CHAPTER I

INTRODUCTION

Minorities have been and continue to be under-represented in most areas of the agricultural sciences. Wardlow, Graham, and Scott (1995) noted that there is little doubt that minorities are underrepresented in academic departments at land-grant universities, professional roles in agricultural industries, and in governmental agencies such as the United States Department of Agriculture (USDA). The recruitment and retention of minority students in the agricultural sciences is very important. The *Wall Street Journal* (1995) recommended that agricultural industries would have to recruit and hire a diverse workforce that reflects the international scope of their business. This will constitute a major challenge since students of ethnic minority groups represented only 10% of the land-grant college enrollment in 1993, up from five percent in 1984, while minorities represented 20% of all higher education enrollments (U.S. Department of Education, 1993).

Background

Over the last six years, as a result of streamlining and downsizing, the USDA permanent workforce has decreased by almost 15,000 employees (15%), from 99,000 to 84,000 (USDA, 2000). Although the representation of minorities has steadily improved at a slow rate, enrollment numbers in agricultural programs across the country indicate that agriculture, as a major, does not appeal to minority students as a profession. The USDA (2000) reported that from 1993 to 1999, African-American employment increased from 9.4% to 10.8%, Hispanic employment increased from 4.1% to 4.8%, employment of Asian Pacific Islanders increased from 1.7% to 2.0%, and that of American Indians increased from 2.4% to 2.6%. Moreover, the National Research Council (1996) suggested that the agricultural system needs a highly-educated, diverse work force. Colleges of agriculture are challenged to seek new and innovative ways to appeal to minority students. The recruitment process can begin with discovering and identifying what has the greatest influence on minority students' decision to select agriculture as a major.

According to the National Research Council (1988), agricultural education has a long history in American education. Most Americans know very little about agriculture and its social and economic importance and significance in the United States (U.S.). Colleges of agriculture design and facilitate recruitment strategies to introduce the opportunities available to students (Rawls, 1995). Other college-related sources of influence that affect students' decisions to select agriculture as a major are the reputation of the college and faculty, facilities, geographical location, cost of tuition, and financial incentives in the form of scholarships (Donnermeyer & Kreps, 1994).

Although agricultural education is popular at the secondary level with other ethnic groups such as Caucasians, the post-secondary sector has experienced problems with recruiting minorities. Colleges of agriculture at 1862 land-grant institutions have found it difficult to recruit and retain minority students within their agricultural programs. The belief is that agricultural programs are only designed to train individuals for farming and production agriculture, causing potential students to stray away from the field. One of the problems identified is that when minority students hear the word "agriculture," they associate it with slavery (Morgan, 2000).

The low numbers of minorities enrolled in college agricultural programs has led to a nationwide concern. In the fall of 1999, there were only 4,209 African-American students of 119,034 enrolled in agricultural-related fields (Food and Agricultural Education Informational Systems, 1999, p. 7). Admission requirements for many universities have made students hesitant to enroll in vocational classes, including agricultural education, while at the secondary level. A study by Talbert and Larke (1992) on minority agricultural education students in Texas secondary agriculture programs revealed that minority students perceived more barriers to enrolling in agricultural courses and had negative attitudes toward agriculture and agricultural occupations. With increased graduation requirements and state-mandated tests, minority students have been pressured to focus more on basic studies. The misconception is that if you are enrolled in a vocational class, then you will not be adequately prepared for standardized tests and not able to pass the entrance requirements for many universities. Many educators are trying to find ways to make minorities, particularly African Americans, aware of the myriad of options available in the field of agriculture.

Studies by Marshall (1989) and Valverde (1988) suggested stereotyping, discrimination, and constraints imposed by self, family, lack of career aspirations, and lack of confidence as causes for lack of representation by minority groups in professional roles. Donnermeyer and Kreps (1994) found that students already exposed to agriculture tended to enroll in agricultural majors more often than students without exposure. Literature and past research suggest that minorities experience significant cultural and institutional barriers that may restrict their preparation for educational programs and choosing a career. Lam (1987) identified interpersonal reasons, school factors, socioeconomic status, and family issues as barriers that discourage students from enrolling in secondary agriculture classes when attending high school. Kotrilk (1987) found that parents were the dominant influence on students' decisions whether to enroll in agriculture classes when attending high school. Students also tend to seek the advice of teachers, parents, counselors, friends, and other students.

Bohr, Pascarella, Nora, and Terenzini (1995) noted that the majority of African-American students pursue post-baccalaureate degrees and education at predominately white institutions (PWIs). Of the 4,009 colleges and universities in the U.S., PWIs represent 3,904 of the institutions. Furthermore, 80% of African Americans attending college are enrolled at PWIs (Chronicle of Higher Education Almanac, 1998; Wenglinsky, 1996). The decrease in agricultural enrollments has had a profound effect on many institutions, notably land-grant institutions. Land-grant institutions were created through the Morrill Acts of 1862 and 1890. The initial purpose of the institutions was to educate citizens in the areas of agriculture, home economics, and the mechanical arts. Manderschied (1988) reported a 24% decline in land-grant university enrollments and a 13% decline in other university agricultural enrollments from 1978-1988. In addition, several 1890 land-grant institutions have lost agricultural science programs due to the lack of funds needed for program innovations, student recruitment, and faculty development (Morgan, 2000). The researcher in this study believes that integration policies and politics by state lawmakers have contributed to the problem with recruiting students at both 1862 and 1890 land-grant systems. University faculty and administrators are seeking ways to diversify their programs to include more minorities and help them to be aware of the potential opportunities that exist for them. PWIs are responding to this crisis by creating more innovative programs and offering special incentives to help with the recruitment and retention of minorities in the agricultural sector.

Shade (1993) defined the worldview of African Americans as cautious, suspicious, and apprehensive. This resulted from the past prejudices and injustices that African Americans faced and the negative outlook by other ethnic races. Shade's perception of African Americans' is supported by research of Parham and Austin (1994), who postulated that the stereotypical occupational structure that exists in American society influences African Americans' career outlook. History and other related research have shown over the years that African Americans have been portrayed as having deficiencies that prevent them from succeeding in academia and occupations that require intensive thinking and problem solving. According to Parham and Austin (1994), individuals select jobs in which they visualize themselves, but if no other familiar faces or colors are there, is the determination still there?

The United States has undergone a major demographic change with the racial and ethnic composition of its people within the past 10 years. Because of the demographic shift, the changes have led to an increase in the number of minorities pursuing higher education and enrolling in institutions of higher learning. Johnston and Packer (1987) predicted that the nation would be increasingly culturally diverse in the years ahead, and that people of color would account for more than five-sixths of the net additions to the workforce. Hodgkinson (1998) noted that if we look into the future in terms of ethnic composition, we would see the population increasing by 9 million for Hispanics, 3.8 million for African Americans, 3.8 million for Asians, and 266,000 for Native Americans over the next 10 years. Hodgkinson also noted that another sign indicating that diversity exists is that there are 215 nations in the world, and the U.S. has at least one individual from each living within it.

The U.S. college enrollment is estimated to be 14,367,520 students. Of that number, African-American students represent 1,505,565 (10.6%), and Hispanic students 1,166,108 (8.2%) (Chronicle of Higher Education Almanac, 1998, p.18). Ethnic minorities including African Americans, Hispanics, and Asians represent a small, though recently growing percentage of land-grant college enrollment, about 10% in 1993 versus five percent in 1984 (U.S. Department of Education, 1993). Additional data by the U.S. Department of Education in 1993 revealed that of all U.S institutions of higher learning, ethnic minorities account for slightly more than 20% of undergraduates and about 14% of the graduate students.

The author noted that diversity is a practical agenda that we must address if our graduates are to remain prized recruits for businesses and organizations that have sought them in the past. The presence of minority students in the university setting is very important. Many factors influence minorities to enroll in agricultural science programs and select agriculture as a major. Minorities are attracted for a variety of reasons. Much data have been collected on the factors that lead students to enroll in college and the college selection process. Past research has shown that guidance counselors, parents, friends, family members, and former teachers have the most influence on minorities to enroll in college and aid in selecting a particular major. As we enter the 21st century, the opportunities for African Americans and other minorities will increase, and there is a need to attract them to universities, place them into the world of agriculture, and prepare them with the skills deemed necessary to be highly competent citizens in the workforce.

Virginia Tech is one institution that is making an effort to increase the number of minorities in all academic disciplines. Each college at Virginia Tech is looking to develop a more diverse student base. In 1999, the university hired a vice president for multicultural affairs who joined the Virginia Tech community to enhance the diversity at the university. The president's goal is to increase minority enrollment at the university from 3 to 5%. The university has made some great strides over the past years. More minority students earn doctoral degrees at Virginia Tech than at any other university in the state. Virginia Tech is among the top universities in the nation in terms of doctoral degrees awarded to African Americans, according to a special report of the top 100 academic degree producers by *Black Issues in Higher Education* magazine (1998). The university also has established a partnership with neighboring Historically Black Colleges and Universities (HBCUs) and the Office of Minority Academic Opportunities Program (MAOP) housed in the College of Agriculture and Life Sciences, which offers a set of programs designed to attract and retain minority students in agriculture, natural resources, the life sciences, and related fields.

Theoretical Framework

The theoretical framework for this study is based on Fishbein and Ajzen (1975) who determined that intentions to participate in an activity could be predicted based on knowledge, observation, or other information regarding a specific issue. In this study, minority students' intent to major in agriculture or become involved in an agricultural career may be predicted by analyzing their belief about agriculture and their experience. Greenwald (1989) supported this theory by reporting that individuals with positive attitudes toward a subject or situation tend to evaluate them positively. Minority students are scarce in the agricultural sciences and there must be some reasons as to their lack of representation when so many opportunities are available for them.

Minorities are under-represented in the agricultural sciences and in agricultural professional roles (Wardlow, Graham, & Scott). Minorities experience more barriers to enrolling in agricultural courses and have more negative attitudes toward agriculture and agricultural occupations (Talbert & Larke, 1992). The road to professional status in the agricultural industry is through formal education, namely at land-grant institutions which offer and provide the resources. According to Bekkum (1993), the agricultural industry places considerable importance on the background and experience of graduates. The primary forum and recruitment tool for agricultural professionals is through 1862 land-grant institutions because they are the largest and most widespread.

Enrollment at land-grant universities, agricultural industries, occupations, and government may be increased if there is documentation and justification as to why minorities are not pursuing degrees in the agricultural sciences and pursuing occupations where there is opportunity for them. Research has shown that the minority experience is different from that of their white counterparts. In order to improve recruitment, agricultural educators must understand what motivates students to enroll in agricultural science programs. Faculty within colleges and universities use past research on college choice to develop methods to recruit students. They consider the factors that students' rate as most important when marketing the campus and their respective programs (Chapman, 1981). Colleges and academic departments within the university work hard to recruit students who qualify for admission and students who have the ability to succeed in the different programs that are offered. More efforts are needed for recruiting minority students in agricultural higher education programs due to their culture and learning environment.

Statement of the Problem

It is in the author's opinion that for change to exist, it is imperative that we diversify the agricultural sciences as well as other fields. The researcher feels that some of the reasons that agriculture, along with other science-oriented fields, needs to be diversified are because: (a) it is the diversity of the scientists' backgrounds that causes science to grow; (b) when not represented, researchers leave out a portion of the people they intend to serve; (c) it develops an open-mind in the field, and can help to increase tolerance across the nation; and (d) it enriches both the undergraduate and graduate experience.

The factors influencing the enrollment of minorities into agricultural science programs at 1862 land-grant institutions is a concern, especially as the nation becomes more diverse and moves into the 21st century. There has not been any prior research conducted on the factors that influence minorities to enroll in agricultural science programs at 1862 land-grant institutions. As agricultural educators, we need to understand the concerns and issues that minority students face within the program. This study will attempt to gather data on the perceptions of minority students enrolled in the agricultural sciences at Virginia Polytechnic Institute and State University (Virginia Tech), an 1862 land-grant institution.

Purpose of the Study

The purpose of this study is to identify the factors that most influence African Americans and other minorities to enroll in agricultural science programs at Virginia Tech. It is intended that this study will provide the groundwork for the development of a conceptual framework giving implications for the recruitment and the minority experiences in the agricultural sciences. The many contributions that African Americans have made to the field of agriculture are well documented and chronicled in the review of literature. To increase the numbers of African Americans and other minorities in the agricultural sciences, it is imperative that administrators, colleges of agriculture faculty, and other faculty and staff members identify the reasons behind the limited number of minorities enrolled in agricultural programs at 1862 land-grant institutions.

Research Questions

1. What are the factors that influence minorities to enroll in agricultural science programs?
2. What are minority students' perceptions of their relationship with professors and other students within the department?
3. What is the level of minority students' satisfaction with their agricultural science program experience?
4. What are the demographic characteristics of minority students enrolled in the agricultural sciences at Virginia Tech?

Significance of the Study

The data in this study are important in allowing current agricultural educators, administrators, and other faculty personnel to gain a better perception of the recruitment process of minorities. In addition, the study will help to alleviate the past problems of recruiting and provide a means for producing an increase of minority students in the near future in all agricultural programs and enhancing their success. As agricultural scientists, we must understand that the world is vastly changing and understand the concerns and potential barriers that minority students face within our respective programs. According to the Hudson Institute (cited in Michael-Bandele, 1993, p.23), "the years ahead will demand an understanding of, and the ability to interact with people from varied cultural backgrounds." This study will help to serve as an aid in the minority thought process upon selecting agricultural science as a major. After the completion of this study, the data will be disseminated through educational journals, newspapers, and the Internet and presented at conferences to help educators and other professionals develop solutions to recruit minorities within their programs.

Definition of Terms

The researcher has identified the following terms in an effort to assist the reader in comprehending the contents of this study:

Agriculture*:* The science or art of cultivating the soil, the production of crops, and the raising of livestock.

Agricultural educators*:* Professionals who have expertise in teaching high school or post-secondary agriculture courses and conducting research.

Agricultural science programs*:* Programs (i.e. animal science, plant science, soil science, general agriculture, food science, agricultural education, and forestry) that are taught at 1862 land-grant universities.

African Americans*:* Persons of African descent who were born in the United States or became naturalized citizens of the United States.

Minorities*:* In this study minorities will refer to African Americans, Hispanics, Asians, and American Ind./Native American.

Predominately white institutions (PWIs)*:* Colleges and universities where African-Americans and other minorities are not the majority ethnic race enrolled at the institution.

1862 land-grant institutions*:* Institutions of higher education established in the United States under the provisions of the Morrill Act. The Act authorized the granting to each state of 30,000 acres of public land for each senator and each representative of the state in Congress at that time. The lands were provided to be sold or used for profit and proceeds used to establish at least one college per state. The emphasis stressed at these universities is to promote scientific and classical studies, including military tactics to teach branches of learning related to agriculture and mechanic arts (FAEIS, 1999).

Limitations

1. The data collected from this study only included minorities from one 1862 land-grant institution. It is possible that minority student responses from other institutions would differ from the ones used in this study based on the location and programs available.
2. This study was limited to minorities who are enrolled at one 1862 land-grant institutions in agricultural science programs such as agricultural education,

general agriculture, poultry science, animal science, crop and soil science, agronomy, agricultural business management, agricultural economics, aquaculture, international agriculture, agricultural mechanics, and agricultural engineering.

Despite the limitations that have been identified, this study is pertinent because it will allow agricultural educators, administrators, and other faculty at institutions of higher learning to have a better perception of the factors that influence minorities to enroll in agricultural science programs. The conclusions and recommendations drawn will be disseminated throughout educational journals to serve as an aid to help other researchers in their quest to acquiring data on the decisions and choices that minorities make when enrolling in any program. Furthermore, the data will reveal some of the issues that minorities face within the program and the relationships that they have developed with their advisor, instructors, faculty, administrators, and students within the department.

Organization of the Study

This study is organized into five chapters:

Chapter I. INTRODUCTION

This chapter provides a brief overview of research related to the demographic shifts and anticipated increase of minorities in the U.S. It also gives statistics as to the number of minorities enrolled in institutions of higher learning and how the agricultural curriculum has suffered from a one-sided ethnic view over the years with a lack of minority students enrolled. This chapter serves as a general introduction to the potential factors that may influence minorities to enroll in agricultural science programs at 1862 land-grant institutions.

Chapter II. REVIEW OF LITERATURE

This chapter provided a review of the literature related to the problem of recruiting minorities into agricultural science programs. It also gives a brief history of the creation of 1862 land-grant institutions and their mission, purpose, and commitment to attracting minorities to the programs they have available. Additionally, Chapter II cites and identifies related research that the investigator feels is pertinent and important and connects to the factors that influence the enrollment of minorities in agricultural science programs at 1862 land-grant institutions.

Chapter III. METHODOLOGY

This chapter reports the methodology employed by the researcher. It entails the design of the study, the sample selection, instrumentation used to collect data, data collection process, and the procedures and statistical program used to analyze the data.

Chapter IV. FINDINGS

This chapter gives a brief overview of the study, information and methods employed by the researcher to collect data, methods used to analyze the data. Chapter IV will report the findings found of the study by presenting tables.

Chapter V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter gives an overview of the entire study by discussing and restating the problem, purpose, and objectives of the study. Chapter V will draw conclusions and discuss the results and major findings identified by the researcher. The chapter will also offer recommendations for policy and practice and implications for future research.

CHAPTER II

REVIEW OF THE LITERATURE

The review of literature in this study covers eight aspects: (a) development of agriculture in the U.S., (b) creation and mission of land-grant institutions, (c) African Americans in agriculture, (d) college enrollments, (e) experiences of minorities on college campuses, (f) minorities in agricultural professions, (g) Virginia Tech's commitment to diversity, and (h) views on future minority recruitment.

Development of Agriculture in the United States

In 1862, almost 50% of all U.S. residents lived on farms, and almost 60% of the labor force worked on them (National Research Council, 1995a). President Abraham Lincoln was considered a fierce supporter of agriculture and that eventually led him to the establishment of the United States Department of Agriculture (USDA) in 1862. During his term, the majority of the citizens were farmers. These citizens lacked knowledge and skills to be successful contributors to the agricultural industry that one day would require them to be successful farmers. Lincoln thought of the USDA as a mentoring tool established to promote scientific farming practices to persons that would enable them to be highly productive farmers. He often referred to the USDA as the "people's department," which provided information on subjects connected with agriculture, seeds, plants, and monetary support to aid farmers in growing their crops and raising their animals. Other sources of monetary support existed with the implementation and passing of governmental acts created by Congress, and the establishment of different agencies and organizations with the purpose of helping to strengthen the field of agriculture. The business of the day was agriculture, and certain legislation helped to promote it throughout the land.

The Homestead Act was created in 1862 to give 160 acres of public land to men at least twenty-one years of age or head of a family. The settlers were to make improvements or have lived on the land for at least five years before the agreement was to become valid. The Homestead Act was an historical act because it provided an opportunity for the common person to own land, develop pride and freedom, which is the foundation of our current farming industry.

The Hatch Act of 1887 authorized the payment of federal funds to each state to establish an experiment stations in connection with the land-grant institution. Its purpose was to:

> . . . aid in inquiring and diffusing among the people in the U.S. useful and practical information on subjects connected with agriculture and promote scientific investigation in experiments respecting the principles and applications of agricultural science (Prawl, 1984, p. 18).

The experimental stations were established to help farmers learn the most effective and profitable ways of improving crop yields, disease control, and animal production on their farms. Through research, farmers were able to obtain valuable information that would enable them to become more productive producers of agricultural products.

The Smith-Lever Act of 1914 extended the benefits of federal aid to those colleges established under the Morrill Acts of 1862 and 1890. Its purpose was to:

> . . . inaugurate in connection with these colleges, Agriculture Extension work which shall be carried on in cooperation with the USDA in order to aid in diffusing among the people of the U.S. useful and practical information on subjects relating to Agriculture and Home Economics and to encourage the application of the same (Eddy, 1957, p. 7).

The Smith-Lever Act was designed to eliminate much of the duplication of extension efforts among the colleges, the USDA, and other governmental agencies by creating one organization. The Cooperative Extension Service (CES) is one of the largest educational organizations that address the world's changing society. Known in the beginning as the Agricultural Extension Service, states changed to CES to reflect the mission and function of the organization. Numerous laws have been passed relating to the Cooperative Extension Service (CES) since the Smith-Lever Act. New Legislation has authorized Extension activities to include 4-H club work and education in rural health (Sanderson, 1988). During the 1920s, Extension was active in helping to organize farm cooperatives and purchase fertilizers, feed, and aid in the sale of crops and livestock. Many of the programs that were created continue to operate today (Sanderson, 1988). The Cooperative Extension Service served as a link for educating rural America.

In 1917, Congress further defined the federal role in agricultural education with the passage of the Smith-Hughes Act, which included special provisions for agricultural education (National Research Council, 1988). The Smith-Hughes Act of 1917 provided federal funds to support the teaching of agriculture. The passage of this act marked the point at which vocational agriculture diverged from and largely replaced general agricultural education in the schools. The vocational agriculture programs that developed after the Smith-Hughes Act were intended to prepare young people to work as farmers. The programs created by the Act did more than prepare young people to be farmers, they also helped to spread knowledge throughout farming regions about how and when to use agricultural innovations and which soil and animal husbandry practices might overcome longstanding problems (National Research Council, 1988).

The Creation and Mission of Land-grant Universities

America's land-grant universities offer an environment that can match the needs and interests of every type of student. As the people's universities, these institutions offer access and opportunity to millions of Americans--opening doors to a better life for many who might otherwise be denied a college education (Gray, 1997). Since 1862, the nation's state and land-grant universities have played a pivotal role in the development of our democratic society. Gray (1997) noted that these institutions are committed to providing students with challenging opportunities that enrich both their professional and personal lives and to offering a curriculum that provides both a liberal arts and a practical education.

Over the years, land-grant status has implied several types of federal support. The Morrill Act of 1862, also known as the Land-grant College Act, stimulated the states to create public universities to help develop the vast natural resources of the nation through agricultural extension programs and engineering experiment stations, while broadening opportunities for education to the working class. Its purpose was to:

> . . . establish at least one college in each state where the leading object shall be, without excluding other scientific or classical studies, to teach such branches of learning as are related to agriculture and the mechanic arts, as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life (Eddy, 1957, p. 31).

The Morrill Act also provided each state with 30,000 acres of public land for each Congressman and U.S. Senator. The land was to be sold and proceeds placed in a fund to provide support for a land-grant college in each state. Introduced by a Vermont congressman named Justin Morrill, the mission of the act was to educate citizens in the areas of agriculture, home economics, and the mechanical arts. Congressman Morrill wanted to finance these fields and provide an education for all social and ethnic classes. The passage of the first Morrill Act reflected a growing demand for agricultural and technical education in the United States and provided U.S. citizens with practical education that had direct relevance to their daily lives.

In the beginning, not everyone benefited from the land-grant system. Although the first Morrill Act provided for educational facilities, blacks were not permitted to attend the original 1862 land-grant institutions. Mississippi and Kentucky were the only states to establish institutions for Black Americans. Under the act, Mississippi's Alcorn A&M College (presently Alcorn State University), established in 1871, was designated as the only black land-grant institution in the country. From 1866 to 1890, several southern states established normal schools to train black teachers (Jones, 1975). Although many of these institutions were similar to land-grant institutions, the federal government was unable to gain cooperation from the southern states in the provision of land-grant support to the black institutions. For blacks, this signified a road to many changes that would be made in the future.

A Second Morrill Act was enacted in 1890 with the sole purpose of establishing and providing support to Negro Land-Grant Institutions in 17 southern states. These schools were referred to as 1890 institutions. The U.S. Congress appropriated $10,000 annually, which was to be matched by each southern state. The 1890 institutions evolved into a major educational resource for the nation. For over a century, they have provided a principal means of access to higher education for black men and women for the economic, social, and political challenges of America. Gray (1997) reported that the majority of African Americans who hold Ph.D. degrees, medical degrees, law degrees, federal judgeships, and officer rank in the U.S. military did their undergraduate work at these institutions. Every year about one-third of all African- Americans who get a college degree graduate from these schools, even though they enroll only 16% of all African-American college students.

The philosophy of land-grant universities has become the foundation of America's agricultural success for over 125 years. The combination of teaching, research, and extension has improved the economic success of millions of Americans. Faculty at these institutions spend the majority of their time teaching and engaged in research and scholarship activities. Research conducted at state and land-grant universities has touched the lives of every American by improving the environment, food supply, creating cleaner energy resources, reducing pollution, and promoting better health and human development. Many of these research projects are translated into the classroom environment, giving undergraduate students opportunities to work with great scholars. The Morrill Acts have been a major educational tool and resource for America over the years by helping to prepare students for the workforce upon leaving the classroom with knowledge that has enabled them to change the face of our country and world. Today, America's land-grant institutions continue to fulfill their mission of educating students and service to the people. Through land-grant heritage, millions of students are able to study a variety of academic disciplines, far beyond the scope envisioned in its original mission.

African Americans in Agriculture

African Americans and other minorities are under-represented in many agricultural programs and occupations, though many minority groups can trace their history through the crop fields. Blacks who were once slaves began to farm upon being freed after the signing of the Emancipation Proclamation of 1863. After the Civil War, agriculture and farming were the main sources of income to support families. As a result of the opening of some institutions, African Americans began to become enlightened on some issues and methods that they used to plant, grow, and produce higher crop yields that led to their success in farming.

Booker T. Washington was one of the most influential African Americans who supported the teaching of agriculture. An educator, leader, and advocate for vocational education, Washington believed that blacks could benefit more from a practical, vocational education rather than a college education. In 1881, Washington founded and became head of Tuskegee Normal and Industrial Institute, a vocational school for blacks in Tuskegee, Alabama that promoted the pursuit of specific vocational skills and development of proper manners and good morals (World Book, 2000). Under Washington's leadership, the school became one of the leading African-American educational institutions in the United States. In 1890, with approximately 57% of the African-American race illiterate and only 121,000 of the 1,689,000 blacks engaged in agriculture owning the land they tilled, Washington concluded, “the great body of the Negro population must live in the future as they have done in the past, by the cultivation of the soil and the most helpful service now to be done is to enable the race to follow agriculture with intelligence and diligence” (Washington, 1904 p. 18). Washington was also recognized as an eloquent speaker and a leader in the black community and emphasized the great need of training African Americans in agriculture and quoted in his speech, *Industrial Education for the Negro* (1903) as saying:

> We must incorporate into our public school system a larger recognition of the practical and industrial elements in educational training. Ours is an agricultural population. The school must be brought more closely to the soil. The teaching of history, for example, is all very well, but nobody can really know anything of history unless he has been taught to see things grow - has so seen things not only with the outward eye, but with the eyes of his intelligence and conscience. The actual things of the present are more important, however, than the institutions of the past. Even to young children can be shown the simpler conditions and processes of growth - how corn is put into the ground - how cotton and potatoes should be planted - how to choose the soil best adapted to a particular plant, how to improve that soil, how to care for the plant while it grows, how to get the most value out of it, how to use the elements of waste for the fertilization of other crops; how, through the alternation of crops, the land may be made to increase the annual value of its products - these things, upon their elementary side are absolutely vital to the worth and success of hundreds

> of thousands of these people of the Negro race, and yet our whole educational system has practically ignored them. Such work will mean not only an education in agriculture, but also an education through agriculture and education, through natural symbols and practical forms, which will educate as deeply, as broadly and as truly as any other system which the world has known. Such changes will bring far larger results than the mere improvement of our Negroes. They will give us an agricultural class, a class of tenants or small land-owners, trained not away from the soil, but in relation to the soil and in intelligent dependence upon its resources (pp. 22-23).

Washington presided over the institution until his death. Tuskegee Institute provided educational opportunities for many blacks, which would not have existed without his leadership. Though Washington did great deeds and was respected within the African-American race, he remains one of the most controversial subjects of African-American history due to his theory of practical and vocational education.

Charles Greene, a graduate of Hampton Institute was brought to Tuskegee Institute in 1888 by Booker T. Washington to serve as superintendent of the school's farm. Known as, "Farmer Greene," he found an opportunity to teach students and local black farmers lessons in the best methods of farming and to develop a number of ideas in farming methods and techniques. Greene taught the students to plant and put out onion sets in the fall, introduced some important forage plants among local farmers, and was the first to put out Bermuda sod as a pasture at the school (Jones, 1975). Greene's work helped to lay the foundation for the establishment of a definite course of study in agriculture and research in the Tuskegee Department of Agriculture.

George Washington Carver was another individual who brought much recognition to the field of agriculture. Carver was a black chemist and scientist who won international fame for his agricultural research. As a young boy, he showed a keen interest in plants and a great desire to learn and later attended Iowa State Agricultural College (now Iowa State University) pursuing a degree in agriculture. Booker T. Washington, founder of the Tuskegee Normal and Industrial Institute for Negroes, convinced Carver to come south and serve as the school's director of agriculture. In 1896, Carver moved to Alabama to join the faculty as head of the Tuskegee agricultural department and director of a state agricultural experiment station. At Tuskegee, Carver directed his attention toward soil conservation and other ways to improve crop production. He also studied and researched peanuts enabling him to develop over 300 uses that led to lectures throughout much of the country in an effort to promote peanuts. He wrote pamphlets and bulletins on applied agriculture and distributed them to farmers across the nation. Carver also began to teach more productive agricultural practices to Southern farmers, particularly black farmers through conferences, traveling exhibits, demonstrations, and lectures. Upon his death, Carver contributed his life savings to establish a research institute at Tuskegee.

Over the years, minority ownership of farms and the number of minority farmers have decreased drastically. From 1920 to 1992, the number of minority owned farms has decreased from 925,000 to 18,000. Ford (1998) noted that much of the decrease could be attributed to the large number of factory jobs and larger salaries that were readily available. Traditionally, factory jobs have provided for a reliable income, whereas income from farming was dependent on weather and other conditions beyond the control of the farmer. Fearing that farming would not provide enough income for raising a family, many farmers moved away from the land and toward more urban areas (Ford, 1998). Booker T. Washington and George Washington Carver, along with other faculty at Tuskegee Institute, were instrumental in their efforts to emancipate the black farmer from agricultural ignorance. Today, statistics indicate that less than two percent of the workforce are farmers, and only one percent of that group consists of African Americans. Fewer students attending land-grant universities have farm backgrounds, whereas 25 years ago the majority of the students had farm backgrounds (Morgan, 2000). The farm that was once a priority seems to be just a memory.

College Enrollments

According to national data reported by the Patterson Research Institute of the College Fund/ UNCF (1997), African Americans continue to be under-represented in the traditional college-aged populations despite increased college and university enrollment rates from 1976 to 1994. In a study entitled, *The Changing Racial/Ethnic Demography of the United States* (1998), college participation rates among all high school graduates (43.4% in 1996, an increase from 37.7% in 1990) are the highest ever recorded. Significant differences, however, exist between groups of students, which reflect differences in access to, and persistence in higher education. For example, in 1996, the college participation rate for African Americans age 18-24 was 35.9%, an increase from 30.4% in 1990. Latino students made even greater gains: in 1990, the college participation rate stood at 16.8% and increased to 34.5% in 1996. The college participation rates for both groups, however, are well below those for white students:

45.1% of white high school graduates age 18-24 were enrolled in college in 1996 (NCES, 1997b)

College enrollment of Asian American students, on the other hand, surpasses that of whites: 55.1% of 18-24-year olds were enrolled in college in 1990. Within this group, however, college enrollment rates vary significantly. For example, in 1990, 66.5% of Chinese Americans within the 18-24-year-old Asian population enrolled in college, compared to 26.3% of Laotian Americans. Asian-American students were also more likely than African Americans and Latinos to enroll in four-year institutions. Of the Asian American students enrolled in college, 60% were at four-year institutions compared to 58% of African American college students and 44% of Latino college students (Carter & Wilson, 1997).

Similar to differences in college participation rates, racial/ethnic groups also differ in their rates of college completion. Of those who graduated from high school in 1990 and entered college seeking a bachelor's degree, by 1994, 69% of Asian American students either completed their degrees or were still enrolled, compared with 65% of the white students, 53% of the African American students, and 54% of the Latino students (Carter & Wilson, 1997).

Baccalaureate Minority Participation

The Food and Agricultural Education Information System (FAEIS) (1999) reported that minorities comprised 16% (19,378 of 121,070) and Caucasians (non-Hispanics) comprised 82.9% (100,361 of 121,070) of the total baccalaureate students enrolled in the fall 1999 semester at land-grant universities. Some other major findings were:

- The academic area with the largest percent of African American enrollment also contained the largest percent of Asian and Hispanic enrollment. With 19.3% (896 of 4,646) of the African American enrollment, related biological/physical sciences was the agricultural program academic area with the largest percent of African Americans. It was also the academic area with the largest percent of Asian students with 25.6% (1,509 of 5,897).
- The agricultural program academic area with the largest percent of Hispanic students reported was animal sciences with 15.6% (893 of 5,723).
- Almost 40% of Native-American enrollment was reported in two academic areas: Animal Sciences with 19.9% (213 of 1,071) and natural resources with 19.4% (208 of 1,071).
- Minority enrollment in agricultural, renewable natural resource and forestry programs comprised 13.8% (15,022 of 109,099).

There were 15,022 minorities enrolled in agricultural baccalaureate programs in the fall of 1999. Data in Table 2.1 show the enrollment by the ethnicity and Table 2.2 shows the minority enrollment by academic area.

Table 2.1

Baccalaureate Minority Enrollment in Colleges of Agriculture, Renewable and Natural Resources, and Forestry for the Fall Semester of 1999

Ethnicity	Minority Percentage	Percentage of Total Enrollment
Asian	29.0	4.0
Hispanic	28.7	4.0
African American	24.2	3.3
Unspecified Minorities	11.4	1.6
Native American	6.3	0.9
Native Hawaiian	0.4	.05

Table 2.2

Baccalaureate Minority Enrollment by Academic Area for Minorities in the Colleges of Agriculture, Renewable and Natural Resources, and Forestry for the Fall Semester of 1999

Academic Area	Percentage	Number of Minorities	Total Enrollment
Related Biological/ Physical Sciences	27.2	3,548	13,034
Food Sciences	26.2	1,282	5,678
General Agriculture	16.3	1,080	6,638
Soil Sciences	5.8	466	8,026

Trend information for baccalaureate minority enrollment has slightly increased over the years. The FAEIS (1999) reported that minorities in all baccalaureate programs administered by colleges of agriculture and, renewable natural resources and forestry has increased by over 12,000 students since 1990. Minority participation increased 7.0% between 1990 and 1999. In 1990, only 6.5% (5,527 of 84,728) compared to 3.8% (15,022 of 109,099) in 1999 of baccalaureate students were classified as minorities. Overall, enrollment in baccalaureate programs in agricultural programs has increased since 1990. Although there has been an increase in minority participation in agricultural programs, there presence is very small.

Summary of 1862 Land-grant Enrollment

The FAEIS (1999) reported that 1862 Land-grant Colleges of Agriculture, Renewable Natural Resources and Forestry enrolled 119,034 students in the fall semester of 1999 (FAEIS, 1999). Minority students comprised 13.5% (11,349 of 83, 788) of the enrollment in agricultural, renewable natural resources and forestry programs. Of the 11,349 minority students enrolled in baccalaureate programs, Tables 2.4 and 2.4 show percentages by ethnicity and academic disciplines at 1862 land-grant universities:

Table 2.3

Baccalaureate Minority Enrollment in the Colleges of Agriculture, Renewable and Natural Resources, and Forestry for Fall Semester of 1999 at 1862 Land-grant universities

Ethnicity	Percentage	Percentage of Total Enrollment
Asian	35.0	4.7
Hispanic	27.6	3.7
African American	19.9	2.7
Unspecified Minorities	11.1	1.5
Native American	6.3	0.9

Table 2.4

Baccalaureate Minority Enrollment by Academic Area in the Colleges of Agriculture, Renewable and Natural Resources, and Forestry for the Fall 1999 Semester at 1862 Land-grant institutions

Academic Area	Percentage	Number of Minorities	Total Enrollment
Related Biological/ Physical Sciences	25.4	3,203	12,614
Food Sciences	22.2	1,036	4,674
General Agriculture	18.6	843	4,532
Soil Sciences	5.8	466	8,026

On the graduate level, minorities comprised 9.9% of the total graduate enrollment (2,098 of 21,233). Of the number of minorities enrolled in graduate programs, areas with the largest number of minority graduate students were: related biological physical sciences with 416, food science/human nutrition with 260, and natural resources with 253 minorities enrolled. Some other major findings related to minority graduate students were:

- At the master’s level, 986 minorities were enrolled of 10,914 for an overall 9.0% participation rate.

- Asians comprised the largest number of master's degree enrollment with 283, while Hispanics represented the second largest number of students enrolled with 248.
- At the doctoral level, minorities comprised 10.8% (1,112 of 10, 319) of the total enrollment.

The percentages differ little from the national percentages. Minority participation at 1862 land grants has increased (5.2% in 1990 and 13.5% in 1999) over a 10-year period. The FAEIS (1999) report represented 51 of the 59 1862 land-grant institutions.

Experiences of Minorities on College Campuses

Over the past years, researchers have paid a considerable amount of attention to the impact of attending historically black colleges and universities (HBCUs) versus attending predominately white institutions (PWIs). Much that has been written on the experiences of African-American college students addresses the racial discrimination that many have faced while attending PWIs. Numerous researchers have commented on the difficulties many black students face at PWIs due to racism and a lack of supportiveness.

Davis (1991) studied the importance of social support networks and minority undergraduate student academic success related outcomes. Davis contended that social support positively related to health and well-being. The more social support received from close relationships with family, friends, acquaintances, co-workers, and the community, the better the individual's well-being. Fleming (cited in Davis, 1991) indicated that partly due to differences in social support, African Americans at HBCUs differ in their intellectual and psychological development from African Americans at PWIs. Students at HBCUs develop closer relationships with faculty and students, have a greater satisfaction with their academic lives and performance, are more involved with organizations, and have a greater desire to succeed. Students were also more social and adjusted better to campus life and experiences, whereas at PWIs students tended to be separated, less social, and to themselves. Fleming (cited in Davis, 1991) noted that African Americans at PWIs reported dissatisfaction with their academic lives and experience and negative attitudes toward teachers whom they felt were unjust when it came to grading and were not supportive of them in their efforts to achieve. In addition, African Americans at PWIs did not have a mentor and had limited academic aspirations for achievement.

Faculty interactions with students

According to Williams (1989), undergraduate black students often express that they frequently use faculty advisors, especially when registering for courses, arranging their schedules, and for other general concerns such as academic guidance. Often, students preferred to interact with faculty outside of class because they had problems and concerns that were not related to academics. Williams (1989) reported that most students met with their advisors at least twice per semester and were satisfied with the results of the meetings. He also found that some students did not know their assigned advisors, felt that their advisors did not want to advise them, offered no help, and advised them to take courses they did not need, or advised them to take courses that were too difficult. Williams (1989) concluded that students with high grade-point averages at the end of their first semester or at the end of their second semester met with their advisors once per semester or not at all. However, they wanted to know that an advisor was available if needed. Students also reported that they felt that their advisors were necessary because of their counsel pertaining to academic load and schedule. Watson and Kuh (1996) noted that informal contacts with faculty and administrators play vital roles in academic success of African-American students. A study by Davis (1991) found that African Americans at PWIs are forced to rely on white students and professors in making adjustments in their departments. In his findings, he showed that professor/student/staff relations are strong predictors of satisfaction with campus life for African Americans at PWIs and HBCUs.

Cokley (1999) noted that African-American students have more contact with professors at HBCUs than PWIs. Trujilllo (1986) discovered in his research that Caucasian instructors paid less attention to African-American students and often ignored them in class, whether consciously or unconsciously. This was especially true when the representation of African Americans was low.

Howard-Hamilton (1997) recommended to educators and administrators to learn to infuse student development theories that are applicable to the African-American culture in that they are able to empower and motivate African Americans to succeed on college campuses. Other authors (Harris, 1995; McEwen, Roper, Bryant, & Langa, 1990) have pointed out that many of the present student development theories are not applicable for African-American students due to cultural differences. When attempting to infuse developmental issues of African Americans in existing theories. McEwen, Roper, Bryant, and Langa (1990, p. 430) suggested the following:

1. *Developing ethnic and racial identity:* inculcating ethnic diversity, information, and facts of African self-consciousness development.

2. *Interacting with the dominant culture:* discussing acculturation, assimilation, and association with white students on campus.

3. *Developing cultural aesthetics and awareness:* understanding and appreciating other's cultures as well as one's own.

4. *Developing identity:* enhancing one's own unique and diverse characteristics, societal interaction, and group identification.

5. *Developing interdependence:* establishing personal relationships amid some separation from immediate family but with development of extended campus family.

6. *Fulfilling affiliation needs:* satisfying African-American students' social needs outside the campus community.

7. *Surviving intellectually:* challenging African-American students to compete with those who had educational privileges preparing them for the academic rigors of college.

8. *Developing spirituality:* understanding the role and importance of religion and spirituality in the growth and development of African Americans.

9. *Developing social responsibility:* coming face-to-face with real and perceived social inequalities, thus becoming social advocates on campus.

Climate and environment

The 1954 *Brown vs. Board of Education of Topeka Kansas* was a monumental court decision that dramatically changed the demographic landscape of higher education (Allen, 1992). The *Brown* case mandated that all public educational divisions abolish their segregation policies and enroll minority students in their respective institutions (Scott, 1995). After the mandate, PWIs developed recruiting initiatives and educational opportunities to attract talented African-American students to their institutions (Davis, 1998; Tidwell & Berry, 1993; Townsend, 1994). Unfortunately, many of African-American students found it difficult to adjust to the environment.

African-American students at PWIs sometimes feel the burden of discrimination. PWIs can be a hostile and non-supportive environment for African Americans, although many still attend and have graduated from them. Fleming (1984, p. 24) found that in white institutions, "from a theoretical point of view, black students experienced feelings of disconnectedness and that a process of alienation could be observed." These students did not report that they experienced academic and social integration or feelings of belonging. These students were perplexed because they were admitted with good academic credentials and did not expect to experience feelings of an outsider. These negative experiences thwarted academic development because the environment was not inviting. Fleming concluded that faculty involvement could probably reverse these negative experiences by engaging the students in college activities that would utilize their intelligence, enthusiasm, and energy.

Dezmon (1995) conducted a study of school climate and academic achievement. In the study, she observed and noted the school's climate as the students' perceptions and satisfaction with staff members, school facility, and the academic environment. According to Dezmon (1995 p. 34) these factors are grounded in the "values, beliefs, and norms of a school, which together comprise the educational environment of a school." Dezmon reported that students found the school's climate unsatisfactory.

Many African Americans have not been educated in the white setting and find themselves with having a problem adjusting, and many find themselves coping with issues in which they have limited or no social support. Davis (1991) indicated that African Americans use support systems to help buffer many social, psychosocial, and academic difficulties that are apart of the campus life. He concluded that support systems maintain individual self-esteem and life satisfaction, increase social and academic competence, and help in contending with the difficulties of stress. Fishbein and Ajzen (1975) determined that intentions to participate in an activity could be predicted based on knowledge, observation, or other information regarding a specific issue. In addition to the findings, Nettles (1987) suggested that the needs of African Americans and Caucasians are different. Nettles (1987) believed that PWIs have fallen short in meeting the needs and expectations of African-American students, particularly in providing social support. "Because social adjustment and interpersonal climate seem to be central factors in many African Americans' satisfaction and success at PWIs, educators and administrators must understand how these issues operate to develop effective interventions for these individuals" (Schweitzer et al., p. 190).

Financial Aid

African Americans have a strong desire to attend college, however, the unavailability of financial aid often limits their attempts (Bracey, 1992, Council on Education, 1989). Gibbs (1988) reported that the college persistence rates of black students are associated with family financial status. Gibbs reported that black and Hispanic students leave undergraduate school more frequently for financial reasons. Gibbs (1988) maintained that in the mid 1970s, 38% of black students withdrew compared to 23% of white students due to having financial aid problems. If the numbers are to increase, there needs to be more funding allocated for minorities to pursue higher education. There is also a need for high school guidance counselors to play a more important role by letting the students know what is available to them.

Culture

McCray (1994) noted that culture refers to the totality of the ways of life of a people and includes the basic conditions of existence, behavior, style of life, values, preferences, and the creative expressions that emanate from work and play. It is a tool-kit that provides people with stories, symbols, and world-views that will enable people to solve problems that they may encounter. Gibbs (1988) poised the question, would it remain necessary to implement programs to enrich a specific ethnic group? According to Gibson and Ogbu (1991), how students handle cultural differences depends on how school officials integrate those differences into the mainstream culture. As early as 1903, DuBois felt that it was too bad that we have to use the word “cultural” for so many meanings. In modern scientific thought, it means that millions of men and women who for three centuries have shared common experiences, common sufferings, and have worked many days and nights for their survival and progress must not be lost. Education is a one way to overcome obstacles and prepare for the future. When students are involved in learning, they are able to capitalize off their negative experiences motivating them to doing better. By knowing their history, African Americans realize that they have accomplished much but will still have obstacles to face. They realize that the only way for them to make changes is if they receive a college degree and serve as change agents helping to help others along the journey.

Wardlow, Graham, and Scott (1995) conducted a qualitative study on minorities' perceptions of agriculture, the influencers in the career-decision making process, and the barriers encountered by minorities pursuing education and careers in agriculture. In nearly all the cases in this study, many were influenced to pursue agriculture while in high school and college by professionals in the field. Community based professionals in agriculture, such as a high school agriculture teacher or an agriculture extension agent, were identified as important influencers. A respondent stated:

> I made my mind up in high school. I noticed that the Ag teacher had the respect of the students and most all of the teachers. They made more money because they worked longer. I chose agriculture when I got into college because (an agriculture professor) talked me into it. Many of my

> friends in agriculture were majoring in education. I chose that because of the people . . . and an Ag teacher in high school (p. 3).

After making the decision to continue their education, many of the respondents in the study also noted the barriers they had encountered during their pursuit of their agricultural degree. They perceived many of the barriers to be based on race. Nearly all who had studied agriculture at a PWI reported encountering race-related bias in college classes. One respondent stated:

> I went to a predominately white institution, so it was definitely some isolation that occurred there. I had one instructor who, once he found who I was (African American), I had made the highest score (previously in class)…I had a very difficult time making a "C" after that (p. 4).

A second respondent described a similar situation at an 1862 land grant institution:

> You walk in the classroom and the teacher tells you point blank, " You are going to make a "C." It makes no difference, you can make straight one hundreds on the tests, and they're going to find something wrong with your paper (p. 4).

A third respondent described his experience in a college class:

> When I started class, the teacher looked up at me and said, "I see two D's and a possible F." I looked around the room and there wasn't but two minorities in there and I realized who he was talking about (p. 4).

A fourth respondent described his experiences with instructors in university classrooms:

> They talk to the other side of the room and never talk to your side. The way they never ask you a question and assume you don't know the answer. You may know the answer, but they don't even give you the chance to give you the chance to give the answer. You really can't put on paper what people are doing to you, but you can feel it if you are in that class (p. 4).

The majority of the participants studied believed that adults with whom they came into contact often had an impact on their decision. They furthur noted that influence may not lead to an immediate decision to enroll in agricultural programs. According to the participants, minority youth tend to follow the experiences of successful older youth from the community. They discussed a "pipeline effect" in which students would pursue specific studies at specific institutions if older peers have had positive experiences in those institutions. They agreed that negative experiences could affect the pattern in a negative way. The respondents in this study also believed that it was important for students to see agriculture as providing good economic opportunity for a career, and that the general level of awareness about agricultural opportunities must be raised by providing more exposure of youth to successful agricultural professionals. Teachers were identified as a great influence and the need for minority agriculture teachers in high school was voiced. Adults in the study felt that students are in need of role models and that minority agriculture professionals should be available to serve as role models.

According to Fordham and Ogbu (1986), African-American students have a limited amount of established resources to affirm their identity and to connect with their cultural heritage at PWIs. As a result, African Americans often find it "necessary to create their own cultural networks to remedy their exclusion from the wider White-oriented university community" (Allen, 1992, p. 29). Willie and McCord (1972) found that African-American students expected more than they were actually receiving from PWIs. The authors also found that this contributed to African-American students segregating themselves from other groups.

There is little doubt that African Americans in this country are different in major aspects from other ethnic groups. There are similarities, but major differences do exist. Education has been a primary goal in the African-American community for many years dating back to slavery. During that time, if a slave were caught trying to learn to read or write, he/she was abused, punished, or killed. Today, African Americans realize that education is the most successful exit from poverty and because of their determination and strength found within, many are choosing to pursue higher education.

Minorities in Agricultural Professional Roles

The Office of Human Resources Management (OHRM) in the USDA developed a Student Employment Program Report (SEPR). SEPR is an important recruiting resource designed to help agencies eliminate the under-representation of minorities and women in the Department of Agriculture (USDA). OHRM's student report (2000) indicated that USDA's recruitment of students remained almost constant for 2000 while strides were made with efforts to hire minorities. American Indians showed a large increase in the number of students and in their percentage in the student population. American Indians represented 302 students, an 83% increase from 164 in 1999. African American students had a slight percentage increase of 1.5%. Hispanic students decreased by 2.9% overall but they increased their numbers in the Career Experience Program which leads to permanent status. White and Asian student employment remained almost constant representing 64.5% and 4% respectively. Minorities represented 35.5% of the student employment in USDA. This was an increase over last year's percentage of 34.2%. Other highlights in OHRM’s student employment report (2000) are:

- The representation of American Indians in USDA rose from 164 students in 1999 to 302 students in 2000.
- The representation of white students remained almost constant. They represented 64.5% of all students in 2000. White students numbered 3,432.

- The representation of Hispanic students in the Career Experience Program increased from 91 students in 1999 to 103 students in 2000.

- The representation of Asian students in USDA rose slightly from 211 students in 1999 to 212 students in 2000.

- The percentage of African Americans increased from 16.8 percent in 1999 to 18.3% in 2000. African Americans constitute 976 students.

The overall student employment covered in this report decreased by 14 positions from 5,334 students in FY 1999 to 5,320 students in August 2000. However, the total number of students in most minority groups increased. All minority groups increased for 2000. Data in Table 2.5 represent the student employment trend for the USDA in 1999 and 2000:

Table 2.5

Student Employment for the USDA in 1999 by Ethnicity

Year	Total	White	African American	Hispanic	Asian	Native American
2000	5,320	3,432	976	398	212	302
1999	5,334	3,512	894	553	211	164

Virginia Tech's Commitment to Diversity

Virginia Tech is one institution that is making an effort to increase the number of minorities in all academic disciplines. Each college at Virginia Tech is looking to develop a more diverse student base. The Department of Educational Leadership and Policy Studies (ELPS) in the College of Human Resources and Education has led the way in promoting cultural diversity. The department has been praised for the recruitment of students in its master's and doctoral cohorts, its curriculum, and the research projects supported by the faculty. ELPS ranks third nationally in terms of doctoral degrees conferred to minority students in education. Since its inception in 1971, ELPS has conferred over 800 doctoral degrees, with females and African Americans receiving almost 60% of those degrees (Elliot, Thomas, & Gilbert, 2000, p. 1).

In the Higher Education and Student Affairs (HESA) program offered by ELPS, many graduate assistants occupy positions in the Division of Student Affairs. The department also has a program called, "Building Bridges" in which graduate minority students in HESA travel to historically black colleges and universities (HBCU) to recruit on behalf of the university. Extended campus programs in Northern Virginia, Tidewater, and Richmond enable the department to serve an area with a large percentage of minority members. Elliot, Thomas, and Gilbert (2000) noted the current enrollment reflects this tremendous diversity: 48 African-American females, 112 white females, one Hispanic female, 31 African-American males, one Hispanic male, and 113 white males. The Counselor Education Program has also made remarkable advances in increasing the diversity of its student enrollment. Of the 25 accepted M.A. applicants in counselor education for 2000, 92% were female or minorities. Of that number, nine doctoral candidates had been accepted in counselor education for the fall 2000 semester.

The Office of Minority Engineering Programs was started in the College of Engineering in 1992. The objectives of the office are to increase the number of students from underrepresented populations who apply to, enroll in, and graduate from the College of Engineering (Conners, 2000). To increase the retention rate of underrepresented students, the office's staff provides academic, professional, and personal support programs for students. To encourage underrepresented students to enter the engineering profession, staff members try to increase the awareness within specific underrepresented groups that engineering and other technical fields provide exciting and rewarding careers. Once a student from an underrepresented group arrives on campus, the staff directs an aggressive mentoring program. Each new African American, Hispanic, and woman engineering student is invited to participate. The mentors, upper class engineering students, meet with the first-year students weekly to provide the opportunity to discuss both academic and social issues. Conners (2000) noted that new students are invited to a welcoming reception at the start of the academic year, where they meet their "team leaders" and fellow team members. Various faculty and staff members also attend to welcome the students to the College of Engineering. The mentors typically live in close proximity to those students for whom they are responsible. This encourages interactions between a student and his/her mentor on a regular basis. Finally, the office tries to foster collaborations among the university, industry, and the local community to support its mission.

The mission of Minorities Academic Opportunities Program (MAOP) and Minorities in Agriculture, Natural Resources, and Related Sciences (MANRRS) at Virginia Tech is to select, support, and encourage under-represented individuals, regardless of gender or race, to pursue and obtain academic degrees at all levels within a positive environment. The environment is to be achieved through the mechanism of providing academic, financial, psychological, and sociological support. More specifically, some of their objectives are:

- to provide a local and national network of support for students enrolled in agriculture and natural sciences;
- to increase undergraduate and graduate students enrollment in the agricultural and natural sciences;
- to aid in the recruitment and placement of minorities into professions within the natural and social sciences;
- to promote careers in agriculture and natural sciences; and
- to emphasize the importance of agriculture and natural sciences (MAOP web site, 2000).

As the 21st century begins, our nation, academic institutions, corporations, and all other organizations face changes in composition. In our larger society, women, and racial and ethnic minorities will assume roles of greater prominence in the workforce and in socio-economic leadership positions. This fact requires that we take steps to embrace the growth of a more diverse society both generally and within all our institutions. These programs are a door for transition of well-educated, competitive individuals who believe in, are willing to invest in, and sacrifice to obtain their goals in a competitive society and world (MAOP web site, 2000).

Views on Future Minority Recruitment in the Agricultural Sciences

Hytche (1992) asserted that a national initiative focusing on minority human expertise development must be our priority for the agricultural sciences if the discipline intends to play its role in maintaining a stable professional workforce. He contended that necessary steps needed to be taken and could be classified into four segments: early intervention, pre-college intervention, college, and post-baccalaureate programs. Some examples of the four segments that Hytche (1992) proposed to help attract minorities:

Early Intervention (Pre-High school) Programs

Saturday Academy

A faculty member could devote three or four hours one Saturday per month to bring at-risk minority students onto campus and expose them to some of the activities of Agriculture in the Classroom of the USDA. The time could also be used for students to conduct independent science experiments, stimulate their thinking, and enhance their interest in and perception of agriculture.

Motivational Sessions

Faculty could conduct motivational sessions with minority students. The lives of many of our minority youth are devoid of positive experiences. Sessions in goal setting, leadership development, and social values could prepare them for an outstanding future careers. Many black youth need constant reminders that there are opportunities for them.

High School Intervention Programs

Adopt a High School

Many minorities still perceive agriculture as farming. Through an infusion of agriculture into the high school curriculum, some of the stereotyping can be avoided. Faculty may choose to be guest lecturers at a high school twice a semester or may substitute for a science teacher once a semester.

Minority Research Assistance Program

In this program, minority high school juniors and seniors who are in the upper third of their classes are invited to spend the summer on campus with scientists. They will conduct independent science projects and computerized literature searches and are provided a laboratory science orientation to the agricultural sciences. They are also paid a stipend.

<u>Summer Scholars Program</u>

Outstanding students are invited to spend time on campus for one to two months to participate in some agricultural science activities for college credit. This will provide an opportunity for faculty to observe student performance; for students to establish contacts; develop mentor relationships and decide on career options; and for universities to award scholarships to deserving minority students.

College Programs

<u>Effective Mentoring Program</u>

We have many first-generation minority college students and the number will continue to rise. Many of these students lack role models, and their history and knowledge of agriculture are reminders of the enslavement and work that they were once required to do in the fields. The students are without supportive families, and many who have graduated indicate that their greatest fortune was finding a mentor with whom they built a positive relationship.

Post-baccalaureate Programs

Hytche (1992) noted that, although we have recovered some of our undergraduate enrollment that was lost in the early 1980s, the minority student enrollment in graduate programs is still on the decline. The lack of mentors at schools that offer most of the graduate programs may be contributing factor. Few minority doctorates are being awarded, so there is a lack of existing faculty for the students to look to for guidance. An increasingly diverse graduate student body is the most important means toward a more diverse faculty. The belief is that the majority of minorities will attend only HBCUs, and if they do not have the programs, it results in a shortage of minority faculty. Expanding and diversifying enrollments in colleges of agriculture is the most important means of diversifying faculty ranks to meet the challenges in the future.

Reevaluation of Entrance Requirements

Many minority students are casualties of standardized testing, and the perils of growing up African American and being a minority. The scores that students achieve on the Scholastic Aptitude and American College tests often do not reflect the academic potential of students, particularly African Americans. The summer scholars program mentioned above could provide the opportunity for a more effective evaluation of selecting students that have an interest and desire to pursue the field.

<u>High Profile Recruitment and Marketing Initiatives</u>

Hytche (1992) stated that most educators are engaged in some initiatives to recruit minority students. However, he noted that we as agricultural educators need to go beyond the traditional approach of recruiting and embark upon a national advertising program similar to that done by the National Science Foundation, the U.S. Army, and others. Hytche (1992) suggested that we target minority audiences with specially designed, high profile, nationally televised advertisement and develop appropriate career-oriented recruitment brochures and videos that could be distributed in the high schools. His last suggestion was that we not rely exclusively on recruitment contact and referral slips, but rather, we should establish and maintain constant contact with prospective students and parents through letters, postcards, telephone calls, and when feasible, personal contact.

Financial Assistance

The escalating cost of higher education prohibits many minority students from considering higher education. A recent pronouncement from the U.S. Department of Education (1995) regarding minority scholarship programs will make it more difficult for many minority students to afford college. Hytche (1992) concluded that just as athletic departments and programs can develop attractive financial packages to attract students, so can the agricultural system. He stated that we should solicit funds from alumni, the agribusiness sector, corporations, faculty, and federal agencies to help with providing money. In addition, cooperative education and paid internship programs could contribute to the financial package of the students to play a significant role in attracting and retaining minority students. It would also enable them to be part of the career decision-making process.

Liaison Relationships

We should establish liaison relationships between the 1862 land-grant institutions and the institutions with significant undergraduate minority enrollments such as the 1890 land-grant institutions. This could be accomplished through summer internship and/or joint research activities in which minority students could participate.

Hytche (1992) concluded by stating that we are doing a good job of educating the majority population, but he emphasized the great need to diversify the agricultural sciences. African Americans still lag behind in terms of percentage of college graduates in the agricultural sciences. If change is to occur, colleges and universities must help to reduce the barriers, which can be accomplished through better recruitment, admission policies, and attractive financial aid packages. In addition, the colleges and universities will need to be more innovative and establish support services such as mentoring, advising, and outreach programs for minority students to help them deal with the potential issues that they may encounter within their departments and on the campus.

Summary

The purpose of this chapter was to discuss the history of agriculture, the importance and role of minorities within the field, and literature on minorities enrolled in college and in the agricultural sciences. The chapter also offers readers recommendations for future recruitment of minorities from previous research.

CHAPTER III

METHODOLOGY

The methodology chapter is divided into eight primary sections: (a) the design of the study, (b) setting for data collection, (c) population, (d) instrumentation, (e) pilot study, (f) data collection, (e) role of the researcher, and (g) data analysis.

Minorities have been and continue to be under-represented in most areas of the agricultural sciences. Due to an increase of minorities in the future, there will be a major change in the racial makeup in our institutions of higher learning and in the workplace. The presence of minority students in the agricultural sciences is, therefore, very important. The purpose of this study is to identify the factors that most influence African Americans and other minorities to enroll in agricultural science programs at Virginia Tech. As college of agriculture faculty, we must know what motivates minorities to enroll in agricultural science programs, the issues that minority students face, and concerns within the program at 1862 land-grant institutions.

More specifically the research questions are:

1. What are the factors that influence minorities to enroll in agricultural science programs?
2. What are minority students' perceptions of their relationship with professors and other students within the department?
3. What is the level of minority students' satisfaction with their agricultural science program experience?
4. What are the demographic characteristics of minority students enrolled in the agricultural sciences at Virginia Tech?

Design of the Study

This study used a quantitative approach in researching the problem of identifying the factors that led minority students to enroll in agricultural science programs at 1862 land-grant institutions. The researcher used a descriptive survey method and designed a survey instrument that collected the perceptions, concerns, and factors that influenced minority enrollment in the agricultural sciences at 1862 land-grant institutions. Survey instruments are presently a widely used and accepted method to provide data for social science research. One of the main purposes of a survey instrument is to provide for a description of how people and individuals think and feel (Babbie, 1990). This descriptive study was designed to obtain a complete and accurate description of a situation without showing a direct cause and effect relationship (Boyd, Westfall, & Stasch, 1981). Borg and Gall (1989) noted that the descriptive research method is used to describe, "what is." "Descriptive research studies are designed to obtain information concerning the current status of phenomena. They are directed toward determining the nature of the situation as it exists at the time of the study" (Ary, Jacobs, & Razavich 1990, p. 286).

Setting for Data Collection

The setting for the data collection in this study was at Virginia Polytechnic Institute and State University (Virginia Tech), a large, predominately white institution (PWI) located in Southwestern Virginia. The university was founded in 1872 as the state's first publicly supported, comprehensive, land-grant institution (Beasley, 1998). The institution is located in a rural setting that is surrounded by the Blue Ridge Mountains which provide a beautiful setting. The initial purpose of the university was to put emphasis on agriculture, mechanical, military studies, and technological disciplines, and over time, the university has expanded into other areas such as humanities, the arts, and social sciences.

Historically, the student enrollment was comprised of white males who came from many different parts of the state to pursue education in the areas offered by the university. Upon its founding, the university was a military school and the majorityof the males who attended were active participants in the Corps of Cadets. Today, the university is recognized as one of the nation's top land-grant universities and posts high rankings in many of the different academic programs that it offers. The university is divided into eight colleges: (a) Agriculture and Life Sciences, (b) Architecture, (c) Arts and Sciences, (d) Business, (e) Engineering, (f) Human Resources and Education, (g) Natural Resources, and (h) Veterinary Medicine. Although, the university posts rankings in many areas, it lacks in others. The university's demographic composition has undergone many changes from its initial founding, but it is still not consistent with the state's demographic composition. The projected enrollment at the university from 1999-2000 was between 25,000 and 27,000 with the majority of the student body being white. The university now includes both women and people of different ethnicities. However, their presence is very limited with minorities accounting for only five percent of the student population (Hutchinson & Hyer 2000).

Population

The population in this study consists of minority undergraduate and graduate students (N = 120) in the Minority Academic Opportunities Program (MAOP) and Minorities in Agriculture, Natural Resources, and Related Sciences (MANRRS) at Virginia Tech. The students were selected from four colleges within the university where a component of agriculture is taught: Agriculture and Life Sciences, Human Resources and Education, Natural Resources, and Veterinary Medicine. The study targeted minority students, and all minorities who were part of the two programs were urged to participate in the study.

Instrumentation

The instrument was designed after an extensive review of literature to collect data on the factors that influence minorities to enroll in agricultural science programs at 1862 land-grant institutions. In planning and designing the survey instrument, the researcher studied other instruments used in similar studies. After searching literature on minorities in higher education and in the agricultural sciences, the researcher used the Internet to look at other survey instruments in similar studies to compare questions and items that should be asked to gather data in this study. In addition, some items were derived from a template from the Virginia Tech Campus Climate for Diversity Student Perceptions Survey (Hutchinson & Hyer, 2000) and suggestions made by the researcher's graduate committee.

The instrument (Appendix A) was divided into five parts. The four-page survey contained sections to gather information on the student's influence and recruitment factors, experiences, perceptions, and demographic information. In the instrument, Part I Influences contained six questions with a five-point Likert-type scale (SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, and SA = Strongly Agree) in which the respondents were to indicate to what degree the persons, organizations, and other factors that were influential in the decision for them to enroll in an agricultural science program. The respondents were to indicate their response by checking Yes or No in the spaces and circling the degree to which they agreed or disagreed. Part II Recruitment contained five questions. In this section, the respondents were to indicate how they were recruited to the agricultural sciences and to what degree sources such as financial aid and assistance were influential in the recruitment process, using a five-point Likert-type scale. Part III Student Experiences contained three questions with Likert-type scale items. The respondents were asked to rate the individuals that were supportive of them within the agricultural science department and to rate how fairly they had been treated. The last question in this section consisted of a Yes or No question in which the respondents were asked if they felt they had experienced any type of discrimination. If so, a checklist of four items was given for the respondents to indicate what type of discrimination they had experienced, and an additional space for them to write and give an example. Part IV Student Perceptions contained 20 Likert-type scale items in which the respondents were to circle the appropriate answer as to how they felt to gather the student's perceptions regarding certain situations. In addition, a Yes/No question was asked to identify whether the respondents had considered attending an Historically Black College and University (HBCU) before choosing their present institution. Part V Demographic Data contained 10 multiple-choice questions created to gather data on demographic characteristics. In addition, a cover letter with instructions outlining the purpose of the study, and a statement of thanks to the minority respondents for assistance in the study was included within the packet. A copy of the survey instrument along with the cover letters can be found in Appendix (A-C).

Pilot Study

The survey instrument was pilot-tested in accordance with the techniques by Dillman (1978). The researcher utilized three specific groups to scrutinize the survey instrument for its validity in this particular study. Dillman (1978) suggested that: (a) the first group views the survey to ensure that it accomplishes the objectives of the study, (b) the second group provides substantive knowledge of the survey topic, and (c) the third group consists of individuals from the population being studied. The pilot-study was utilized to: (a) eliminate ambiguities in the overall structure of the instrument, (b) determine whether the questions were worded appropriately, and (c) determine whether the survey would elicit responses that would allow respondents to provide the necessary information required for the study.

The survey was first pilot-tested for content and face validity by 12 graduate students and a faculty member in the Educational Research and Evaluation program at Virginia Tech on April 3, 2000. The graduate students were students in a course entitled Advanced Topics in Educational Research: Survey Research Design. With a general understanding of survey research, the students provided feedback regarding the instrument. The students also concurred that the instrument would be understood by the participants and that it would provide answers to the research questions poised in the study.

A second pilot-test was conducted on October 12, 2000 in an Educational Research and Evaluation Behavioral Science Methods graduate class to check for sentence structure, grammatical errors, and for clarity in an effort to strengthen the instrument. These individuals evaluated the survey to ensure that it addressed the research questions of the study. In addition, the researcher's advisor made suggestions and provided feedback.

The third pilot-test consisted of a total of eight minority students enrolled in the agricultural sciences at three different 1862 land-grant universities in an effort to make sure that the survey items were clear and concise. Instruments were mailed during the months of January and February to students at Mississippi State University, Texas A&M University, and Louisiana State University. Results from the pilot-test indicated that the respondents were able to answer the questions without any problems and as a result, the survey instrument was prepared to be disseminated to minority students at Virginia Tech.

Data Collection

Initial preparation for the collection of data for this study began with approval from the Institutional Review Board for Research Using Human Subjects (IRB). After completing the necessary forms and submitting a proposal (Appendix D) of the study, the researcher also attached a copy of the instruments that would be used to gather data to the IRB. When approval was granted, the researcher began the data collection process.

The data collection in this study was completed through the use of a survey developed by the researcher. The survey targeted minority students at Virginia Tech. The students selected in this study were members of the MAOP and MANRRS programs. After gaining approval to speak with minority students a part of the programs from the directors, Dr. Randolph Grayson and Dr. Larry Moore, the researcher was extended an invitation to come and speak with minority students at the next monthly meeting. During that time, the researcher was able to explain the need and importance of the study, and the significance that would occur as a result of them participating in giving their perceptions and input. It was furthur explained that the no one was obligated to complete the survey, and anyone interested in participating would do so on a voluntary and willing basis. Furthermore, the researcher distributed the instruments to students and was present to answer any questions or concerns that students might have regarding the survey instruments.

An informed consent form (Appendix E) was included within the survey instrument packets for the respondents to return to the researcher. The consent form was used to explain and clarify several items and questions that the students might have questions before they were willing to participate. The consent form provided the name of the researcher, the topics, and a brief summary of the study. The form also helped to ensure the confidentiality of the respondents' answers. The data collection procedures along with the risks and the benefits of the study were also explained on the form.

Role of Researcher

The role of the researcher in this study was to identify the factors that influenced minorities to enroll in agricultural science programs at 1862 land-grant institutions. The researcher knows the issues, questions, and concerns that minority face from having the experience of attending both land-grant systems (1862 and 1890 institutions). The researcher also has aspirations of becoming an agricultural teacher educator at an 1862 land-grant institution and would like to see more minorities take advantage of the opportunities that exist for them at these institutions.

Data Analysis

The data collected through the survey instrument in this study were analyzed using the Statistical Package for Social Sciences (SPSS) Version 10.0.

The following statistical procedures were used to summarize the collected data:

1. Program FREQUENCIES were used to record frequency counts for the demographic variables of the respondents.
2. Program DESCRIPTIVES were used to find means and standard deviations for interval level variables.
3. Program RELIABILITY was used to explore the extent to which the test was free from random error.

Summary

The purpose of this chapter was to discuss the methods utilized in this study, how the survey instrument was developed and field-tested, data collection procedures, and the statistical methods used to analyze the data collected.

CHAPTER IV

FINDINGS

The purpose of this study was to identify the factors that influence minorities to enroll in agricultural science programs at Virginia Tech. Described in this chapter are the data using the survey instrument. The chapter begins with a description of the population followed by an in-depth analysis of the information gathered. The specific research questions were:

1. What are the factors that influence minorities to enroll in agricultural science programs?
2. What are minority student's perceptions of their relationship with professors and other students within the department?
3. What is the level of minority student's satisfaction with their agricultural science program experience?
4. What are the demographic characteristics of minority students enrolled in the agricultural sciences at Virginia Tech?

Description of the Respondents

The survey targeted minority students at Virginia Tech. The students selectedto participate in this study consisted of undergraduate and graduate students in the Minority Academic Opportunities Program (MAOP) and Minorities in Agriculture, Natural Resources, and Related Sciences (MANRRS) organization, representing students in the colleges of Agriculture and Life Sciences, Human Resources and Education, Natural Resources, and Veterinary Medicine.

Methodology

The data collection in this study was completed using a survey developed by the researcher. The researcher was extended an invitation to come and speak with minority students at the February and March monthly MAOP and MANNRS meetings. At the beginning of the meeting, the directors of the two programs gave the researcher permission to explain the purpose of the study and pass out surveys to students in the programs. The researcher distributed 120 instruments at the February and March meetings between the two organizations and 101 instruments were completed and returned for an 84% response rate. According to Brinkerhoff (1983), a response rate between 55 to 70% is considered adequate. A reliability test was run with SPSS using the Cronbach Alpha method, also known as the Alpha coefficient. A reliability test was done on three parts of the instrument, excluding Part IV Demographic Data. The results from the reliability analysis showed that for Part I Influences r = .75, for Part II Recruitment r = .74, and for Part III Student Experiences r = .62, giving a Standard Item Overall Alpha = .79.

Findings

Research Question 1:

What are the factors that influence minorities to enroll in agricultural science programs?

Data in Tables 4.1 and 4.2 show the factors that were most influential in the respondents' decision to select agriculture as a major. The term "agree" refers to combined responses of "Strongly Agree" and "Agree." The term "disagree" refers to combined responses of "Strongly Disagree" and "Disagree." The top three factors that influenced minorities to select agriculture as a major at Virginia Tech was personal decision (83.1%), parents (52.5%), and former teachers and a college faculty member (55.4%).

Data displayed in Table 4.3 indicate the impacts on minority students' decision to select agricultural science as a major. The respondents were also asked to select the factors that influenced their decision. The factors selected were job stability (68.3%), money (55.4%), and need for minorities (51.5%). The term "agree" refers to combined responses of "Strongly Agree" and "Agree." The term "disagree" refers to combined responses of "Strongly Disagree" and "Disagree."

Data displayed in Table 4.5 show the respondent's affiliation and agricultural experience. Seventy-one percent (72) of the respondents were not members of high-school agricultural organizations, but there was 100% (101) participation in college agricultural related organizations (Table 4.6). Forty-four percent of the respondents had participated in a summer agricultural intern program in either high school or college.

Data in Table 4.6 shows the presence of minorities in collegiate agricultural related organizations. The top two organizations that minority students were members of were Minorities in Agriculture, Natural Resources, and Related Sciences (MANRRS) with 85 (84.2%) and Minority Academic Opportunities Program (MAOP) with 69 (68.3%). Only 19 (18.8%) belonged to departmental organizations.

Table 4.1

Influences on Minority Students to Major in Agricultural Science (n =101)

	SA		A		N		D		SD	
Variable	n	%	n	%	n	%	n	%	n	%
Personal decision	57	56.4	26	25.7	13	12.9	5	5.0	0	0.0
Parents	21	20.8	32	31.7	26	25.7	12	11.9	10	9.9
College faculty member	19	18.8	37	36.6	21	20.8	6	5.9	18	17.8
Other family members	17	16.8	26	25.7	24	23.8	17	16.8	17	16.8
Neighbors	17	16.8	12	11.9	25	24.8	20	19.8	27	16.7
Pastor & church family	15	14.9	14	13.9	24	23.8	17	16.8	31	30.8
Former teachers	15	14.9	41	40.6	25	24.8	12	11.9	8	17.9
Friends	11	10.9	31	30.7	24	23.8	26	25.7	9	8.9
Other	9	8.9	7	6.9	18	17.8	2	2.0	65	64.4

Note. 1 = Strongly Agree 2 = Agree 3 = Neutral 4 = Disagree 5 = Strongly Disagree

Table 4.2

Means of Influences on Minority Students to Major in Agricultural Science (n = 101)

Variable	**Mean**	**Std. Deviation**
Personal decision	1.66	.89
Former teachers	2.57	1.13
Parents	2.58	1.23
College faculty member	2.67	1.34
Other family members	2.91	1.33
Friends	3.08	1.37
Neighbors	3.28	1.42
Pastor & church family	3.35	1.42
Other	4.06	1.38

Note. 1 = Strongly Agree 2 = Agree 3 = Neutral 4 = Disagree 5 = Strongly Disagree

Table 4.3

Impact on Decision to Major in Agricultural Science (n =101)

Variable	SA n	SA %	A n	A %	N n	N %	D n	D %	SD n	SD %
Job stability	27	26.7	42	41.6	16	15.8	6	5.9	10	9.9
Need for more Minorities	25	24.8	27	26.7	26	25.7	11	10.9	12	11.9
Money	18	17.8	38	37.6	26	25.7	10	9.9	9	8.9
Other	7	6.9	8	7.9	18	17.8	4	4.0	64	63.4

Note. 1 = Strongly Agree 2 = Agree 3 = Neutral 4 = Disagree 5 = Strongly Disagree

Table 4.4

Means on Minority Students' Reasons for Majoring in Agricultural Science (n = 101)

Variable	Mean	Std. Deviation
Job stability	2.31	1.21
Money	2.54	1.16
Need for more minorities	2.58	1.30
Other	4.09	1.33

Note. 1 = Strongly Agree 2 = Agree 3 = Neutral 4 = Disagree 5 = Strongly Disagree

Table 4.5

Minority Students' Agricultural Affiliations and Experience (n = 101)

Variable	Descriptor	Frequency	Percent
High-School Member of Agricultural Organizations			
	Yes	29	28.7
	No	72	71.3
Agricultural Intern			
	Yes	45	44.6
	No	56	55.4
Present Member of Ag. Organizations			
	Yes	100	100.0
	No	0	0.0

Table 4.6

Minority Membership in Agricultural Organizations (n =101)

Variable	Descriptor	Frequency	Percent
MANNRS			
	Yes	85	84.2
	No	16	15.8
MAOP			
	Yes	69	68.3
	No	32	31.7
Department organizations			
	Yes	19	18.8
	No	82	81.2
Alpha Tau Alpha			
	Yes	8	7.9
	No	93	92.1
FFA			
	Yes	7	6.9
	No	94	93.1

Data in Table 4.7 shows that 89 (88.1%) of the minority respondents had not been recruited by the department but 62 (61.5%) had been offered financial assistance before or after enrolling. Sixty- two (61.5%) minority respondents had been offered some type of financial assistance. Forty-seven (46.5%) of the minority respondents had been offered a scholarship and 24 (24.8%) were receiving work-study. Over half 58 (58.4%) of the respondents indicated they would be enrolled at Virginia Tech in the agricultural science program if they had not received any type of financial assistance.

Data in Tables 4.8 and 4.9 present frequencies and mean regarding the impact of financial assistance and efforts to recruit minorities within the agricultural science program. The term "agree" refers to combined responses of "Strongly Agree" and "Agree." The term "disagree" refers to combined responses of "Strongly Disagree" and "Disagree." Data in Table 4.8 shows that 62 (63.4%) of the minority respondents felt that receiving financial assistance affected their decision to enroll. The second statement asked whether minority students felt there was a departmental effort to recruit minorities. Forty-three (42.6%) of the respondents agreed that the department does make an effort; however, 39 (38.6%) of the minority respondents disagreed that the department was making an effort to recruit minorities. In addition, 19 (18.8%) of the respondents remained neutral.

Table 4.7

Financial Assistance Awarded (n = 101)

Variable	**Descriptors**			
	Yes		**No**	
	n	%	n	%
Recruited by the department	12	11.9	89	88.1
Offered financial assistance	62	61.4	39	38.6
Types				
Scholarship	47	46.5	54	53.5
Work study	24	24.8	75	74.3
Grad/Teaching Assistantship	17	16.8	84	83.2
Fellowship	5	5.0	96	95.5
Would be enrolled if I were not receiving financial assistance.	58	58.4	42	41.6

Table 4.8

Impact of Financial Assistance and Recruitment (n = 101)

Statement	SA n	SA %	A n	A %	N n	N %	D n	D %	SD n	SD %
Receiving financial assistance impacted my decision to enroll.	41	40.6	23	22.8	14	13.9	9	8.9	14	13.9
The department makes an effort to recruit minorities.	14	13.9	29	28.7	19	18.8	23	22.8	16	15.8

Note: 1 =Strongly Agree 2=Agree 3= Neutral 4=Disagree 5=Strongly Disagree

Table 4.9

Means on Impact of Financial Assistance and Recruitment (n= 101)

Variable	Mean	Std. Deviation
Receiving financial assistance impacted my decision to enroll.	2.33	1.44
The department makes an effort to recruit minorities	2.98	1.31

Note: 1 =Strongly Agree 2=Agree 3= Neutral 4=Disagree 5=Strongly Disagree

Research Question 2:

What are minority student's perceptions of their relationship with professors and other students within the department?

Data in Tables 4.10 and 4.11 give information regarding minority perceptions regarding the treatment and supportiveness within the department. The term "agree" refers to combined responses of "Strongly Agree" and "Agree." The term "disagree" refers to combined responses of "Strongly Disagree" and "Disagree." As shown in Table 4.10, advisors were found to be the fairest with 73 (72.3%) followed by professors with 72 (71.3%). Teaching assistants and other students within the department were found to be fair with 68 (67.3) and 67 (66.4). Overall, there were no groups that were found to be unfair in their treatment towards minorities in the agricultural programs at Virginia Tech.

Data in Table 4.11 showed that advisors were the most supportive with 73 (72.3%) followed by other students within the department with 72 (71.3%). Professors within the department were found to be the third highest supportive group with 70 (69.4%). Teaching assistants were found to be the least supportive with 55 (54.5%), but overall all groups were rated supportive of minority students within the agricultural programs at Virginia Tech.

Data in Table 4.14 showed that a majority of the respondents had not experienced discrimination within the agricultural program. Seventy-five (74.3%) of the respondents indicated they had not experienced discrimination within the department, while 26 (25.7%) of the respondents felt that they had experienced discrimination. Thirteen students (12.9%) indicated they had experienced some racial discrimination, and 11 (10.9%) experienced gender discrimination.

Table 4.10

Perceptions of Minority Students Regarding Being Fairly Treated (n = 101)

Variable	SA n	SA %	A n	A %	N n	N %	D n	D %	SD n	SD %
Advisors	38	37.6	35	34.7	18	17.8	7	6.9	3	3.0
Professors	34	33.7	38	37.6	20	19.8	6	5.9	3	3.0
Other Students	33	32.7	34	33.7	25	24.8	6	5.9	3	3.0
Teaching Assistants	32	31.7	36	35.6	20	19.8	10	9.9	3	3.0
Administrators	24	23.8	37	36.6	30	29.7	9	8.9	1	1.0

Note. 1 = Strongly Agree 2 = Agree 3 = Neutral 4 = Disagree 5 = Strongly Disagree

Table 4.11

Perceptions of Minority Students Regarding Supportiveness (n = 101)

Variable	SA n	SA %	A n	A %	N n	N %	D n	D %	SD n	SD %
Advisors	38	37.6	35	34.7	17	16.8	6	5.9	5	5.0
Other Students	32	31.7	40	39.6	18	17.8	4	4.0	7	6.9
Administrators	27	26.7	37	36.6	29	28.7	7	6.9	1	1.0
Professors	25	24.8	45	44.6	20	19.8	7	6.9	4	4.0
Teaching Assistants	25	24.8	30	29.7	28	27.7	12	11.9	6	5.9

Note. 1 = Strongly Agree 2 = Agree 3 = Neutral 4 = Disagree 5 = Strongly Disagree

Table 4.12

Means on Perceptions of Minority Students Regarding Being Fairly Treated (n = 101)

Variable	**Mean**	**Std. Deviation**
Advisors	2.03	1.05
Professors	2.07	1.02
Other Students	2.13	1.04
Teaching Assistants	2.17	1.08
Administrators	2.27	.96

Note. 1 = Strongly Agree 2 = Agree 3 = Neutral 4 = Disagree 5 = Strongly Disagree

Table 4.13

Means on Perceptions of Minority Students Regarding Supportiveness (n =101)

Variable	**Mean**	**Std. Deviation**
Advisors	2.06	1.11
Other Students	2.15	1.13
Administrators	2.19	.95
Professors	2.21	1.02
Teaching Assistants	2.45	1.16

Note. 1 = Strongly Agree 2 = Agree 3 = Neutral 4 = Disagree 5 = Strongly Disagree

Table 4.14

Perceptions of Minority Students' Discriminatory Treatment based on Personal Characteristics (n = 101)

Variable	**Descriptors**			
	Yes		**No**	
	n	**%**	**n**	**%**
Racial	13	12.9	88	87.1
Gender	11	10.9	90	89.1
Physical disability	5	5.0	96	95.0
Other	7	6.9	94	93.1

Research Question 3:

What is the level of minority student's satisfaction with their agricultural science program experience?

Data in Table 4.15 and 4.16 represent the frequencies and means of minority students' perceptions regarding agricultural science programs and experience. The term "agree" refers to combined responses of "Strongly Agree" and "Agree." The term "disagree" refers to combined responses of "Strongly Disagree" and "Disagree." Eighty-two respondents felt they were getting a quality education and were happy within the agricultural science program, and enjoy their experience while feeling they had an opportunity to succeed at the university. Minority respondents agreed they would recommend the program to other minorities and noted they had received adequate guidance from faculty members. They also felt if they had a concern or problem there was a faculty member or administrator whom they could talk to, but felt their experience would be more enjoyable if there were other minorities within the department and program.

Minority respondents agreed that the agricultural departments are making a serious effort to award financial assistance fairly to all, but noted they do not "fit in," and often feel they have to change some of their personal characteristics (e.g. language, dress) in order to fit in with others. Minority respondents were not in total agreement that a serious effort is being made by departments to recruit minorities, and that the university has an environment that fosters diversity. Forty-five percent (45%) of the minority respondents felt that faculty members at the university are fair to all students regardless of their ethnicity while 30% disagreed and 26% were neutral in their responses. Minority respondents were neutral with the notion that the university was placing too much emphasis on diversity, had felt as if they had been discriminated against, and that professors ignored their comments and questions in class.

Table 4.15

Minority Students' Perceptions Regarding Agricultural Science Programs at Virginia Tech (n = 101)

Statement	SA n	SA %	A n	A %	N n	N %	D n	D %	SD n	SD %
1. I am happy within my program.	32	31.7	50	49.5	10	9.9	5	5.0	4	4.0
2. I feel that I am getting a quality education.	31	30.7	49	48.5	13	12.9	7	6.9	1	1.0
3. I enjoy my experience within my Agricultural Program.	27	26.7	46	45.5	18	17.8	8	7.9	2	2.0
4. I feel that having more minority faculty would aid in the recruitment process.	34	33.7	38	37.6	16	15.8	11	10.9	2	2.0
5. If there were more minorities, my experience would be more enjoyable within the department.	34	33.7	34	33.7	24	23.8	6	5.9	3	3.0
6. When I have a concern or problem is a faculty member or administrator in my department who I can talk to about it.	27	26.7	39	38.6	14	13.9	14	13.9	7	6.9
7. I feel that I have received adequate guidance from faculty members within my department.	24	23.8	38	37.6	25	24.8	13	12.9	1	1.0
8. Diversity is good for the department and should be actively promoted by students, staff, faculty, and administrators.	32	31.7	27	26.7	19	18.8	13	12.9	10	9.9
9. A serious effort is made by my department to award financial assistance fairly.	26	25.7	32	31.7	21	20.8	17	16.8	5	5.0

Table 4.15 continued

Statement	SA n	SA %	A n	A %	N n	N %	D n	D %	SD n	SD %
10. I would recommend my program to other minorities.	28	27.7	39	38.6	20	19.8	13	12.9	1	1.0
11. I would recommend a predominately white school over a predominately black school for agriculture.	21	20.8	22	21.8	28	27.7	21	20.8	9	8.9
12. A serious effort is made by my department to recruit minorities.	14	13.9	32	31.7	25	24.8	20	19.8	10	9.9
13. I feel that I have been discriminated against in my department because of my ethnicity.	10	9.9	25	24.8	21	20.8	30	29.7	15	14.9
14. I often feel that I don't "fit in" very well with other students in my department.	18	17.8	35	34.7	22	21.8	18	17.8	8	7.9
15. I often feel that I have to change some of my personal characteristics (e.g. language, dress) in order to fit in with others in my department.	16	15.8	30	29.7	15	14.9	25	24.8	15	14.9
16. I feel that my professors ignore my comments and questions in and out of	22	21.8	12	11.9	21	20.8	32	31.7	14	13.9
17. The university is placing too much emphasis on achieving diversity.	13	12.9	17	16.8	27	26.7	21	20.8	23	22.8
18. The university has a climate that fosters diversity.	15	14.9	27	26.7	24	23.8	25	24.8	10	9.9

Table 4.15, continued

Statement	SA n	SA %	A n	A %	N n	N %	D n	D %	SD n	SD %
19. Faculty members at the university are fair to all students regardless of their ethnicity.	15	14.9	30	29.7	26	25.7	18	17.8	12	11.9
20. I feel that I have an opportunity to succeed at the university.	32	31.7	43	42.6	14	13.9	9	8.9	3	3.0

Note. 1 = Strongly Agree 2 = Agree 3 = Neutral 4 = Disagree 5 = Strongly Disagree

Table 4.16

Means on Minority Students' Perceptions Regarding Agricultural Science Programs at Virginia Tech (n = 101)

Statement	Mean	Std. Deviation
1. I feel that I am getting a quality education.	1.99	.90
2. I am happy within my program.	2.00	.99
3. I feel that I have an opportunity to succeed at the university.	2.09	1.04
4. I feel that having more minority faculty would aid in the recruitment process.	2.10	1.05
5. If there were more minorities, my experience would be more enjoyable within the department.	2.11	1.04
6. I enjoy my experience within my Agricultural program.	2.13	.97
7. I would recommend my program to other minorities.	2.21	1.02
8. I feel that I have received adequate guidance from faculty members within my department.	2.30	1.01
9. When I have a concern or problem, I feel that there is a faculty member or administrator in my department who I can talk to about it.	2.36	1.21
10. Diversity is good for the department and should be actively promoted by students, staff, faculty, and administrators.	2.43	1.32

Table 4.16, continued

Statement	Mean	Std. Deviation
11. A serious effort is made by my department to award financial assistance fairly.	2.44	1.19
12. I often feel that I don't "fit in" very well with other students in my department.	2.63	1.20
13. I would recommend a predominately white school over a predominately black school for agriculture.	2.75	1.25
14. A serious effort is made by my department to recruit minorities.	2.80	1.20
15. Faculty members at the university are fair to all students regardless of their ethnicity.	2.82	1.24
16. The university has a climate that fosters diversity.	2.88	1.23
17. I often feel that I have to change some of my personal characteristics (e.g. language, dress) in order to fit in with others in my department.	2.93	1.34
18. I feel that my professors ignore my comments and questions in and out of class.	3.04	1.37
19. I feel that I have been discriminated against in my department because of my ethnicity.	3.15	1.24
20. The university is placing too much emphasis on achieving diversity.	3.24	1.33

Note. 1 = Strongly Agree 2 = Agree 3 = Neutral 4 = Disagree 5 = Strongly Disagree

Research Question: 4

What are the demographic characteristics of minority students enrolled in the agricultural sciences at Virginia Tech?

The responses to the demographic section of the survey provided a description of the minority students enrolled in the agricultural sciences at Virginia Tech. One hundred and one minority students completed the survey instrument. The largest ethnic group to respond was African Americans with 54 (53.5%). The largest number of responses were females (64, 63.5%). The respondents ages ranged from 18 to 27 with the 20-22 age group accounting for 43.6%. The academic classification of the largest number of respondents was freshmen with 23.8%, followed by juniors with 21.8%. All of the respondents in this study were full-time students. Data in Table 4.17 give additional demographic information about the respondents.

Other major findings of the demographic data revealed that most of the minority students (59.4%) were registered for between 13 and 17 hours. Forty-two respondents indicated their current GPA ranged between 3.0 and 3.49, while 37 respondents indicated their GPA ranged between 3.5 and 4.0. The largest number of students were in the College of Agriculture and Life Sciences with (68, 67.3%). Only 38 (37.6%) of the minority students responding were first-generation college students, and 72 (71.3%) respondents were the first in their family to major in agriculture. Fifty-four respondents (53.5%) had planned to pursue graduate education.

Table 4.17

Demographic Data (n = 101)

Variable	**Descriptor**	**Frequency**	**Percent**
Ethnicity	Black/African-American	54	53.5
	Caucasian/White	0	0.0
	Hispanic	20	19.8
	Asian	13	12.9
	American Ind./Native American	12	11.9
	Other	2	2.0
Gender	Male	37	36.6
	Female	64	63.4
Age	19 or younger	36	35.6
	20-22	44	43.6
	23 or older	21	20.8
Academic level	Freshmen	24	23.8
	Sophomore	15	14.9
	Junior	22	21.8
	Senior	16	15.8
	Graduate Masters	13	12.9
	Graduate Doctorate	11	10.9
Status	Full-time	101	100.0
	Part-time	0	0.0
Registered hours	12 or less	21	20.8
	13-17	60	59.4
	18 or more	20	19.8
Current GPA	3.5 – 4.0	37	36.6
	3.0 – 3.49	42	41.6
	2.5 – 2.99	17	16.8
	2.0 – 2.49	3	3.0
	Below 2.0	2	2.0
College affiliation	Agriculture and Life Sciences	68	67.3
	Natural Resources	18	17.8
	Human Resources and Education	6	5.9
	Veterinary Medicine	9	8.9

Table 4.17, continued (n =101)

Variable	**Descriptor**	**Frequency**	**Percent**
First-generation college student	Yes	38	37.6
	No	63	62.4
First to major in agriculture	Yes	72	71.3
	No	29	28.7
Plan to attend graduate school	Yes	54	53.5
	No	23	22.8
	Already enrolled	24	23.8

Summary

This chapter supplied a description of the data collected using the survey instrument. Frequencies, means, and standard deviations were provided to help summarize the data. Results of reliability test were also reported.

CHAPTER V

SUMMARY, CONCLUSIONS, RECOMMENDATIONS, AND IMPLICATIONS

This chapter is comprised of summary, conclusions, recommendations, and implications. The content of this chapter are derived from results reported in Chapter IV. A variety of suggestions are offered for agricultural faculty, faculty across other academic disciplines, administrators, and staff members who are involved in the recruitment and retention of, and interaction with minority students who are enrolled in agricultural science programs.

Overview of the Study

Minorities have been and continue to be under-represented in most areas of the agricultural sciences. Due to the increase in minorities in the near future, there will be a major change in the racial makeup in our institutions of higher learning. The purpose of this study was to identify the factors that influence minorities to enroll in agricultural science programs at Virginia Tech, an 1862 land grant institution. The research questions addressed in this study were:

1. What are the factors that influence minorities to enroll in agricultural science programs?
2. What are minority students' perceptions of their relationship with professors and other students within the department?
3. What is the level of minority students' satisfaction with their agricultural science program experience?
4. What are the demographic characteristics of minority students enrolled in the agricultural sciences at Virginia Tech?

Summary

The main purpose of the study was to determine the factors that influence minorities to enroll in the agricultural sciences at Virginia Tech. The literature review gave insight on the problems that minorities face on the campuses at predominately white institutions and the changing of the demographics within the U.S. population and our institutions of higher learning. The literature also included information regarding the contributions that minorities have made to the agricultural sciences in the past, and the need for their presence within agricultural governmental agencies and occupations. A study by Hytche (1992) also gave recommendations for future recruitment of minorities.

This study used a quantitative approach in researching the problem of identifying influencing enrollment factors. The researcher used a descriptive survey method and designed a survey instrument that collected the perceptions, and factors that influenced minority enrollment in the agricultural sciences at Virginia Tech. Surveys were distributed to minority students enrolled in the Minority Academic Opportunities Program (MAOP) and Minorities in Agriculture, Natural Resources, and Related Sciences (MANRRS) organization at Virginia Tech. The students were selected from four different colleges (Agriculture and Life Sciences, Natural Resources, Veterinary Medicine, and Human Resources and Education) within the university where a component of agriculture is taught.

The researcher distributed 120 instruments at the February and March meetings of the two organizations and 101 instruments were completed and returned for an 84% response rate. Several discoveries were made from data collected and analyzed concerning minority perceptions regarding the agricultural science programs at Virginia

Tech. A reliability test was run on the instrument using Cronbach's Alpha giving a Standard Overall Alpha = .7874. The following summaries highlight the four research questions and provide results from data collected from minority students in the MAOP and MANNRS organizations at Virginia Tech.

The first research question sought to identify those factors that influence minorities to enroll in agricultural science programs. Data in Table 4.1 and 4.2 showed the factors influencing minorities at Virginia Tech were the result of the individual's personal decision, parents, and former teachers or college faculty member. Other impacts on the decision to enroll in the agricultural sciences rated by the minority respondents were job stability, money, and need for more minorities (Tables 4.3 and 4.4).

The second research question sought to identify minority students' perceptions of their relationship with professors and other students within the department. Data in Table 4.11 and 4.12 indicated that advisors were found to be the most fair and supportive of all groups listed. Professors, other students, and teaching assistants were also noted as being fair and supportive. Overall, none of the groups were found to be unfair in their treatment towards minorities in the agricultural science programs at Virginia Tech.

The third research questions sought to identify the level of minority students' satisfaction with their agricultural science program experience. Data in Tables 4.15 and 4.16 showed the majority of the minority respondents felt they were getting a quality education and happy within the agricultural science program, had an opportunity to succeed at the university, and would recommend the program to other minorities. In addition, minority respondents felt if they had a concern or problem, there was a faculty member or administrator whom they could talk to, but felt their experience would be more enjoyable if there were other minority students and faculty within the department and program. They also noted that if there were more minority faculty it would aid in the recruitment of minority students.

The fourth research question sought to identify the demographic characteristics of minority students enrolled in the agricultural sciences at Virginia Tech. Data in Table 4.17 gave information regarding demographic characteristics of the respondents. The largest ethnic group of respondents were African Americans. More females responded than males. The respondent's age ranged from 18 to 27 with the largest respondent group being in 20 to 22 age group. The largest number of respondents were freshmen and juniors. All of the minority respondents in this study were full-time students.

Other findings of the demographic data were that most of the students enrolled in between 13 and 17 hours of courses. The largest number reported a current grade point average (GPA) of 3.0 and 3.49. Most of the respondents were in the Agriculture and Life Sciences. Only 38 (37.6%) of the minority students responding were first-generation college students, but surprisingly 72 (71.3%) of the respondents were the first in their family to major in agriculture. Fifty-four of the undergraduate minority students planned to pursue graduate education.

Conclusions

Based on the findings of the study, the researcher drew the following conclusions that are organized into four sections: (a) factors that led minorities to enroll in the agricultural sciences, (b) relationship with faculty and students within the department, (c) satisfaction within the program and department, and (d) demographic characteristics of minority students in the agricultural sciences at Virginia Tech.

Factors that Led Minority Students to Enroll in the Agricultural Sciences

The minority respondents in this study were provided with a list of reasons from which they were to select their primary reasons for majoring in agriculture. The results of this study were similar to those findings of Wardlow, Graham, and Scott (1995) who found that community-based professionals in agriculture, such as a high school agricultural teacher or an agricultural extension agent, were identified as influencers of minority students to major in agriculture. The top influential factor in this study was the respondent's personal interest and decision. The other factors most influencing minorities at Virginia Tech were their parents, friends, former teachers or a college faculty member. According to Wardlow, Graham, and Scott (1995), minority youth tended to follow the experiences of successful older youth from the community and believed that it was important for minorities to see agriculture as providing good economic opportunity for a career.

The impact of financial aid is an important factor in the recruitment process. Minorities have a strong desire to attend college; however, the unavailability of financial aid often limits their attempts (Bracey, 1992; Council on Higher Education, 1989). Sixty-four respondents indicated that receiving financial assistance affected their decision to enroll in the agricultural sciences. Fifty-two respondents noted that they would not be enrolled if they were not receiving financial assistance. The financial assistance that most minority students were receiving was a scholarship. Forty-seven of the respondents were receiving a scholarship and 24 were work-study students. The receipt of a scholarship suggests that minority students have strong academic credentials and can balance their work schedules with their academic work. Moreover, job stability, money, and the need for more minorities within the agricultural sciences were other factors for minority students in their decision to select agricultural science as a major.

Conclusion:

A small number of respondents were members of agricultural organizations while in high school. From the data collected, it was concluded that this was not an influential factor in their decision to major in agriculture. According to Bekkum (1993), the agricultural industry places considerable importance on the background and experience of graduates. However, only 29% of the students surveyed had experience in agriculture or were enrolled in agricultural secondary programs while in high school. Most of minorities felt there is opportunity for them in the agricultural sciences, but feel that other minorities do not know about the opportunities that are available within the field. It was concluded in this study and other studies that family, friends, and former teachers were influential in minority students' decision to select agriculture as a major.

Relationship of Minorities with Faculty/Students within the Department

Advisors were found to be the most fair and supportive to all minority groups listed on the survey instrument. Professors, other students, and teaching assistants within the department were also noted as being fair and supportive. Overall, none of the groups were found to be unfair in their treatment towards minorities in the agricultural programs at Virginia Tech. This contrasts to an earlier study in which Dezmon (1995) found that the climate of most predominately white institutions (PWIs) are unsatisfactory and that many minorities have not been educated in the white educational setting. Forty-eight (47.5%) of the respondents indicated they had considered a historically black college and university (HBCU) before enrolling at Virginia Tech. Minorities did report they felt they had to change some of their personal characteristics in order to fit within the department. Fleming (1984) supported this perception noting that minority students experience feelings of disconnectedness and students sometimes feel like outsiders. Fleming (1984) concluded that faculty involvement could help to alleviate this problem by engaging students in more departmental activities and classroom discussions that would utilize their intelligence, enthusiasm, and energy.

Minority students enrolled in the agricultural sciences noted a positive relationship with faculty and students within the department. Their responses indicated that minority students at Virginia Tech have a positive relationship with professors and students whereby they feel they are being treated fairly and feel that faculty and students are supportive of their efforts. According to Williams (1989), minority students often report that they use faculty for guidance. Williams (1989) also found that students often preferred to interact with faculty outside of class because they had problems and concerns that were not related to academics. From the findings in this study, 61% of the respondents at Virginia Tech indicated they have received adequate guidance from faculty and students within the agricultural sciences. Davis (1991) noted that professor/students/staff relationships are strong predictors of satisfaction with the campus life for minorities. In contrast, Nettles (1987) noted that faculty members at PWIs have fallen short in meeting the needs and expectations of minority students in providing social support. Sixty-five percent of the minority respondents in the agricultural sciences at Virginia Tech indicated that when they had a concern or problem, they felt there was a faculty member or administrator within the department whom they could talk with in helping to solve their problem.

Davis (1991) noted that minority students use support systems to help maintain individual self-esteem and life satisfaction, increase social and academic competence, and help in contending with the difficulties of stress. All of minority respondents in this study were currently members of an agricultural related organization, but the organizations with which they were affiliated were organizations in which they were the majority ethnic group. Eight-four percent of the respondents were members of the MANNRS organization, and 68% were a part of MAOP. Other traditional organizations such as FFA (Future Farmers of America) and Alpha Tau Alpha (ATA) had very few minority students who were members. Fordham and Ogbu (1986) and suggested that minority students have a limited amount of established resources to help affirm their identity to connect with their cultural heritage and other minorities.

Conclusion:

The respondents feel that their professors and students are fair and supportive within the department. It is evident by the findings that the MANNRS and MAOP organizations have helped minority students to remedy their exclusion from the majority white-oriented university community. It is clearly illustrated that minority students at Virginia Tech tend to segregate themselves from traditional agricultural organizations and affiliate in those where they feel secure and feel they belong as only 19% chose to belong to departmental organizations. MANNRS and MAOP should work together and encourage students to become a part of the departmental organizations.

Satisfaction within the Department

The majority of the respondents felt they were getting a quality education and were happy within the agricultural science program, had an opportunity to succeed at the university, and would recommend the program to other minorities. The lack of minority professors and professionals in agricultural science at Virginia Tech who can serve as role models was noted as a factor in encouraging minority students to pursue agricultural science as a major and a career. Fleming (1994) noted that minority students at PWIs sometimes feel the burden of discrimination and that the environment can be hostile and non-supportive.

Conclusion:

From the data, the researcher found that students had not observed many minority professors and only a few minority students in their respective program. However, the majority of the students surveyed noted that professors were fair and supportive, and generally believe that the university has attempted to foster a positive climate. Hyer and

Hutchinson (2000) concluded in their study that if minority students are to have an overall positive experience at Virginia Tech, in terms of their interactions with faculty, the university must begin active recruitment of minority faculty. Minority students felt they have the opportunity to succeed in the agricultural sciences and at Virginia Tech.

Demographics of Minority Students in the Agricultural Sciences at Virginia Tech

The responses from the survey instrument showed that the majority of the respondents (53.5%) were African Americans. There were 64 females (63.5%) respondents compared to 37 males. The 20-22 age group accounted for 43.6% of the total responses, and freshmen were the largest responding group followed by juniors. All of the respondents in this study were full-time students. About 42% of the respondents had a current grade point average (GPA) between 3.0 and 3.49, and 37% of the respondents indicated their GPA was 3.5 and 4.0. The results suggest that minority students are excelling in their courses in the agricultural sciences and are capable of pursuing post-baccalaureate degrees. Fifty-four undergraduate respondents indicated that they planned to pursue graduate education. Seventy-two respondents are the first in their family to major in the agricultural sciences, making them trend setters. This could hopefully lead and motivate other family members or friends to pursue the field. Wardlow, Graham, and Scott (1995) supported this theory by noting that minority youth tend to follow the experiences of successful older youth from their community.

Conclusion:

The agricultural sciences were once dominated by white males, but the results in this study indicated that females were the dominant group. The profile of the typical agricultural science minority student at Virginia Tech is an African-American female who is a freshmen or junior between the ages of 18 and 22. She is a member agricultural related organizations, and has chosen to be a part of MANNRS and the innovative MAOP program that helps to provide her with financial assistance during her tenure at Virginia Tech. She is full-time student who is registered for between 13 and 17 hours and maintains a grade point average between 3.0 and 3.49, which has motivated her to explore the possibility of pursuing graduate education and obtaining a post-baccalaureate degree. The College of Agriculture and Life Sciences is credited with having the agricultural program that has led her to Virginia Tech, and by being the first in her family to major in the agricultural sciences, she is helping to set a trend that will possibly lead others in her family to pursue the field.

Recommendations

Given the small number of minorities currently enrolled in the agricultural sciences, it is imperative that the factors influencing minorities to enroll in agricultural science programs at 1862 land-grant institutions be examined more thoroughly to develop strategies to increase the number of minorities enrolling in agricultural programs. The total impact of the factors influencing minority presence in the agricultural sciences is yet to be realized as evidenced by the lack of literature on this subject, but it is hoped that this study will help to alleviate that problem and open new doors toward research on minorities in the agricultural sciences.

Based on the findings of this study, there is much to be done to ensure that minorities are being represented within the agricultural sciences. These findings are relevant to career choices for minority students in the agricultural sector. These findings are also relevant to faculty and administrators of institutions interested in a better understanding of the factors that influence minorities to enroll in agricultural science programs and their experiences at 1862 land-grant institutions. To recruit more minority students, faculty should involve currently enrolled minority students as recruiters, use minority professionals as role models, and use techniques that link minority students' interests to agricultural science careers.

Recommendations for Universities

1. Collaborate, network, and co-sponsor educational programs with outside sources, organizations, businesses, or groups that are interested in increasing minority representation.
2. A collaborative effort needs to be made between the 1862 and 1890 land-grant institutions to help alleviate the problem of minority representation. The 1890 institutions could help by serving as a feeder to the 1862 land-grant institutions for graduate students and helping student enrollment to become more diverse in the process. An exchange program could be developed by administrators and faculty whereby students from both universities would have the opportunity to experience both environments. This would help to correct the past problems that existed between the two institutions and help students develop an appreciation for both land-grant systems.
3. More money needs to be allocated for the creation and maintenance of programs like the Minority Academic Opportunities Program (MAOP) at Virginia Tech, which aims to recruit and retain minorities in the agricultural sciences.

Recommendations for Practice and Policy Changes in the Colleges of Agriculture and Life Sciences, Human Resources and Education, Natural Resources, and Veterinary Medicine

1. Faculty members and advisors should closely monitor the academic progress and experiences of minority students.
2. Efforts should be made to increase the relationships between minority agricultural students with faculty/advisors/students. The efforts could help the minority students to connect more within the various colleges/departments and the university.
3. Efforts should be made to enhance faculty/advisors' understanding of developmental issues and challenges that minority students experience at Virginia Tech.
4. More aggressive efforts should be made in the recruitment of minorities and colleges and departments need to utilize the minority students enrolled in the program as recruitment tools to encourage other minority students.
5. Many participants mentioned that they decided to attend the university because they received scholarships from Virginia Tech. Efforts should be made to award more scholarships, assistantships, and fellowships to achieving and capable minority students interested in the agricultural sciences that are competitive with other universities.
6. A departmental climate survey should be conducted to gather data about all students' perceptions regarding diversity and what can be done to improve it within the department and college.

Areas for Future Research

1. A follow-up study should be done at Virginia Tech in a few years to determine the generalizability of this study.
2. A comparative study should be conducted at other 1862 land-grant institutions to determine if there are similarities and/or differences among minority agricultural students.
3. A comparative study should be conducted at 1890 land-grant institutions to determine if there are similarities and/or differences among minority agricultural students.
4. A qualitative study should be conducted to add more depth to the findings addressed in this study.

Implications

Based on the findings of this study, the researcher developed the following implications:

1. The respondents felt their reason for selecting agriculture a major in agricultural science programs was due to individual commitment, self-confidence, family support, and guidance by faculty and former teachers. If a minority student has the desire to major in the agricultural sciences, has the necessary academic credentials, and there is a demand for a specific ethnic group, there should be some type of financial assistance for those students, especially if they are lacking the monetary funds.
2. It is important that minority graduates return to their communities and make students aware of the opportunities that are available and possibly expose students to the world of agriculture through field trips, summer internships, and brochures.

Seventy-two respondents in this study are taking the initiative by being the first in their family to major in agricultural science. Minority graduates and professionals must encourage and motivate students by promoting the agricultural sciences and stressing the importance of obtaining a degree. Minority students must realize that the only way to make changes is to serve as change agents to help others along the journey.

3. Minority students within agricultural science majors need a broader perspective of the myriad opportunities that are available for them and should understand the financial rewards as a result of their decision. Agricultural educators and college recruiters should work with local teachers and counselors to raise the awareness level of minority students about careers and opportunities in agriculture for minorities, targeting those school districts that have a high minority enrollment. In addition, some attractive financial packages and incentives should be awarded to students who exemplify good academics and leadership skills.
4. Programs should be developed that would expose minority students to the scientific and technical occupations that are not customarily pursued by them.
5. Teachers and guidance counselors should develop strategies to identify minority students for special programs and summer intern programs that are looking for agricultural students.
6. Guidance counselors should develop comprehensive career guidance programs that include the following: shadowing; field trips to industry, local universities, and community colleges where agriculture is offered; and summer programs. The programs could help to increase the students' awareness of opportunities that are

available to them. In addition, there should be some assistance with securing funding.

Virginia Tech has made considerable efforts within the past few years in its quest to make the university more diverse and increase the number of under-represented students, faculty, and staff members. The Colleges of Human Resources and Education and Engineering have led the way in helping to promote cultural diversity. The aim of these colleges is to help provide an environment whereby students will feel comfortable and be able to relate to fellow students and their professors. Of the 1,387 full-time, tenure-track faculty at Virginia Tech in the 1999 fall semester, only 34 (2.5%) were African American, meaning that minority faculty do not have a visible presence in campus classrooms (Hyer & Hutchinson, 2000). The minority students in the agricultural sciences at Virginia Tech have voiced their concerns regarding having more minority faculty within the departments and felt that it would help in the recruitment of other minorities and make the minority agricultural experience more enjoyable.

As the 21st century begins, our nation, academic institutions, corporations, and all other organizations face changes in composition. Minorities will assume greater roles in the workforce, requiring educators to take steps to embrace the growth of a more diverse society both generally and within all our institutions and in our academic disciplines. The Minority Academic Opportunities Program (MAOP) at Virginia Tech is one program that is helping to recruit minorities and provide financial assistance. The program has been praised for its efforts and the high retention rate of the students that it serves. The MAOP program is one that other land-grant universities should try to model for helping to increase the number of minorities in their agricultural science programs. The program is a door for transition of well-educated, competitive individuals who believe in, are willing to invest in, and sacrifice to obtain their goals in a competitive society and world (MAOP web site, 2000).

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