

Diversity in Agricultural Education: A Synthesis of Research

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Abstract

Diversity in the nation, workplace, and even agricultural education has recently garnered greater attention. We have come to recognize that diversity includes not only ethnicity, but also gender, race, religion, lifestyles, and sexual orientation. While more result-oriented diversity program initiatives are expected across the agricultural, environmental, natural, and life sciences, it is imperative that research in this area of inquiry be conducted utilizing appropriate methodologies. Prior to conducting such studies, the researchers discovered the need to critically examine the status of diversity research within agricultural education in order to provide a basis to direct future research. The purpose of this article is to present the findings of a synthesis of research on diversity in agricultural education during a 10-year period (1992-2001). A library search of selected agricultural education scholarly sources was used to gather data for the study. Research findings support the belief that diversity is regarded as beneficial to students, employers and academic programs. Yet further research in this area is needed to support programmatic activities.

Introduction

Changes to higher education practices and curricula involving diversity began nearly 40 years ago, when institutions began opening their doors to groups that previously had been excluded from higher education. Legislation such as the Higher Education Facilities Act of 1963, the Civil Rights Act of 1964 (Title I-VII), the Immigration Act of 1965, the Higher Education Act of 1965, and the 1972 Amendment to the 1965 Act (known as the Pell Grant Program) helped to facilitate changes in higher education. Many campuses and academic programs were not prepared at the time for the changes they would undergo when more adult students, women, and racial/ethnic minorities were introduced in their student bodies. Changes in student enrollments were connected with major intellectual and social movements that raised important questions about the production and transmission of knowledge, as well as access to education. Diverse student enrollments resulted in pressures that led to: 1) development of new academic support programs and student organizations; 2) diversification of faculty and staff; 3) establishment of ethnic, sexual orientation and women's studies programs; and 4) revision of educational policies and curricula to reflect more diverse populations and perspectives. Because these issues often required fundamental changes in premises and practices at many levels, many of these changes met with institutional or individual resistance. Many institutions and disciplines continue to confront conflicts over diversity issues today.

Embracing diversity is about valuing people who have differences of thought concerning gender, race, religion, ethnicity, lifestyles, and sexual orientation. The Kellogg Commission on the Future of State and Land-Grant Universities points out that addressing issues of diversity should be a top priority.

America's strength is rooted in its diversity. As the United States embarks on a new century, our diversity remains our greatest strength. But it can sustain us only if we bring our entire society together, creating one from the many. Diversity is not just an artifact of our history; it remains our society's obligations to the future. Our institutions are among the nation's best hopes of making diversity work in that future (NASULGC, 1998, p 34).

A similar message was brought forth by Dr. Blannie Bowen, the 2001 American Association for Agricultural Education (AAAE) Distinguished Lecturer who outlined fundamental changes needed in order for agricultural education to fully address diversity. Specifically, he challenged the profession to implement a number of recommendations in order "to lead to higher levels of appreciation and more proactive behavior." Moreover, he challenged the profession to "engage in sound, contemporary research that addresses complex gender and ethnicity questions" (Bowen, 2001, p.10).

Purpose/Objectives

Prior to addressing Bowen's call for addressing diversity questions, the profession needs to take stock of that research that has involved diversity. The purpose of this study was to conduct a thorough review of research, to critically examine the status of diversity research and provide the profession with a basis from which to direct future research. As Mannebach, McKenna, and Pfau (1984) indicated, "if research and development are to lead the way, we must continually review and evaluate our efforts" (p. 15).

During the *Journal of Agricultural Education's* span of 43 years, a number of researchers have examined various research and publishing aspects in the agricultural education profession. These include: safety issues in agricultural education laboratories (Dyer & Andreasen, 1999); supervision of supervised agricultural experience programs (Dyer & Williams, 1997a); benefits of supervised agricultural experience programs (Dyer & Williams, 1997b); a review of subject matter topics researched in agricultural and extension education (Radhakrishna & Xu, 1997); developing a model for supervised agricultural experience program quality (Dyer & Osborne, 1996); participation in supervised agricultural experience programs (Dyer & Osborne, 1995); an empirical analysis of the literature cited in *Journal of Agricultural Education* (Radhakrishna et al., 1994); the most prominent subjects discussed included empirical analysis of the *Journal of Agricultural Education* during the eighties (Radhakrishna & Jackson, 1992); what topics were cited and who was cited (Moore, 1991); agricultural and extension education research published in terms of program area, area of focus, and scope (Crunkilton, 1988); and reader opinions of the JAE (Newman, 1990).

The conceptual framework for this study was furnished by Williams (1991) in his "Dimensions of Agricultural Education" model. Williams noted that "we must fully understand the dimension of agricultural education before we can successfully focus our research" (p. 8). Therefore, finding voids in the current knowledge base may be an effective method of fostering understanding and focusing future research endeavors. To achieve this purpose, three objectives were developed:

1. To synthesize a 10-year period (1992 -2001) of research related to diversity in agricultural education;
2. To identify research deficiencies related to diversity in the agricultural education discipline; and
3. To recommend future diversity research in the agricultural education discipline.

Procedures

Four sources were used to gather data: 1) *Dissertation Abstracts International* (DAI); 2) *Journal of Agricultural Education* (JAE); 3) *NACTA Journal*; and 4) Proceedings from the National Agricultural Education Research Conference (NAERC). Studies were located through a library search at Michigan State University and consisted of articles published from January 1992 through December 2001. Keywords used by the researchers in conducting this study included ethnicity, diversity, gender, minority, multiculturalism, physically and mentally challenged, race, religion, and sexual orientation. Each article was given a code number and independently read by the researchers. The criteria used in reviewing the articles consisted of examining the title, purpose or focus, findings and conclusions. Finally, the articles were placed under themes found in the literature and the studies themselves, based upon a consensus by the researchers.

Findings

A total of 4 dissertations, 28 journal articles and 27 papers have been published on diversity from 1992-2001 in the four agricultural education scholarly outlets (Table 1). Table 2 outlines the 12 diversity themes published during the 10-year period (1992-2001).

Table 1

Total number of articles addressing diversity issues

Publication	92	93	94	95	96	97	98	99	00	01	Total
DAI	1	1	-	-	-	-	1	-	1	-	04
JAE	3	1	1	1	1	2	2	-	1	2	14
NACTA	2	1	2	1	1	4	1	-	1	1	14
NAERC(M)	2	4	4	4	3	4	1	2	1	2	27
Total	7	7	7	6	5	10	5	2	4	5	59

Table 2

Total number of articles addressing diversity issues

Diversity Themes	DAI	JAE	NACTA	NAERC	Total
Women Issues in Agricultural Education	-	3	3	4	10
Gender Equity	-	3	1	4	8
Recruitment & Retention	1	2	3	2	8
Perceptions/Attitudes Towards Diversity	3	1	2	-	6
Factors Influencing Minority Participation	-	2	-	3	5
Career Perceptions of Minority Students	-	1	1	3	5
Faculty Preparation to Address Diversity	-	2	-	2	4
Gender/Ethnicity Comparisons	-	-	-	4	4
Hispanic/Chicano Populations	-	-	3	1	4
Native American Populations	-	-	-	3	3
Multicultural Leadership Development	-	-	1	-	1
Physical Accessibility Evaluation	-	-	-	1	1
Total	4	14	14	27	59

Women Issues in Agricultural Education

A vast amount of research indicates that the values, beliefs, and knowledge held by individuals come from prior experiences. Hoover and Yoder (1994) reported 7th & 8th grade female students including those from farms, did not know very much about agriculture, agricultural education or agricultural careers. Moreover, Bell and Fritz (1992) indicated that deterrents to female enrollment in secondary agricultural education programs in Nebraska resulted from lack of career information, nontraditional employment and career opportunities, counseling services providing an awareness of, and supportive networks. Webb and Iverson (1994) said respondents “indicated that agriculture was not a career choice in their youth. Since teachers play significant roles in shaping minds; this may be an indicator of negative attitudes toward women in this traditionally male-dominated field” (p. 410). The complexity of this issue is compounded in that Larke, Alexander-Finn and Falconer (1992) concluded that although female students in Texas were being certified to teach, job offers were not readily available. Foster (2001) also stressed that despite an increase in the number of women prepared to teach agricultural education, equal increases in those employed are not reflected in the working force. Nokes and Gustafson (1994) reported that recruiting women is not enough. Special attention must also be given to retention of students, and the focus should be on providing a supportive

environment. Thorp, Cummins and Townsend (1998) concluded that “an all-female classroom was superior to a coeducational setting for collegiate women in the development of working with groups, making decisions, communicating, understanding self and leadership” (p. 60). The number of women faculty members in higher education institutions has been increasing over the years. However, the number of women faculty in agricultural education is very small representing about 16 percent (Foster, 2001; Camp, 1998). Foster (2001) reported that the top three barriers to women not entering the profession included “acceptance by parents and community, acceptance by peers (male teachers), and acceptance by administrators and business leaders” (p. 393). Moreover, Baxter and Hoover (1992) and Foster (2001), indicated that a quality mentoring program may assist in creating a stronger support system for women in agricultural education. “The lack of female role models and the subsequent women available to serve as mentors in agricultural education, has made it difficult for women to enter and advance in the agricultural education profession [Baker and Baggett, 1995, p. 515].”

Gender Equity

Attrition of women in agricultural education is well-documented. Studies have repeatedly shown a higher percentage of women leave the profession. Findings in this section address issues of gender equity within agricultural education. Specifically, Cano and Miller (1992) investigated factors associated with job satisfaction and dissatisfaction of male and female teachers of agriculture, and concluded that there was no significant difference between the genders. However, both male and female agricultural teachers rated interpersonal relationships highest, whereas, males rated working conditions lowest, and female rated supervision lowest (Cano & Miller, 1992). Bell and Fritz (1992) identified and defined deterrents to male enrollment in secondary agricultural education programs. They compared and contrasted the results to responses of females in a similar study, and concluded that counseling is either consciously or unconsciously influenced by the perception of gender appropriate occupational roles and is a phenomenon of acceptance. Moreover, Dillingham, Ramirez and Amsden (1993) concluded that traditional teacher preferences for instructional areas indicate that equity has not been achieved in agricultural mechanics courses and that males receive greater levels of benefits from industry work experience and from full-time or part-time teaching experience than to females. Townsend and Thorp’s (1997) study looked at self-perceived leadership skills based on gender and indicates that social structure of the classroom did not have any adverse effect on women’s leadership development from the activities when compared to men. Young and Bedker’s (1997) study which looked at variation in learning styles by gender in large classroom settings, concluded that gender differences should be acknowledged and that their results strongly reinforce the notion that all classes should use a wide variety of teaching activities to help students be successful in the course. However, findings of the Johnson, Wardlow and Franklin (1997; 1998) study of gender and the reinforcement method conducted in agricultural education do not support the notion that males have higher academic achievement than females in physical sciences and that females benefit most by hands-on instruction in the physical sciences. Likewise, Conroy and Kelsey (1998) concluded that results of their analysis support prior research that indicated little or no significant differences in how males and females view agricultural occupations. However, they caution that without the attention to gender stereotypes and differences in perceptions, program goals to attract diverse students into agricultural education and related careers may not be achieved.

Recruitment & Retention of Diverse Populations

Recruitment and retention of diverse student and faculty members continues to gain attention across the agricultural, environmental, natural, and life sciences. A 1993 study by Bankston and Cano assessed the recruitment and retention of minority youth in 4-H programs, and, based on their conclusions, recruitment of minority youth will require marketing efforts directed toward the needs of minority youth. Bankston and Cano's (1993) recommendation was also confirmed by Rawls, et al. (1994) who concluded that the Beginning Agricultural Youth Opportunity Unlimited program has proven to be an effective recruitment method for the College of Agriculture in Louisiana. Likewise, Rudd, Hoover and Daugherty (1996) recommended more attention be placed on introducing agricultural programs in areas with greater minority populations. Talbert et al. (1997) concluded that colleges of agriculture must do a better job of recruiting and retaining members of underrepresented groups, citing the need to break down educational barriers and career perceptions held by these groups. Wiley, et al. (1997) and Wiley and Bowen (1998) tend to support previous research about summer pre-college recruitment programs that reported positive attitudinal gains. On the other hand Case, Berkenholz & Campbell (1993) studied selected Black students from Lincoln University and ascertained their perceptions of the USDA/1890 Summer Internship Program and revealed that USDA hiring of Black graduates from Lincoln University was not successful. They did note that there was evidence to suggest that students realized intangible benefits, such as developing work ethic, accomplishing tasks, being evaluated by professionals, seeing new areas of the country, making new friends, managing their money and planning for the summer work experience and that the program encouraged minority students to pursue careers in agriculture (Case, Berkenholz & Campbell, 1993). Moreover, Ingram and Nyangara (1997) concluded that to effectively meet the educational needs of all populations, the boards and advisory committees of Extension programs must reflect the needs and interests of the entire community. They went further to recommend that a concerted effort should be directed toward making Extension boards and advisory committees representative of all segments of the population in every county.

Perceptions/Attitudes towards Diversity

There have been several perceptions/attitudinal studies conducted toward diversity including a study by Ingram and Rodgers (1997) involving 63 academically-talented juniors and seniors who participated in the Governor's School for the Agricultural Sciences at Pennsylvania State University. The respondents had mostly favorable attitudes toward equality of gender, cultural pluralism, and multilingualism. Females possessed more positive attitudes toward diversity than males. Both females and males were uncomfortable with people who have physical and mental challenges. Jones and Moore (2000) and Moore, Ingram and Jones (2001) reported that Michigan AgriScience teachers held positive attitudes toward equality of gender, and were comfortable working alongside and talking with people from a variety of different groups. Teachers were less comfortable in working with people who are mentally challenged and people who have a different sexual orientation. Mathis and Moore (2000) researched the attitudes of Michigan State University students in the College of Agriculture and Natural Resources (CANR) and those outside the CANR regarding diversity. CANR and non-CANR students were least comfortable interacting with mentally challenged and physically challenged people. Females and non-CANR students were more positive toward diversity than were males and CANR students. Cano and Ludwig (1994) reported Extension administrators in Ohio perceived the Extension system had not reached its goals of becoming a multicultural organization.

Factors Influencing Minority Participation

Wakefield and Talbert (2000) reported that in 1963, the New Farmers of America (NFA), a national organization of Negro farm boys studying vocational agriculture in the public schools in the United States reached a high of 58,132 members in 1963. Prior to the merger with the FFA in 1965, the number was approximately 52,000, and in 1994, the number decreased to approximately 20,000. "An implication from these findings is that a merger of equals was in reality a merging out of the FFA" (Wakefield and Talbert, 2000, p. 430). Wakefield and Talbert (2001) interviewed past NFA members and discovered that "the NFA contributed to their leadership development, the teacher played an important role in their leadership development, and the NFA had a major effect on them today. They all agreed that after the merger there was a lack of Black leadership in the FFA, it became more difficult for Black students to gain leadership roles in the FFA, the merger was inevitable, and the attitude of the teacher determined the smoothness of the transition after the merger." The researchers concluded, "a lack of forethought and effort in maintaining Blacks in leadership positions led to poor morale and a loss of identity among Black students enrolled in the FFA" (p.57).

Cano and Bankston (1992) noted that ethnic minority youth and parents found several positive influences for participation in agricultural activities, concluded that continued effort should be made toward youth development in an effort to recruit and retain minority youth. Talbert (1997) and Talbert and Larke (1993) identified factors influencing enrollment of minority and non-minority students in introductory AgriScience courses. Recommendations from their study included: 1) agricultural education should focus awareness and informational activities on the elementary grades and should conduct recruitment activities no later than the middle school grades; 2) minorities should be depicted in instructional materials; 3) efforts should be made to change possible negative perceptions of agriculture held by guidance counselors and others in influential roles; and 4) retention efforts should be based on research and should be supplied to AgriScience teachers in self-contained, ready-to-use form (Talbert & Larke, 1993; Talbert, 1997).

Career Perceptions of Minority Students

The demographics of the United States are changing at an increasing rate, and nowhere are the demographic shifts better reflected than in the nation's public schools. For example, the U.S. Census Bureau predicts that ethnic minorities will constitute nearly one-third of the U.S. population and nearly half of the school aged youths by the year 2020 (U.S. Census Bureau, n.d.). African Americans, Asian Americans, Hispanic (Latino/Latina) Americans, and Native Americans constitute the major ethnic minority groups in the country. Contrary to the uniformity suggested by their labels, each of these groups subsumes a highly heterogeneous mix of peoples and subcultures, and each is growing faster than the majority population, with the implication that the U.S. workplace will continue to diversify. Yet, according to Wardlow, Graham and Scott (1995a) there is little question that minorities are under represented in professional roles in the agricultural sciences and technologies. Findings from their study conclude that the lack of minority professionals in agriculture who can serve as role models was seen as a significant barrier to encouraging minority youth to pursue agricultural careers (Wardlow, Graham & Scott, 1995a). The complementary study by Wardlow, Graham and Scott (1995b) further recommended that agriculture professionals should work to cooperate with school officials in providing students with information about professional careers. Likewise, Talbert and Larke (1995) declared that overall minority enrollment in AgriScience education will continue to be

small. Consequently, minority enrollment in colleges of agriculture will remain low. Jones and Larke (2001) counter previously held conclusions that suggest that in order to achieve and maintain minorities in agriculture and to enhance career decisions of minority students' career options must be introduced at an early age – as early as elementary and middle school. Instead, Jones and Larke (2001) suggest that minority students often decide to select an agriculture career later in their lives, and often transfer into the discipline after their freshman year.

Faculty Preparation to Address Diversity

Diversity is one of the key buzzwords for agricultural educators to address. Unfortunately, minority issues and questions of diversity are confronting most colleges of agriculture and departments of agricultural and Extension education throughout the U.S. (Bowen, 1993). According to Conroy and Bruening (1994) if agricultural educators are going to make a difference in recruiting, retaining and serving diverse groups, they need to relate to all segments of the population. Likewise, results of the Luft (1996) study indicate that secondary agricultural education teachers can do much better in serving the needs of culturally diverse students in their programs. Luft recommends that pre-service teacher education students should be required to take courses dealing with teaching in culturally diverse classrooms. Wakefield and Talbert (1999) found that agricultural education programs are not adequately preparing students for diversity. If new and current faculty members are not receiving adequate preparation, the faculty members in agricultural education need instruction and experience in diversity. Likewise, Bell (2000) recommended that colleges and universities with the mission of preparing teachers continue to provide teaching students with multi-cultural experiences both of a formal and informal nature.

Gender/Ethnicity Comparisons

In studying gender and ethnicity, Newsom-Stewart and Stutphin (1993) reported that female tenth grade students had more positive self-perception and attitudes toward school than males, and recommended intervention programs to address this issue. Student's attitudes and interests can be categorized in conceptual domains that include economic security, supporting friends and family, academic achievement, supporting community, social achievement and detachment/autonomy. No significant differences were detected among the ethnic groups, which included African Americans, Caucasians, Native Americans or Alaskan Natives, Asian or Pacific Islanders and Hispanic students. Within the conceptual domains, students gave higher ratings to being successful in work, having a good family life, being college educated and giving children better opportunities. In most cases, significant differences were noticed with female students achieving higher means. Moreover, significant ethnic differences were identified in three of six subscales. Even though minorities continue to be under-represented in agriculture, Talbert (1997) found no difference in enrollment decisions by minority and non-minority students who attended an urban magnet school. He did point out that the characteristics of the magnet school and the careers related to it were the primary reason why urban students continued to enroll. He did determine that sophomores were more likely to see themselves in an agricultural career than freshmen. He recommended that in-depth qualitative studies needed to be conducted to determine reasons why minority students do not enroll in proportional numbers in agricultural education. Newsom-Stewart and Stutphin (1994) found no significant differences in how male and female students perceive the integration between agriculture and other academic courses. The researchers did report that White students rated this relationship higher than Hispanic students. Moreover, White students felt the descriptors were more applicable to their perceptions

of agriculture and environmental science than Asian or Hispanic students. Additionally, no significant differences were found between how male and female students perceive agriculture and environmental science.

Hispanic Populations

In investigating the barriers perceived by Hispanics, Nichols, Jimmerson, and Nelson (1993) and Nichols and Nelson (1993) revealed significant differences between Hispanic and non-Hispanic high school students. The researchers reported Hispanic students perceive more overall barriers to participation in higher education, differed on barriers relating to family and cultural factors, and tended to have more negative perceptions of agriculture. Bechtold and Hoover (1997) also studied the differences in perceived barriers among Hispanic and non-Hispanic high school students with regard to enrollment in college and perceptions of agriculture. The researchers reported that Hispanic students did not understand how to apply for scholarships or financial aid, faced specific barriers relating to culture and family, had difficulty imaging themselves in college and fitting in, and held negative perceptions of agriculture. DelCampo, Soto-Fulp, and DelCampo (1996) outlined for the academy the faculty advisor's role in helping Mexican American students succeed in higher education. The writers discussed the importance of accurately assessing the student's level of acculturation early in their degree program and recommend the "Acculturation Rating Scale for Mexican Americans." More importantly, the writers described the acculturation problems of Mexican American students, the advisor's development of ethnic self and cultural sensitive advising. According to the writers, it is crucial that the advisor make subtle changes in attitudes and behaviors in order to maximize advising sessions that involved Mexican American students.

Native American Population

Frick and Wilson (1996) investigated Native American high schools student knowledge and perception of agriculture in selected western states. The respondent's knowledge of agriculture was moderate to high, but concept area means varied widely. They were most knowledgeable about natural resources and animal concepts, and less knowledgeable about plant concepts. The respondent's perceptions toward agricultural literacy subjects were positive but varied by concept area. In examining the factors influencing enrollment in agricultural education classes of selected Native American students in Oklahoma, Terry (1999) reported the students felt they were in the classes because of circumstances beyond their control. Vicenti-Henio and Torres (1997) investigated the learning styles of Native Americans who were enrolled in agricultural education classes at Tohatchi High School during the spring of 1997. Their findings found respondents being field independent, with male students being more field independent than female students.

Multicultural Leadership Development

According to McCray and Weber (2000) pedagogy, curricula, and classroom management systems are of particular concern if future educational systems are to meet the needs of a highly diverse population. However, the literature is lacking in studies that explore underlying differences in outlook, values and social skills of various student populations as a basis for designing appropriate curricula, instructional strategies, and learning environments. Therefore, McCray and Weber (2000) set out to analyze student growth along several social dimensions. Their findings suggest that a multicultural leadership course resulted in modest improvements in social skills and diversity awareness of the students. Moreover, McCray and

Weber (2000) concluded that reflective reasoning, critical thinking skills and various experiential learning activities were major vehicles used to advance social skills and diversity awareness. They also state that perhaps the single most important impact of the project was the erosion of stereotypes which allowed students an opportunity to view America's history from another cultural perspective.

Physical Accessibility Evaluations

Ploss and Frick (1995) investigated the barriers faced by students with physical disabilities in Indiana secondary agricultural education programs under Title II. A majority of the agricultural education facilities were accessible to students with physical disabilities, but public notices indicating accessible facilities were lacking.

Conclusions

Over the past decade, agricultural education has instituted a wide variety of programs and new curricula to better educate all students for a diverse society and interconnected world. An increasingly comprehensive body of research is now emerging that documents the effects of diversity on student learning and campus relations. Overall, research addressing diversity in agricultural education can best be characterized as a mixture of descriptive and philosophical, primarily detailing the general values perceived by students. To a greater extent than most other areas of agricultural education, research in the area of diversity has focused on programmatic evaluation. Additionally, examining the impact of diversity training on student development, recruitment and retention provides a sound empirical base of knowledge from which future research efforts may be directed.

Taken as a whole, this research suggests several conclusions about the impact of diversity on students in agricultural education:

1. Diversity initiatives within agricultural education have positive effects on both minority and majority students. They improve students' relationships within agricultural education programs as well as their satisfaction and involvement with academic growth and career preparation.
2. Beyond their proven capacity to improve access and retention of under-represented groups of students, comprehensive diversity initiatives also promote satisfaction, academic success, and cognitive development for all students.
3. Despite these efforts, the research clearly documents that many students—including many minority students, women, gay and lesbian, and disabled students—still find the campus climate unresponsive to their needs, past experiences and educational expectations. Students often feel marginalized in existing institutional cultures.
4. Involvement in specialized student groups—such as ethnic support centers and academic departments—benefit both minority and majority students. These activities appear to contribute to increased satisfaction and retention of those students involved in such programs.
5. A greater need for teacher preparation to address diversity within agricultural education curricula at both the secondary and post-secondary levels.
6. Many students seem to anticipate and desire greater levels of inter-group contact than they actually experience in current agricultural education programs. In fact, opportunities

for interaction between and among student groups are desired by virtually all students. When they do occur, such interactions produce an increase in understanding, decrease in prejudicial attitudes, and positively affect academic success. These interactions are likely to be more beneficial when they are institutionally supported, equally valued, and are involved in projects with common goals and outcomes.

7. Research shows that when students perceive that there is a commitment to diversity, there is increased recruitment and retention of students from under-represented groups and an increase in all students' satisfaction and commitments to improving racial understanding.
8. Diversity in the curriculum has a positive impact on attitudes toward racial issues, opportunities to interact in deeper ways with those who are different and overall satisfaction with agricultural programs. These benefits are particularly powerful for White students who have had less opportunity for such engagement.

It is clear that diversity initiatives, from those that focus on access to campus climate to curriculum change to comprehensive institutional transformation, provide benefits to all students. There is considerable evidence that agricultural education's efforts to address diversity issues are fostering greater intellectual development, cultural knowledge and interracial understanding among students, faculty and the agricultural industry.

Recommendations for Future Research

This paper identified research deficiencies pertaining to the diversity issues in agricultural education. Specific research should be aimed at answering the following questions to make the knowledge about diversity in the agricultural, environmental, natural, and life sciences more complete:

1. For individuals interested in careers in agricultural, environmental, natural, and life sciences, what, when, where, and how should diversity education be offered?
2. What role should agricultural education play in advancing diversity?
3. What are the major reasons why minorities tend not to enroll in secondary and post secondary programs leading to careers in the agricultural, environmental, natural, and life sciences?
4. To what extent are the attitudes toward diversity changing among the academy's stakeholders?
5. To what extent is diversity currently included in the agricultural education curricula?
6. What efforts/strategies are being used to include diversity in the agricultural education curricula?
7. What efforts/strategies are being made to prepare teacher educators to address diversity in teacher preparation programs?
8. What impact have extra curricular programs like Minorities in Agriculture, Natural Resources and Related Sciences (MANRRS) played on student development, recruitment and retention?

Implications for Agricultural Education Research

Findings of this paper have provided a basis to remind the agricultural education discipline where research in the area of diversity within the agricultural education has been and where it may lead. Moreover, the findings provide the profession an evaluation or examination of past and present research efforts in the area of diversity. Finally, findings provide a basis to

avoid repetitive studies and focus more on what topics associated with diversity should be emphasized in the future. It is hoped this study will help current and future agricultural education researchers establish priorities for future diversity related research efforts and lead to findings that will advance diversity development within the agricultural, environmental, natural, and life sciences.

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Diversity in Agricultural Education: A Synthesis of Research

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The authors present a synthesis of research that makes a compelling case for the continued importance and study of diversity in agricultural education. To conduct the study, the authors utilized four sources, including Dissertation Abstracts International, Journal of Agricultural Education, NACTA Journal and NAERC proceedings to synthesize research on diversity in agriculture education over a ten-year period (1992-2000). The authors used a keyword search technique to derive a sample of 59 publications, including dissertation, journal articles and research papers.

In addition to frequencies, the authors break down the studies they reviewed into content areas for coding purposes and grouped results accordingly. The conclusion section included extended discussion of key implications and common themes found in the studies that were reviewed, as well as research implications for the agriculture education discipline, and recommendations for further research. These recommendations were couched in the form of potential research questions not found in the literature, but presumed to be worthy of study.

The authors are to be commended for the thoroughness of their work and the clear writing and exposition contained in the synthesis of this important research stream.

Questions that arose from contemplation of this study include the following:

- Although studies were reviewed in narrative details as to their major findings and analyses, the studies were not grouped by methodology, research design, population/sample studied. Doing so would add to the value of the synthesis approach and allow for more discussion of the trends in this research.
- Perhaps more explanation of how the coding terms were derived could be included as well as more information as to number of coders, intercoder agreement, and procedure with respect to coding of articles containing multiple themes.