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# Demographic Profile of Students Majoring In Animal Science

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## Introduction

W.B. Martin (1981) propounded the hypothesis that effective teaching involves combining teaching skills with human sensibilities so that both science and art contribute to the cognitive process of learning. The successful application of this hypothesis in the classroom or lecture hall requires that the teacher or lecturer be knowledgeable about the audience. Meeting this requirement allows the presentation of new material to be related or made relevant to the experiences or interests of the students. This is a challenge to agricultural educators when one considers that as many as 60 to 70% of today's agricultural students lack farm or other agricultural experiences (Hasslen, 1983). Moreover, it has been suggested that students who lack a farm background or a significant amount of farm experience are disadvantaged as students. Such students often encounter difficulties in the classroom that may carry over into sub-optimal job performance (Helsel and Hughes, 1984). Because of the challenge presented by the nontraditional student clientele currently pursuing baccalaureate programs in agriculture, it is imperative that we, as educators, re-evaluate our curricula to determine if our courses are meeting the needs of our students. However, a prerequisite to this evaluation process is the need to develop an accurate profile of the students to be served by the curriculum. Therefore, the objective of this study was to develop a demographic profile of those students entering the Animal Sciences program at the University of Missouri-Columbia (UMC).

## Methods

These data were collected over eight consecutive semesters beginning Winter Semester of 1980 and continuing through the Fall Semester of 1983. Student responses were obtained by distributing the following questionnaire to freshman and sophomore animal science students enrolled in the entry level animal science course (Introduction to Animal Science).

### Animal Science 11 Student Survey

**Instructions to Student:** This is an anonymous survey. The information collected in this survey will help us determine which subject material needs to be presented to you based on your background and interests. Select the most appropriate answer for each question and blacken in the appropriate circle on the answer sheet.

1. I am a (a) female, (b) male.
2. I have lived most of my life in (a) Missouri, (b) the central time zone excluding Missouri, (c) none of the above.
3. My expected occupation upon graduation is (a) farming, (b) work in agricultural related fields, (c) go to professional school, (d) go to graduate school, (e) work in a field unrelated to agriculture.
4. My major area of emphasis is (a) animal agriculture only, (b) animal agriculture/pre-professional (pre-vet, pre-med, etc.)
5. I was reared (a) on a farm |200 acres, (b) on a farm {00 acres, (c) in a town with less than 10,000 people, (d) in a city of 10,000 to 50,000 people, (e) in a city of more than 50,000 people.
6. Of my family's income (a) 0%, (b) 1-25%, (c) 26-50%, (d) 51-75%, (e) |75% of the income comes from agriculture.
7. On our family farm (if any) (a) crops, (b) dairy, (c) beef, (d) swine, (e) other are the main source of income.
8. I have had (a) 0, (b) 1, (c) 2-3, (d) 4-5, (e)|5 years 4-H and/or FFA experience.
9. I have had (a) 0, (b) 1, (c) 2, (d) 3, (e) 4 years of high school vocational agriculture.
10. I have worked on a farm or ranch for (a) 0, (b) 1-2, (c) 3-5, (d) 6-10, (e)|10 years.
11. I have had (a) no, (b) very little, (c) some, (d) considerable, (e) extensive **experience** with beef cattle.
12. I have had (a) no, (b) very little, (c) some, (d) considerable, (e) extensive experience with dairy cattle.
13. I have had (a) no, (b) very little, (c) some, (d) considerable, (e) extensive experience with sheep.

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14. I have had (a) no, (b) very little, (c) some, (d) considerable, (e) extensive experience with swine.
15. I have had (a) no, (b) very little, (c) some, (d) considerable, (e) extensive experience with horses.
16. I have had (a) no, (b) very little, (c) some, (d) considerable, (e) extensive experience with poultry.
17. I have had (a) no, (b) very little, (c) some, (d) considerable, (e) extensive experience with dogs and cats.
18. I have (a) no, (b) very little, (c) some, (d) considerable, (e) extensive interest in beef cattle.
19. I have (a) no, (b) very little, (c) some, (d) considerable, (e) extensive interest in dairy cattle.
20. I have (a) no, (b) very little, (c) some, (d) considerable, (e) extensive interest in sheep.
21. I have (a) no, (b) very little, (c) some, (d) considerable, (e) extensive interest in swine.
22. I have (a) no, (b) very little, (c) some, (d) considerable, (e) extensive interest in horses.
23. I have (a) no, (b) very little, (c) some, (d) considerable, (e) extensive interest in poultry.
24. I have (a) no, (b) very little, (c) some, (d) considerable, (e) extensive interest in dogs and cats.

Student participation was solicited on a voluntary basis and student responses were totally anonymous. Responses were compiled using the MERMAC test analysis and questionnaire package (Bussell, et al., 1971). The responses to each question were expressed as a percentage of the total number of responses for each individual question. The year to year variation in

**Table 1. Type of family residence, family income from agriculture, and family farm income source of students entering the Animal Sciences program at UMC.**

Family Background	Student response %
Type of family residence (n=465)	
Farm, <200 acre	31
Farm, >200 acre	17
Town, population <10,000	14
City, population 10-50,000	16
City, population >50,000	22
Percentage of family income from agriculture (n=465)	
0	44
1-25	20
26-50	5
51-75	6
>75	25
Family farm income source (n=223)	
Beef	24
Crops	37
Dairy	9
Swine	7
Other	23

the data was analyzed by ANOVA procedures on the arc sin transformed data (Anderson and McLean, 1974). Experience and interest indexes were computed from questions 11 through 25 using the following formula for each given question: total positive responses/total responses x 100. The relationship between interest and experience indexes among domestic animal species was determined by least squares linear regression procedures (Snedecor and Cochran, 1976).

### Results

Over the four year period that this survey was conducted, a total of 465 students or 93% of the students entering the Animal Sciences program at UMC volunteered to complete the questionnaires. Student responses did not vary significantly over the 4 year period; therefore, data were pooled across years and expressed as a percentage of the total number of responses for each question.

The majority of the students in the Animal Sciences program had lived most of their lives in Missouri (85%) or other areas of the Central Time Zone excluding Missouri (5%). The remainder of the students (10%) were from outside the Central Time Zone. Distribution of females and males entering the program was nearly equal at 45% and 55%, respectively.

Regarding their expected occupation following graduation, the entering students anticipated their vocation to be farming (15%), working in an agricultural related field (48%), and employment in a field unrelated to agriculture (3%). Fifty-two percent of the students indicated that they were in the pre-vet curriculum. However, only 34% anticipated going to professional or graduate school following graduation.

There was considerable variation among type of residence, family income from agriculture, and farm income source (Table 1). It should be noted that 52% of the students indicated that they were reared in a small town or urban environment. Sixty four percent of the students reported that 25% or less of their family's income came from agriculture. Moreover, 37% of the students whose family had income from agriculture reported that crops were the main source of farm income, while 24%, 9%, 7% and 23% of the students reported beef, dairy, swine and other, respectively, were the principle family farm income sources. Over 50% of the students reported no experience with either 4-H/Future Farmers of America (FFA) or vocational agriculture (VO-AG) and 27% reported no farm or ranch work experience (Table 2).

Student responses demonstrated a correlated ( $r = .623$ ,  $P < .01$ ) and parallel relationship between student interest in a species of domestic animal and the amount of experience that the students had previously had with that species of animal (Figure 1). In general the greatest interest was in beef cattle and the least was in poultry. As one might expect, both interest and experience was high with pets (i.e. dogs and cats). In

spite of the fact that student responses indicated that they had a smaller amount of experience with dairy cattle, the interest level in dairy production was comparable to other species.

### Discussion

It has previously been reported that the number of agricultural students lacking farm or ranch backgrounds has been increasing during the past decade (Helsel and Hughes, 1984; Waldren, Parkhurst and Ward, 1983). However, the uniform student responses that we have observed suggest that the demographic characteristics of students entering the Animal Sciences Program at UMC have remained homogeneous over the past four years. Such data also indicates that the proportion of students entering our Animal Sciences Program with limited or no agricultural experience has stabilized. Because these data were collected specifically from students majoring in the Animal Sciences and the duration of the survey was only four years, caution should be exercised in applying this observation to total college of agriculture student populations.

The majority of the students (85%) entering our Animal Sciences Program have lived most of their lives in Missouri. These data are consistent with those reported by Beaulieu and Zachariah (1984) for the University of Florida's College of Agriculture. In contrast, the percentage of females (45%) entering the UMC Animal Sciences Program appears to be greater than the majority of previously reported data obtained from total college of agriculture student populations at other institutions. Values of 37% and 15% were reported by Beaulieu and Zachariah (1984) and Waldren et al. (1983), respectively. Recently, the National Association of State Universities and Land Grant Colleges reported that 35% of the 1984 graduating classes were female (RICOP, 1985). The higher percentage of females that we observed may be related to the following: a) this survey was limited to entering Animal Science majors, b) 52% of the students entering our program are in the pre-vet curriculum (in some years the number of female students in our pre-vet program can exceed 75%), c) our equine program (which traditionally attracts a large percentage of female students), and d) the proximity of UMC to large metropolitan areas. Strand and McIntosh (1981) observed an identical sex distribution in data collected during a five year period (1976-1980) from agricultural alumni and graduating seniors.

The question used to evaluate the type of environment in which the students were reared was devised to group small and intermediate sized farms together and separate them from larger acreage farming operations. Moreover, the question was designed to make distinctions among the smaller rural communities, larger town and suburban communities, and urban communities. Forty-eight percent of the students indicated that they were reared on a farm with the

majority (31%) being raised on small or intermediate sized farms (Table 1). The remainder of the farm students (17%) were from farms of greater than 200 acres. Reports on the number of agriculture students that were reared on farms is highly variable ranging from 8.2% (Beaulieu and Zachariah 1984) to 68.3% (Waldren et al., 1983).

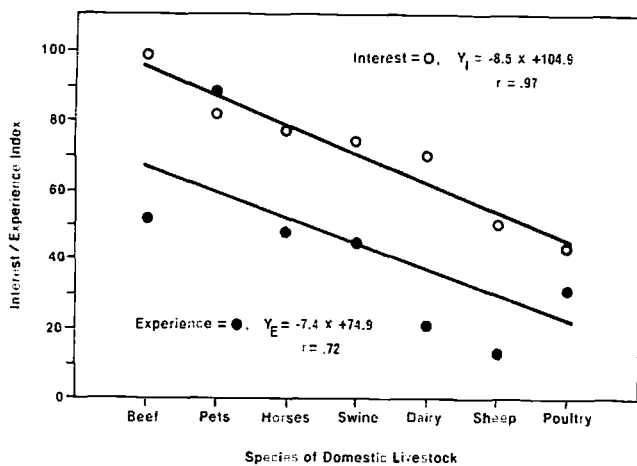
It is interesting to note that 64%, 11% and 25% of the students reported that agriculture provided minor, intermediate, and major portions of their families income, respectively (Table 1). These data suggest that the students entering the Animal Sciences Program form two distinct groups: one group in which farming is a minor family income source and one in which it is a major source. This observation may reflect a statewide trend regarding changes in farm size (acreage as well as annual farm product sales) as reported by Heffernan and Campbell (1983). These workers reported that in Missouri the number of medium-sized farms was declining while the number of small and large farms were increasing. It appears that this trend has had a significant impact upon the population of students entering our program.

The income source among the farm students indicated a balance between crops and livestock (Table 1).

Agricultural experience as defined by years of participation in 4-H or FFA, VO-AG, and farm or ranch work appeared to reflect the dual face of agriculture that is emerging in Missouri (Table 2). Forty-one percent of the students reported 2 years or less of farm or ranch work experience with 36% reporting more than 10 years of agricultural work experience. The observation that over 60% of the students had 1 year or less of 4-H, FFA or VO-AG experience may also reflect this trend.

**Table 2. Experience with 4-H/FFA, VO-AG, and farm/ranch work of students entering the Animal Sciences program at UMC.**

Experience in agriculture	Student response %
Years of 4-H/FFA experience (n=465)	
0	55
1	6
2-3	5
4-5	15
► 5	19
Years of VO-AG experience (n=465)	
0	59
1	7
2	5
3	11
4	18
Years of farm/ranch work experience (n=465)	
0	27
1-2	14
3-5	11
6-10	12
► 10	36



**Figure 1. Relationship between interest in and experience with various species of domestic livestock based on responses by students entering the Animal Science program at UMC.**

The correlation between interest in and experience with a particular species of domestic animal was not surprising for students of this age group (Figure 1). The interest ranking among the livestock species appears to reflect the general make up of the animal industry in Missouri.

### Conclusion

University professors have all too often been accused of teaching a course the same way year after year without any indepth knowledge about the students that they are teaching. This study was the first phase in our attempt to counteract this charge. From these data it can be concluded that, in general, the students entering our Animal Science Program form two distinct groups. The first group is composed of those students with a limited amount of farming experience and in which farming is a minor family income source (approximately  $\frac{2}{3}$  of our students). The second group consisted of students in which farming is a major family income source and a significant amount of farm experience has been acquired (approximately  $\frac{1}{3}$  of our students).

Having completed the first phase of our re-evaluation process, the next phase is to use the student profile data in our course modification and development. Traditional modification will include expansion of supporting laboratory sections in introductory and advanced courses, increased student participation in our internship program and the reorganization of the curricula to enhance the interaction among those students with varying degrees of farm experience. We will continue to administer the profile questionnaire to our entering students in an effort to keep in touch with the nature of our student population.

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## Product Evaluation Of Instructional Programs

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### Abstract

*Sixty-seven percent of the graduates of the College of Agriculture at Oklahoma State University responding to a questionnaire indicated their employment was closely related to their field of college study. Most indicated that instructors, equipment and facilities and course content were adequate. However, job placement facilities needed some improvement. Degree programs were indicated to be of much benefit to the career development of respondents, and most would still seek a degree in Agriculture if they could remake their decision regarding college study.*

Public institutions of education have always had the obligation to be accountable to the people they serve. Evaluation of and corresponding changes in the institution are internal functions, but too often the impetus for change comes from outside (McComas, 1971). Generally, an internal response to outside stimuli is of a defensive nature. Leaders within the educational institution should take the initiative in developing proper programs of evaluation because, according to Holzemer (1976), evaluation of instructional and training programs must be done if the

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