take a career in crop production to help improve the dismal contribution of agriculture to Botswana's Gross Domestic Product (GDP), which has declined significantly over the years since independence.

Other Respondents: Non-Agriculture teachers and students

Economic issues

One of the economic issues that emerged from the non-agricultural teachers and students was the low prices that the Botswana Agricultural Marketing Board offers for farmers' products. The marketing board discourages farmers by these low prices and in turn, these prices further discourage all students who aspire to take agriculture as a career because they would not want to operate within such an economic climate. Moreover, some students come from farming backgrounds and are thus directly affected by the low prices their families receive. Another related economic issue identified by agricultural students was the misappropriation of government schemes by farmers. If the government is going to continue

providing incentives that are misdirected, agricultural production will continue to decline and the image of agriculture will continue to be negative. Some farmers will continue exploiting these schemes to the detriment of improved production. Agricultural graduates contend that the provision of government schemes will lead to too much dependence on the government so that independent initiatives in agricultural enterprises will be minimal.

Educational issues

Non-agricultural students from the University of Botswana and former BCA graduates observed that agricultural students are reluctant to use their skills in self-employment enterprises after graduation. Most of these graduates would like to be employed as teachers or work for the ministry of agriculture and other organizations. This affinity for employment after graduation may be caused by various factors that students are most likely to encounter. It is difficult for new graduates to access loans at lending institutions for agricultural enterprises because they do not have the security that is required. One other problem is that they also do not have enough experience on how to operate a viable business in agriculture. Even though theory is emphasised in the agricultural teaching institutions, the students are nevertheless inadequately trained and still lack practical as well as theoretical experience to set up a business venture. This is a contributing reason as to why there is reluctance to start businesses in this sector.

Another related issue is that students take agriculture as a last resort career. Thus resources are wasted when these students have to be retrained in other courses of their choice. Agricultural students attribute this behaviour to take agriculture as a fall back career as a desperate measure because it is difficult to survive without money. Taking agriculture as a last resort leads to a lack of commitment to the career and may produce mediocre students

who would be ineffective in their future jobs. Further, many students have a general conception that agriculture only involves rearing animals and the planting of crops. This narrow vision can lead students to have a negative conception of agriculture. That is why students look at agriculture as a “dirty” career that involves a lot of work in the garden and with little mental stimulation.

In the secondary schools (high schools) visited, the status of agriculture as a subject was never homogeneous because of the traditions fostered by the different school administrations. Some schools categorised agriculture as a science subject so that students taking the pure science like Physics, Biology and Chemistry subjects would be excluded from agriculture. It is considered superfluous and redundant for those selected to take the pure sciences to take an extra science subject. Students taking the pure sciences are regarded as better performers than those who have been selected to take agriculture. In other schools agriculture was only regarded as a practical subject that is suitable for students taking the *double sciences*. In all these instances, it is confusing and inappropriate to have different standards of education based on the performance of students. This kind of standard if left in the hands of school administrators can cause the assumption that agriculture as a subject is suitable only for poor performers.

Overall, the themes involved in attitudes to agriculture are much more negative than positive. This certainly affects the numbers of students taking up agriculture as their career path. In the next chapter, possible solutions for these problems are explored in light of issues raised in the preceding chapters.

CHAPTER 7

A WAY FORWARD

Introduction

After investigating the agriculture education in educational institutions in Botswana, it is important to present approaches that might address the negative perceptions that are hurting this sector of the economy. Agricultural awareness is urgently needed in schools to redress this problem and to re-invigorate agricultural production that more adequately meets Botswana's food needs.

Teacher Satisfaction in the Job

Teacher satisfaction in the job has to be treated as a priority to avoid teacher attrition. Machete (1990) believes that remuneration must be improved so that teachers could be attracted to agriculture. If the government wants to retain teachers in the field, salary reviews should be conducted regularly so that resignations could be averted. This approach is recommended because some of the teachers who had resigned are recent graduates who are ambitious and consider low salaries in a competitive job market as a disincentive. For the ambitious young teachers remuneration concerns could be a critical problem. There is evidence in this study that shows that young teachers resign from teaching because of remuneration issues. Previous research has concurred that remuneration is the main factor that contributes to teacher attrition (Subair and Mojaphoko 1999, Machete 1990), a factor that needs to be addressed.

Improving Agricultural Teaching in Primary Schools

Agriculture is already taught as a core subject in primary schools in Botswana. Making agriculture a core subject from primary school to junior school seems the best pedagogical approach towards improving the overall image of agriculture amongst students. Improving agricultural teaching would be a way of enhancing the image of agriculture in Botswana thus contributing to overall numbers of people in the field. Teachers felt that primary school pupils might appreciate agriculture education as a viable career option if the teaching was improved. The question that needs to be asked here is a pedagogical one. How should agriculture be presented to pupils so that they can appreciate it and thus improve its image? Another question that follows from this one is whether the school gardens should be maintained for practical training at that level.

The best way to teach agriculture at a young age is to first divide the teaching of agriculture into two phases. This model has been developed after a discussion with students at the tertiary level. The first four years at primary school could be devoted to conducting simple experiments with pupils in laboratories. This approach will lessen dependence on the school garden that may result in overworking pupils who are between seven and ten years. It may also present agriculture as a less menial educational and career option. Then from eleven to thirteen years, pupils could be introduced to some practical training suitable at that level. Teachers should however be cautious not to overemphasise practicals as pupils may develop negative images at a young age and thus overcome the positive pedagogical effect that has to be created.

The content of the syllabus should be student-centred and be practically orientated so that pupils get used to the manual activities involved in agriculture and appreciate the value

of experimental activities associated with food production. Theory should be taught progressively from primary school so that at high school they would have acquired useful attitudes about the nature of agricultural production.

Agriculture in Tertiary Institutions: Practice versus Theory

In tertiary institutions students should be exposed to more practical application of agriculture than is currently the case. One tertiary lecturer in agriculture emphasised the fact that practicals at this level must be geared towards the realities of agriculture in society, not the kind of demonstrations that are currently being practised. Practical must consist of real life situations where students engage in activities that mirror skills they have to apply in the work environment once they graduate. Theoretical skills should not be sacrificed for these skills are important for students' academic capabilities and more adequately reflect the complex understandings and skills involved in agricultural work. A balance has to be reached between practical and theoretical skills. If the balance is reached, then an equally balanced and competent student will emerge and apply the skills in his or her future agricultural career.

Strategies suggested by teachers concerning the teaching of agriculture need to be given special treatment in appropriate forums with the view of improving current agricultural teaching. The complex nexus of practice and theory needs careful planning by the curriculum department in conjunction with teachers' perspectives so that teachers can articulate their ideas to the designers of the curriculum.

In tertiary institutions, priorities have to be identified by the professionals in deciding what kind of graduates they want to produce. If too much emphasis is on the theoretical skills, then it means that resources will be wasted because graduates would not be able to

work effectively in a field that requires a combination of both skills.

Curriculum Planning in Tertiary Institutions

This study has attempted to show that the practice and teaching of agriculture is characterised by images that are positive, negative and mixed. Once the curriculum planners are aware of these images of agriculture education, they can then factor them into future curriculum designs. A curriculum design that is controlled by the economic objectives of the country concerning agriculture practice is commendable, but it may suffer if there is not much known about agricultural workers. If the curriculum designers know the images of agriculture education, they may eliminate some of the negative images agriculture receives in secondary schools and by students in tertiary institutions in Botswana. The images identified may help curriculum designers develop appropriate teaching and learning environments that are relevant for students.

Even though the syllabus states that a lot of practical application is to be emphasised, agricultural teachers still complain about the overly theoretical aspect of agricultural education. Teachers felt that there is an undue emphasis on the theory of agriculture than on the practical application. However, students, who felt that there was too much "manual work" involved, contradict this assertion. Relevant pedagogy is needed which will distinguish between practicals that target students' real needs in the career from intensive manual work as an end in itself. Practical have to target students' interest and future needs.

It is evident from what agricultural teachers and lecturers say that practical skills are not adequately emphasised; practical skills currently taught are not enough to equip students with the necessary skills for the work they will do. It is implied here that tertiary institutions offering agriculture should have appropriate resources where practicals should be taught

realistically, for not only demonstration purposes and theoretical assessment. However, teaching agriculture realistically has resource implications that education providers should be willing to bear. It is simply not sufficient to have a curriculum that emphasises practical skills without the resources necessary for that purpose.

Improving the Limited View of Agriculture Education

Non-agricultural students also noted that agriculture is not only about the production of crops and livestock. This a common image among students even in developed nations and as indicated by studies carried out in Australia and the USA. This misconception needs to be remedied by using appropriate instruction that teaches the real and multifaceted work in agricultural business. One of the teachers who had resigned suggested that agriculture teaching must be innovative. Students must not be subjected to intensive manual work, but must also work in laboratories conducting experimental projects. Students should be made aware of the diversity of agricultural careers that they could choose from if they decide to pursue it in the future. Students should have broadened perspectives that may purge the limited perception of agriculture. It is the responsibility of the agricultural teachers to do this during interaction with the students. These kinds of activities would challenge students academically and may be a way of attracting higher performing students into the field.

Curriculum designers should use agriculture education as a scaffold so that they could better respond appropriately to the needs of the students. This move will provide a curriculum that is relevant and guided by an understanding of both teachers' and students' perceptions of the subject.

Improving the Criteria for Agricultural Selection

Agricultural teachers and both non-agricultural and agricultural students observed that

the decision to choose agriculture is restricted by structural obstacles within the school system. In some schools, students' choice is predetermined by subject teachers thus excluding high performers from taking agriculture. While in other schools students are free to choose agriculture if it has not been over subscribed. This double criterion should be removed so that students who wish to take agriculture at senior school can do so without teachers' interference. It is understandable that teachers may be faced with situations of resource constraints that may lead them into imposing such selection choices.

Educational Requirements for Enrolment into Agriculture

Entrance prerequisites into tertiary institutions have to be reconsidered. This approach may be regarded by some as lowering educational standards in Botswana, but this issue has to be broached because it is a crucial one. The educational system in Botswana allows students to take agriculture at both junior and senior schools irrespective of the 'hard' sciences like mathematics, physics and biology, particularly at senior school. The situation changes when students wish to enrol in tertiary institutions for agricultural science subjects are then prerequisites regardless of whether the student had good agricultural grades or not. Any student who does not satisfy the requirements would not be admitted to any of the two agricultural institutions and for any science based course. This may have a negative effect on students who have passed agriculture at high school and are keen on choosing it as a career, but are denied the opportunity because of their desire to also take other related subjects like Biology and Computer Studies and Accounts. It is tempting to suggest that standards be lowered to admit these students for agricultural careers. The problem with this approach is that agriculture is science-based and if students are admitted without the requisites, they may experience conceptual problems that are related to the sciences. Assisting students who are

in this category can address the educational dilemma by organising courses that are mainly tailored for them so that they can start production even though access to loans is a problem for them. The College of Agriculture should work hard to identify these students and make the first initiative because facilities are available to help in this regard through the Centre for In-Service and Continuing Education located at the Botswana College of Agriculture.

Environmental Factors

In secondary schools, students and teachers were concerned about the harsh climatic conditions that are not favourable to agriculture in Botswana. The country is prone to drought and its dependence on rainfall for agricultural production cannot be over emphasised. Irrigation systems and their operational processes (though currently on a small scale and limited by available resources) should be introduced at secondary level so that students could be exposed to new methods of agricultural production. This may be an effective way of encouraging students who may feel that these issues are insurmountable.

Now that it is known that students are discouraged by the harsh weather in Botswana to choose agriculture as a career, for fear of failing or of not being able to make a living, it becomes crucial to deal with this image constructively. One of the ways of dealing with this problem is to introduce students to new methods of agricultural production that use less water. In the school garden students are only exposed to the growing of vegetables that require more water – a practice that does not take into account the environmental realities students may have to face if they decide to go into agribusiness after they have completed their studies. If the pedagogical emphasis is to help students to respond to the harsh climatic conditions then agricultural teachers have to introduce new crops that are better suited to weather conditions in Botswana.

Irrigation as a subject is not included in the secondary curriculum, but it should be introduced in schools so students can learn how to use these systems in the future for agricultural production. Since not all students are going to proceed to post-secondary education the knowledge they have acquired can be supplemented by experts if they choose to venture into crop production after secondary education. If they are not taught how to deal with harsh climatic conditions, then agricultural education at that level does not serve any useful purpose, no matter how relevant the other components of the curriculum are.

Guidance and Counselling

Strengthening the guidance and counselling support for agricultural teachers and students could be a significant method of improving the uptake of students in the field and could also be a method for keeping more teaching staff in the profession. The idea for this option is precipitated by what non-agricultural students stated as perceived limited career opportunities in agriculture. It is also suggested that agricultural students in tertiary institutions be trained in career guidance and counselling so that they could handle this task with ease instead of relying only on school counsellors who might not even be present in some schools. Former agriculture students may be the best advocates for the field. Training agricultural teachers at tertiary institutions would strengthen guidance and counselling for agriculture teachers so that they would be able to provide specialist advice on career objectives to students who are ignorant of the potential agricultural career opportunities.

Initiatives by the Ministry of Education

The Ministry of Education in Botswana has committed resources for educational development in tertiary institutions. In 1995 and 1996, the Ministry introduced the New Grant Loan Scheme that "aims at encouraging training in areas of national priorities and

critical human resource constraints" (NDP8 1997/98-2002/03:353). The different categories related to government support are presented in Table 23. Under this scheme, agriculture has been included as category two because it was considered unattractive to students. The Ministry of Education has a scheme for special funding for programmes. Category Two subjects including agriculture receive 100 percent grants on tuition, 50 percent grants on maintenance, and 50 percent loans on maintenance costs. Students are then expected to serve for a specified period in Botswana (this is dependant upon the duration of the course) and repay 50 percent of their loan on their educational maintenance costs. For other categories, students are expected to repay 100 percent of both loan and tuition costs if the programme is going to benefit the individual or small sections of the economy.

Table 23 The grant/loan scheme – broad categories

Category and description	Examples	Amount of Loan/Grant	Degree of cost Recovery
Category 1 Areas with critical human resource shortage especially in the science and technical field	Medicine, Dentistry, Engineering, Computer Science, Architecture, Surveying, System Analysis, Metallurgy, Mathematics, Science and Setswana, Teaching, Professional Accounting, Science Teaching, Radiology	100% grant on both tuition and maintenance costs	Direct allocation into employment in Botswana and service for a specified period
Category 2	Accounting sub-professional, Professional Nursing, Paramedical studies, Quantity Surveying, Geology, Secondary School teaching (in all subjects in category 1), Agricultural Science.	100% grant on tuition, 50% grant on maintenance, and 50% loan on maintenance	Service in Botswana for a specified period and repayment of 50% loan on maintenance
Category 3 Programmes to increase local capacity to supply qualified manpower to satisfy the market or balance demand and supply	Law, Public Administration, Journalism, Graphic Arts, Hotel and Tourism Studies, Television Production, Fashion/Fabric Design, Social Work	100% grant on tuition, and 100% loan on maintenance costs	Service in Botswana for as specified period and repayment of the 100% loan on maintenance costs.
Category 4 Programmes that benefit the society and economy but are less priority.	Philosophy, Sociology, Museum Studies, Archaeology, Land Board Administration, Library Information Studies.	50% grant on tuition, 50% loan on tuition, and 100% loan on maintenance costs	Service in Botswana for a specified period, repayment of 50% loan on tuition and 100% loan on maintenance costs.
Category 5 Programmes benefiting individuals or small sections of the economy	Hairdressing, Photography, Music, Performing Arts, Interior Design.	100% loan on both tuition and maintenance	Service in Botswana for a specified period and repayment of the 100% loan on maintenance on costs

Source NDP 8

This initiative by the Ministry of Education, the major sponsor for students in Botswana, may attract students to take agriculture as a career. If it is not supported by better employment prospects after graduation, however, it will serve as a disincentive and discouragement that may lead to the attrition of teachers and other staff. Therefore, payment packages have to be competitive with similar jobs in the private sector and this would enhance the image of agriculture among students in educational institutions.

To further improve the uptake of graduates of agriculture the Ministry of Education could also avail some special scholarships for women because their position is still not comparable to that of men in agriculture both in teaching and in the Ministry of Agriculture. This may help increase female enrolments. In spite of the fact that the merit-based system is in place at the Botswana College of Agriculture, there are still more males than females. Even though these scholarships could be construed as a form of inverse discrimination, the justification for such a position would be to attract more females to reduce the domination of males in agricultural education and production. Even though the merit-based system is in place, it still attracts more males and a few females into this field, so special scholarships are justified to attract talented women into the field.

Setting of the Minimum Wage

At present agricultural labourers are in the main exploited because there is no minimum wage. Some of the labourers in the industry are dropouts from either primary or secondary school. These students do not want farm jobs because of the exploitative wages they receive. This situation, as already pointed out, has prompted the government to contemplate importing cheap labour from neighbouring countries like Zimbabwe. This kind of move deserves criticism for it lowers the image of agriculture in Botswana and no students want to

work in an industry that exploits them. The present employment system in Botswana exploits unskilled agricultural workers particularly in cattle production. Head boys work without any legislative protection from the government regarding the minimum wage. This situation may already affect primary school dropouts as they may get a job in the industry. This matter is political and may be resolved in a way that may impinge negatively on the image of agriculture, particularly for those students who have a limited perception of agricultural career potential. The government or the Ministry of Agriculture has to set competitive wages so that agriculture can be attractive even to those who have not been able to proceed with agriculture at a higher level. This approach can engender a positive image among those students who are continuing with their studies in agriculture and have the intension of making it their career.

One of the benefits of developing a positive image of agriculture by creating conducive employment opportunities is that labourers could influence their children to take agriculture as a career in the future. Some of the students have indicated that the decision to take agriculture as a career is because of the influence of relatives or close family members who are engaged in agricultural production. If the image is negative and exploitative, parents may discourage their children from taking agriculture as a career so that they could escape the exploitation they have experienced. Similarly, it is because of negative associations that even in the United States caused African-Americans to develop a negative image of agriculture because of the impact of slavery on their grandparents (Morgan html document 2000).

Easy Accessibility of Loans to Graduates

The difficulty faced by tertiary students in securing loans to start agricultural enterprises after graduation is a deterrent against a business to create employment. The College of

Agriculture has already launched an initiative that tries to encourage students to develop small business projects that help them gain experience in entrepreneurial skills in agricultural production. However, because of the problem of access to loans after graduation the initiative by the College has not been effective. After graduation, some of these students would still join the job market because they cannot get loans to start any agribusiness. If students could be provided financial assistance by lending institutions, then they would be able to use the skill they have acquired and perhaps that would encourage other students to do the same after they have graduated.

It seems reasonable that the government should assist some of the students who are interested in starting businesses after graduation. These graduates have practical skills that are needed and may have gained some knowledge related to running a business. In fact, one of the requirements for such assistance should be based on a viable project that the student has been able to demonstrate successfully at the college (Botswana College of Agriculture). A special dispensation has to be made for recent graduates to access loans from the government. The government should be involved because it already has financial assistance schemes that farmers can access regardless of any demonstration of success in production. These schemes have suffered from financial misappropriation that has led to failure of some projects because some of the farmers do not have suitable skills in agricultural production.

Improving Interpersonal and Professional Relationships

In order to improve the retention of teachers it is crucial to improve the interpersonal relationships between teachers and their superiors so that teachers would feel more secure and valued in their work. This would involve better trained administrators who would be able to involve and include teachers in the making of decisions that affect them and their

profession. The leadership style of head masters has to be compatible with the staff. If it is authoritarian, it is likely that conflicts would develop that would in the end lead to dissatisfactions that may ultimately lead to resignations. Even though leadership styles are an individual matter, conflict resolution skills have to be established through training of both teachers and their headmasters to help improve interpersonal and professional relationships.

Agricultural Publications: International versus Local Standards

Agricultural publications have extrinsic and intrinsic value for professionals. Publications in agriculture help professionals by providing promotions and by providing an opportunity for further research that keeps them interested in the job. However, it seems that agricultural professionals are more interested in promotions and monetary rewards than investigating the local situation. In publishing, the local context is ignored and the knowledge produced tends to be esoteric to local situations. Professionals could consider their interests, but must also consider what standards they abide in their profession. There could be a productive reformation of the academic system so that it is not tied exclusively to international standards that seem to exclude local contexts. Publications should be contextualised and valued for what knowledge they produce in local situations. Knowledge produced by research should not be esoteric, but must be applicable to the national context it is meant to assist.

Future Research Directions

Since agriculture education can be related to place and ethnicity, further research is needed to find out more about nomadic minorities and their perceptions of agriculture education, for example the San (Bush Men). Some of them have been integrated into the society and their children are offered the same education as all other citizens. This kind of

research may assist curriculum designers with the needs of these groups and help to determine how agricultural teaching should respond to their itinerant situation.

More studies on the general attrition of teachers should be conducted because attrition is not unique to agricultural teachers. Teachers are an important resource that must be handled professionally by satisfying their professional development needs timely to avoid resignations.

Teachers are both practical and professional career people who should be able to make a reasonable living for themselves and their families. Further, these teachers must be seen as professionals who are able to support the educational needs of students who are at best sceptical of agriculture as a career and their current agricultural work context. More investigation into developing career-counselling courses for agricultural teachers is needed to determine if a short professional course in this area would benefit teachers.

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Appendix I

Consent Form

School of Education

Project Title: The Image of Agricultural Education in Educational Institutions in Botswana. Thesis for the Ed.D funded jointly by Murdoch University and the Botswana College of Agriculture.

I am an Ed.D student at Murdoch University, and am undertaking research about the image of agriculture in educational institutions in Botswana, particularly among students at different levels of education. One of the goals of the study is to develop strategies that can be used to improve the image of agriculture, particularly by teachers at secondary schools and tertiary institutions in Botswana.

You can help in this research by consenting to taped group or individual interviews. It is anticipated that the interview(s) will not be more than one hour. The study is voluntary and you may withdraw from it at any time. Interviews will be taped with your consent. The tapes and transcriptions will be kept confidentially at Murdoch University for five years and will be destroyed then. All information given during the research is confidential and no names or other information that might identify you will be used in any publication arising from the research. I will provide feedback on the research to all the participants who did not ask for anonymity. The feedback will be provided in the form of a report.

If you are willing to participate in this study, could you please complete the details below? If you have any concerns about the nature and conduct of this research please feel free to contact either myself, Mogadime Rammolai, on 267 3650100 (w) or my supervisor, Dr James Bell, on 61 8 9360 2676 (w).

My supervisor and I are free to discuss with any concerns you may have on how this study has been conducted, or alternatively you can contact Murdoch Research Ethics Committee on 61 8 9360 6677 or e-mail them at *ethics@central.murdoch.edu.au*.

I/We.....,.....,.....

..... have read the

information above. Any questions I / we have asked have been answered to my/our

satisfaction. I / we agree to take part in this activity; however, I / we know that I/ we may

change my/our mind(s) and stop at any time.

I / We understand that all information provided is treated as confidential and will not be released by the investigator unless required to do so by law.

I / we agree for this interview to be taped.

I / We agree that the research data gathered for this study may be published provided my/ our name(s) or other information which might identify me/us is not used.

Participant / Authorised Representative:

Date:

Investigator:

Date:

Investigator's Name:

Appendix II

Interview Protocols

Dear Participants

The purpose of this research is to find out the image of agriculture that is held by various groups of individuals within educational institutions, and some strategies that could be used to change the current image.

Non-Agricultural Students

1. Why didn't you choose agriculture as your subject?

Keng lesa thlopha agriculture jaaka nngwe ya dithuti tsa lona?

Prompt: Was the decision entirely your own?

2. Would you choose agriculture as a career in the future?

Aa lena le maikaelelo a go tshwelela le agriculture mo dithutong tsa lona tsa isago?

Prompt: Why/ Why not?

Tlhalosang.

3. Is agriculture an important subject?

Le bona agriculture e le botlhokwa?

Prompt: Why/ Why not?

Tlhalosang

4. What is your attitude towards the subject and those who have chosen to do it?

Ka le sa thlopha agriculture e lenngwe ya dithuto tsa lona, maikutlo a lona mogo yone kea fe mo goba ba e dirang?

Prompt: Do you think they are doing a low status subject?

Aa le bona ba dira subject ee kwa tlase ka seemo?

Agricultural Students

1. Why did you choose agriculture as a subject?

Ke eng se sedirileng gore le thlophe agriculture?

Prompt: Was the decision to do agriculture entirely your own decision?

Tlhlosang gore ka goring.

2. Are you going to choose agriculture as your career?

Prompt: Why / Why not?

Aa lena le maikaelelo a go tswelera ka agriculture mo matshelong a lona?

3. Is agriculture an important subject?

Aa agriculture le bona ele botlhokwa?

Prompt: Why/Why not?

Thlalosang gore ka goring.

4. What is the attitude of students who have not chosen to agriculture towards you?

Bana ba bangwe ba basa direng agriculture, ba le tsaya jang?

5. Is agriculture more suitable for one group of people or another?

Aa le bona agriculture e siametse sethlopha sengwe sa batho?

Prompt: Males, Females, Academic or Non-academic

Are there any structural or cultural barriers?

Non –Agricultural Teachers (secondary schools)

1. Should agriculture be an elective?

2. Is agriculture an important area?

Prompt: Why/ Why not?

Would you recommend agriculture as a career to students?

Why/ Why not?

3. Are there any limitations, like academic, which may encourage low achievers to choose agriculture rather than other subjects?

4. What is the image/s of agriculture generally?

Prompt: Is it a low status or high status career/subject?

What strategies might impact on or change the images?

5. Do you determine students' choices regarding who should or should not do agriculture?

University of Botswana Students.

1. Why didn't you choose as a career?

2. Should agriculture be an elective?

Prompt: Why /Why not?

3. What is / are image/s of agriculture generally?

Prompt: Is it a low status or high status career?

What strategies might impact on or change the image of agriculture?

What is your general feeling/impression about students who have chosen agriculture as a career?

4. Is it a subject more suitable for one group of people or another?

Prompt: Males, Females, Academic or Non-Academic

Are there structural or cultural barriers?

Former BCA Graduates

1. Why did you choose agriculture as your career?

Prompt: Is agriculture an attractive career?

What are the employment prospects like?

What advice could you give to others?

2. Should agriculture be an elective?

Prompt: Why/ why not?

3. What is/are the image/s of agriculture generally?

Prompt: Is it a low status or high status career?

What strategies might impact on or change the image/s?

Agricultural Teachers

1. What kinds of students choose agriculture?

2. Are your students likely to pursue agriculture as a career?

3. What is the image of agriculture generally?

Prompt: Is it a low status or high status subject?

What strategies might impact on or change this image?

4. Are there any limitations, like academic, which may encourage low achievers to choose agriculture?

5. Do you influence the choice of students towards agriculture?

6. Should agriculture be an elective?

Prompt: Why/ Why not?

7. Is it a subject more suitable for one group of people or another?

Prompt: Males, Females, Academic or Non-Academic?

Are there structural or cultural barriers?

Agricultural Teachers Who Have Resigned

1. Why did you resign from the profession?
2. Should agriculture be an elective?

Prompt: Why/ why not?

3. What is/ are the image/s of agriculture generally?

Prompt: Is it low status or high status career?

What strategies might impact on or change the image?

Is there a need to improve the image of agriculture in schools?

Can you advice students to consider agriculture as a career?

4. Is it a subject more suitable for one group of people or another?

Prompt: Males, Females, Academic or Non-Academic?

5. Are there any structural or cultural barriers?

Tertiary Institutions (Agricultural lecturers)

1. What types of students choose agriculture?
2. Should agriculture be an elective?

Prompt: Why/ why not?

3. Is agriculture more suitable for one group of people or another?

Prompt: Males, Females, Academic or Non Academic

Are there structured or cultural barriers?

4. What is the image of agriculture generally?

Prompt: Is it low status or high status career?

What is the future of agriculture in Botswana?

Non-Agricultural Lecturers

1. Why didn't you choose agriculture as a career/subject?

Prompt: Can you advice others to choose agriculture as a career?

2. Should agriculture be an elective?

Prompt: Why/ why not?

3. Is agriculture a subject suitable for one group of people or another?

Prompt: Males, Females, Academic or Non- Academic?

Are there structural or cultural barriers?

4. What is / are the images of agriculture generally?

Prompt: Is it low or high status career?

What strategies might impact on or change the images/s of agriculture?

Is there any future for agriculture in Botswana?

Dear Participants

The purpose of this research is to find out the image of agriculture that is held by various groups of individuals within educational institutions, and some strategies that can be used to change the current image.

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2. Is agriculture an important area?

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Why/ Why not?

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5. Do you determine students' choices regarding who should or should not do agriculture?

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Prompt: Why /Why not?

3. What is / are image/s of agriculture generally?

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What strategies might impact on or change this image?

Are there any limitations, like academic, which may encourage low achievers to choose agriculture?

4. Do you influence the choice of students towards agriculture?
5. Should agriculture be an elective?

Prompt: Why/ Why not?

6. Is it a subject more suitable for one group of people or another?

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Prompt: Why/ why not?

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What strategies might impact on or change the image?

Is there a need to improve the image of agriculture in schools?

Can you advice students to consider agriculture as a career?

4. Is it a subject more suitable for one group of people or another?

Prompt: Males, Females, Academic or Non-Academic?

5. Are there any structural or cultural barriers?

Tertiary Institutions (Agricultural lecturers)

1. What types of students choose agriculture?

2. Should agriculture be an elective?

Prompt: Why/ why not?

3. Is agriculture more suitable for one group of people or another?

Prompt: Males, Females, Academic or Non Academic

Are there structured or cultural barriers?

4. What is the image of agriculture generally?

Prompt: Is it low status or high status career?

What is the future of agriculture in Botswana?

Non-Agricultural Lecturers

1. Why didn't you choose agriculture as a career/subject?

Prompts: Can you advice others to choose agriculture as a career?

2. Should agriculture be an elective?

Prompt: Why/ why not?

3. Is agriculture a subject suitable for one group of people or another?

Prompt: Males, Females, Academic or Non- Academic?

Are there structural or cultural barriers?

4. What is / are the images of agriculture generally?

Prompt: Is it low or high status career?

What strategies might impact on or change the images/s of agriculture?

Is there any future for agriculture in Botswana?