

CHARACTERISTICS AND INFLUENCE  
PATTERNS OF STUDENTS WHO ENROLL  
IN THE COLLEGE OF AGRICULTURE AND  
NATURAL RESOURCES AFTER FIRST  
ENROLLING IN ANOTHER COLLEGE

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THESIS



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## ABSTRACT

### CHARACTERISTICS AND INFLUENCE PATTERNS OF STUDENTS WHO ENROLL IN THE COLLEGE OF AGRICULTURE AND NATURAL RESOURCES AFTER FIRST ENROLLING IN ANOTHER COLLEGE

By

Norman Allen Brown

#### Problem

There is a shortage of undergraduate students preparing for careers for which professional training is offered in the College of Agriculture and Natural Resources compared to the demand for such graduates. Approximately two-thirds of the students in the College of Agriculture and Natural Resources enroll in the College after first enrolling in another college. In order to improve career and curricular information programs, information is needed on characteristics of these students and the influences on their choice of curricula.

The specific objectives of the study were:

1. To identify characteristics of these students including educational background, academic achievement, size of high school, and residence.



2. To identify who and/or what students perceived as influencing or assisting them in choosing curricula in the College of Agriculture and Natural Resources.
3. To identify when the choice of curriculum was made.
4. To determine what these students believe could be done to assist other students in choosing curricula in the College of Agriculture and Natural Resources.

#### Procedure

The respondents were 108 transfer students who enrolled in the College of Agriculture and Natural Resources in 1969 after attending a post-high school institution other than Michigan State University and 227 change-of-major students who enrolled in the College of Agriculture and Natural Resources in 1969 after being enrolled in another college at Michigan State University.

A questionnaire was used to gather information in the following categories: (1) type of major, (2) post-high school institutions attended, (3) residence, (4) size of high school graduating class, (5) academic achievement, (6) time major choice made, (7) vocational agriculture and conservation classes in high school, (8) source from which student first heard of major, (9) influence of individuals, career and curricular exploration activities, and

other factors on choice of major, and (10) student suggestions for assisting other students in choosing curricula in the College of Agriculture and Natural Resources.

Analyses included the use of chi-square and comparisons of percentages.

### Findings

Change-of-major students and transfer students were found to differ significantly on the basis of: (1) type of major, (2) time decisions were made to pursue present major, (3) vocational agriculture in high school, and (4) number of majors at Michigan State University. Data from the two groups were then analyzed separately.

Transfer students most often chose fisheries and wildlife as a major and the packaging major was rarely chosen. Over half of these students had attended a community college and over 40 per cent had attended four-year institutions.

Natural resources transfer students: came most often from non-farm homes; varied greatly as to time of major choice; reported that they first learned of their major from the University Catalog, friends and employees in their area of interest; most often reported that parents, acquaintances, counselors, and College of Agriculture and Natural Resources faculty were influences on their choice of major, and; most often reported that their "love for the out-of-doors," magazine and newspaper

articles, career or curricular brochures and television programs were influences on their choice of major.

Agriculture transfer students: came most often from rural areas; tended to choose their majors after high school graduation; in about half of the cases had taken vocational agriculture; most often reported first hearing of their major from friends and College of Agriculture and Natural Resources faculty; most often indicated that individuals who influenced their choice of major were parents, College of Agriculture and Natural Resources faculty, college acquaintances, and vocational agriculture teachers, and; most often reported that career or curricular brochures, discussions with employees, and magazine articles were influences on their choice of major.

Change-of-major students most often chose packaging as a major and most often changed from the University No-Preference category and the College of Engineering.

Natural Resources change-of-major students: most often chose their major during the first and second year of college; reported learning of their major from acquaintances and College of Agriculture and Natural Resources faculty; most often reported parents, College of Agriculture and Natural Resources faculty, and college acquaintances were influences on choice of major; and most often reported discussions with employees and magazine articles as favorable influences.

Agriculture change-of-major students: came from smaller high schools and rural areas; tended to make their major choice in the second year of college; most often reported that they first heard of their major from College of Agriculture and Natural Resources faculty, the University Catalog, acquaintances and advisers in previous majors; most often indicated that individuals who influenced their major choice were College of Agriculture and Natural Resources faculty, parents, college acquaintances, and vocational agriculture teachers, and; most often perceived discussions with employees, career brochures, and magazine and newspaper articles as having influenced their choice of major.

Packaging change-of-major students: most often came from urban homes; chose their major late, with nearly half deciding in the third year of college or later; reported first learning of their major from acquaintances and also perceived acquaintances as having an influence on their choice of major; most often indicated that the career exploration activities which influenced them were career brochures, discussions with employees, and magazine and newspaper articles, and; most often reported that high salaries influenced their curricular choice.

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## CHAPTER I

### INTRODUCTION TO THE STUDY

#### Statement of the Problem

Modern agriculture and natural resources demand highly skilled, professionally educated people. The demand for graduates of Michigan State University's College of Agriculture and Natural Resources has been increasing steadily according to Placement Bureau reports. Salaries received by College of Agriculture and Natural Resources graduates have ranked in the upper third of all colleges at Michigan State University each of the last four years, an indication of a strong demand.

While the demand has been increasing, on the supply side the enrollments have not kept up. In fact, in a number of curricula, especially in the strictly agricultural curricula, the enrollments have actually decreased in recent years. The problem is a shortage of students preparing for careers for which professional training is offered in the College of Agriculture and Natural Resources.

To help increase the supply, numerous programs and activities have been conducted or proposed to provide career and curricular information, counseling, financial

aid incentives, etc. Most of these programs have been conducted with very little, if any, information on what influences students to enroll in curricula in the College of Agriculture and Natural Resources, who influenced or assisted them or when the decision to enroll is made. More information of this type is needed.

### The Situation

Students enter the College of Agriculture and Natural Resources by one of three primary routes: (1) entrance as new freshmen, (2) transfer from other post-high school institutions or the Michigan State University Institute of Agricultural Technology, or (3) change of major after enrollment at Michigan State University in another college.

New freshman enrollment has remained fairly constant over the last five years ranging from 173 to 186. The number of transfer students has been increasing to a high of 119 in 1969. This figure includes transfers from community colleges, other four-year institutions, and the Michigan State University Institute of Agricultural Technology. (See Table 8 for number which attended each type of institution.)

During the 1969 calendar year 273 students changed majors into the College from other colleges at Michigan State University. With 119 transfer students and 273 change-of-major students it is clear that over twice as

many students enroll in the College after having been enrolled first in another college compared to those who start as new freshmen (186 in 1969) in the College.

Studies made to date on influences on choice of agricultural curricula fall in two categories. They either focus on new freshmen or they focus on rural youth. If we look at all students who eventually enroll in the College of Agriculture and Natural Resources, it is clear that the usual student does not enroll in the College as a new freshman. In fact, only about one-third follow this route. Therefore, we need information on the larger proportion of students who enroll by other routes if we are to begin to understand how students choose curricula in the College of Agriculture and Natural Resources. Secondly, studies which focus their primary attention on rural youth are missing the majority of students who now enroll in the College. Today over half of the students in the College have an urban background.

Most studies made to date focus on all curricula in the colleges of agriculture in one group. There is a tremendous diversity in the twenty majors offered by the College of Agriculture and Natural Resources at Michigan State University. In fall term 1969, out of 1,505 undergraduates 613 were enrolled in natural resources majors, 551 in agriculture majors and 341 in the packaging major. Therefore, it would seem advisable to secure and analyze



information from these students as three groups rather than treating them as one homogeneous group.

While Placement Bureau publications, faculty, and graduates report job opportunities in excess of the manpower supply in the College in general, there is one major which is an exception. Fisheries and wildlife is the only major where supply appears to equal or surpass the demand. The writer, in numerous discussions with students and faculty, has concluded that the job market is not good for fisheries and wildlife graduates with only a B.S. degree. This supply and demand situation is further indicated by the fact that fisheries and wildlife graduates have received the lowest average salaries among College of Agriculture and Natural Resources graduates for at least the last three years. Therefore, in this study when references are made to increasing enrollment in the natural resources majors, this is meant to exclude the fisheries and wildlife majors. There is a strong demand for the other natural resources majors. Students considering fisheries and wildlife should be made aware of this situation. The need for information is certainly not negated by the over supply of students.

#### Purpose of the Study

The purpose of this study is to obtain information which will be helpful in assisting potential students in

the selection of curricula in the College of Agriculture and Natural Resources.

It is assumed that more meaningful and more effective career and curricular counseling services and programs could be developed for prospective students on the basis of information secured from present students.

Therefore, the purposes of this study are twofold:

- (1) obtain information on present College of Agriculture and Natural Resources students regarding factors affecting curricular choice, and
- (2) on the basis of this information, make recommendations and draw conclusions as to the type of career and curricular information programs which may be used in assisting prospective students of the College of Agriculture and Natural Resources.

#### Objectives of the Study

The objectives listed below relate to students who enroll in the College of Agriculture and Natural Resources after first enrolling in another college.

1. To identify characteristics of these students including educational background, academic achievement, size of high school, and residence.

2. To identify who and/or what students perceive influenced or assisted them in choosing curricula in the College of Agriculture and Natural Resources.
3. To identify when the choice of curriculum was made.
4. To determine what these students believe could be done to assist other students in choosing majors within the College of Agriculture and Natural Resources.

#### Procedures of the Study

The instrument used in this study was developed after reviewing the techniques and procedures used to secure data in related studies. The instrument in a preliminary form was administered to a group of eleven transfer students during the summer of 1969. Their comments, along with those of the author's guidance committee, were considered in the final revision of the instrument.

The data for this study were gathered from undergraduate students at Michigan State University during the fall term of 1969. Students were invited to attend one of a series of five meetings conducted in various residence halls on the campus. Questionnaires were administered at these meetings. Those who did not attend were requested to come to the office of the Dean of the College of Agriculture and Natural Resources to complete a questionnaire.

Eighty-five point five per cent of the eligible students responded. The number and percentage of response are shown in Table 1.

TABLE 1.--Response.

	Number Enrolled	Number Respondents	% Response
Transfer	119	108	90.8%
Change-of-Major	273	227	83.2%
Total	392	335	85.5%

#### Population and Sample

The population is undergraduate students who enrolled in the College of Agriculture and Natural Resources during the 1969 calendar year after first being enrolled in: (1) another college at Michigan State University, or (2) another post-high school institution.

The sample included the entire population described above.

#### Assumptions on Which the Study is Based

The primary assumptions underlying the statement of the problem and purposes include:

1. That choice of a curriculum is a decision which is influenced by many factors over time.
2. That if we knew the influences which contributed to the choice of present students,

programs could be planned to assist prospective students.

- ✓3. That there are students who have similar interests, abilities, and backgrounds as present students, who are not enrolling in the College because they lack curricular information.
4. That those students (in 3 above) could be helped in making a meaningful choice if it were understood which factors contributed to the choice of present students and career information and exploration programs were developed accordingly.
5. That more students should enroll in the College of Agriculture and Natural Resources.
6. That services and assistance ought to be provided to prospective students to assist them in making choices among colleges.
7. That some students who choose a major late in their college experience could have made their choice earlier if they had adequate information.
8. That choice of a professional career and choice of college curricula are very similar in that when a professional career is chosen it follows that a college curriculum is involved as a prerequisite.

9. That most students in the College of Agriculture and Natural Resources view their college education as preparation for a career or vocation.

The primary assumptions underlying the design and general approach of this particular study include:

1. That present students can identify influences on their choice of majors within the College.
2. That identification of these influences will be useful information.
3. That students who choose curricula in the College of Agriculture and Natural Resources after first enrolling elsewhere are a very important part of the College enrollment and may in fact be different in the manner in which they chose the College than new freshmen.
4. That there is reason to believe that characteristics and influence patterns of students in natural resources, agriculture, and packaging may differ, so that information should be analyzed separately for the three sub-groups.

#### Definition of Terms

The following definitions pertain to key terms used in this study.

Agriculture Major.--Anyone of the following majors: Agriculture No-Preference, Agribusiness, Agricultural

Biochemistry, Agricultural Communications, Agricultural Economics, Agricultural Education, Agricultural Mechanization, Animal Husbandry, Dairy, Crop Science, Food Science, Horticulture Marketing, Horticulture Science, Poultry Science, or Soil Science.

Another College at Michigan State University.--

Any degree-granting college at Michigan State University other than the College of Agriculture and Natural Resources.

Another Post-High School Institution.--

Any educational institution, other than Michigan State University, which offers educational programs beyond the high school level. This includes institutions which offer terminal technical training programs as well as degree programs. The Institute of Agricultural Technology at Michigan State University is included in this category for purposes of this study.

Change of Major.--

A change of major is accomplished when a student officially changes his declared major. In this study, this term when hyphenated (change-of-major) is used to refer to those students who have made such a change at Michigan State University. It is entirely possible that a change-of-major student in this study could have earlier been a transfer student.

Enroll.--Refers to the act of actually and officially becoming a student in a college. This is to be differentiated from mere acceptance. A student is considered to be enrolled when he actually is registered for classes. For purposes of this study a student is also considered to be enrolled in the College of Agriculture and Natural Resources, for example, at the point where he changes his major from another college at Michigan State University and is assigned an academic adviser in the College of Agriculture and Natural Resources. Michigan State University students are considered to be enrolled in the College of Agriculture and Natural Resources if they have declared a major in the College (even though they may be freshmen or sophomores and are technically in University College).

Natural Resources Major.--Anyone of the following majors: Building Construction, Fisheries and Wildlife, Forestry, Park and Recreation Resources, or Resource Development.

New Freshman.--In this study new freshman refers to a student who enters the University as a freshman and initially declares a major in the College of Agriculture and Natural Resources. A freshman who enters the University with a major in another college and later changes to a major in the College of Agriculture and Natural Resources is referred to as a change-of-major student.



Transfer.--To change enrollment from one post-high school institution to another. In this study this term is also used to refer to a student who has made such a change.

#### Treatment of the Data

Data of this research project are treated with descriptive statistics.

The first task was to compare characteristics of transfer and change-of-major students. They were compared on the basis of: (1) type of major, (2) time decision to enroll in College of Agriculture and Natural Resources was made, (3) whether or not vocational agriculture was taken in high school, (4) number of majors at Michigan State University, and (5) academic achievement. For the first four items chi-square analysis was used to determine significant differences. Expected frequencies were computed using border totals. For the fifth item, academic achievement and grade point averages were compared directly.

The remainder of the data was collected to describe groups of students in natural resources majors, agriculture majors, and the packaging major. It was not the purpose to compare these groups, but rather to describe characteristics and influences on choice of major for each of the groups. Characteristics on which data were collected included type of major, post-high school institutions attended, residence, size of high school graduating class, academic achievement, time major choice made, and

enrollment in vocational agriculture or conservation classes in high school. Respondents were asked to list the source from which they first heard of their major. These data were presented using percentages. Respondents were asked to indicate the amount of assistance or degree of influence on choice of major for: (1) individuals, (2) career and curricular exploration activities, and (3) other factors. The responses of "much" and "some" were combined into one category and considered favorable responses. These data were then presented using percentages of each group which gave favorable responses to each item.

When percentages are reported, an arbitrary cut-off point is often used and only percentages which exceed that point are reported. For example, a given table may have a note indicating, "Percentages are reported only when they exceed 25 per cent." This is done to help clarify the data and to avoid cluttering the tables with items which received only a few favorable responses. In every case, however, a summary of the frequencies and percentages for all items appears in the Appendices.

#### Limitations of the Study

This study was limited in that it was confined to students who enrolled in the College of Agriculture and Natural Resources at Michigan State University in 1969 after having been enrolled in another college. The findings and recommendations could be different if the study were to

be conducted at a different point in time because of such things as admission policies, real or perceived supply and demand for professionals in agriculture and natural resources, popular emphasis on environmental quality, etc.

It should be acknowledged that the researcher is Coordinator of Student Programs in the College of Agriculture and Natural Resources. This may have influenced the responses received from the students who participated in the study. It certainly influenced the recommendations which were made.

The data are limited in that they only identify some of the characteristics of the students studied and a selected group of factors associated with their choice of curricula.

## CHAPTER II

### REVIEW OF LITERATURE AND RELATED STUDIES

It is the purpose of this chapter to briefly review some of the literature on career choice as a background for this study. This review will first consider briefly vocational development theory which is relevant to this study and then discuss some related studies. It is not the purpose of this chapter to provide a complete review of relevant theory but only to present the theoretical base on which the study is designed.

#### Vocational Development Theory

Ginzberg's<sup>1</sup> theory states that occupational choice is a development process. So it is not seen as a single decision but as a series of decisions made over a period of time. He sees the process as being largely irreversible. A third aspect of Ginzberg's theory is that every choice involves the essential element of compromise. That is, each individual makes a choice through a compromise of his

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<sup>1</sup>Eli Ginzberg, et al., Occupational Choice--An Approach to a General Theory (New York: The Columbia University Press, 1951), Chapter XIII.

interests, capacities, abilities, values, etc. No one element is seen as the sole basis for occupational choice.

Regarding the time occupational decisions are made, Ginzberg and his co-workers<sup>2</sup> divided occupational decision making into three periods: the period of fantasy choice; the period of tentative choice; and the period of realistic choice. Each period corresponds roughly with the ages of pre-adolescence, adolescence, and early adulthood.

Super's<sup>3</sup> approach to a theory of vocational development includes twelve basic elements: (1) individual differences, (2) occupational multi-potentiality, (3) occupational ability patterns, (4) identification and role models, (5) continuity of adjustment, (6) life stages, (7) career patterns, (8) notion that development can be directed or guided, (9) idea that development is the result of interaction, (10) interaction of the individual and his environment, (11) job satisfaction, and (12) work as a way of life.

Super's<sup>4</sup> theory includes three basic assumptions about vocational development and a chronological ordering of the stages in the process. The assumptions are that

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<sup>2</sup>Ibid., pp. 56, 60, 271.

<sup>3</sup>Donald Super, "A Theory of Vocational Development," The American Psychologist, VIII (May, 1953), 187-89.

<sup>4</sup>Donald Super, et al., Vocational Development: A Framework for Research (New York: Bureau of Publications, Teachers College, Columbia University, 1957), pp. 40-43.

vocational development is: (1) an on-going, sequential, generally irreversible process, (2) a regular patterned process, and (3) a dynamic process. The chronology of the process is as follows:

1. Growth Stage (Birth-14)
2. Exploration Stage (15-24)
3. Establishment Stage (25-44)
4. Maintenance Stage (45-64)
5. Decline Stage (65-On)

Since the focus of this study is on young people who are primarily in the first two stages, Super's<sup>5</sup> description of these stages are summarized below.

#### Growth Stage (Birth-14)

The first stage is characterized as one of growth. It starts with conception and continues until approximately the age of fourteen. As the individual progresses through this stage interests and capacities become more important and there is increasing social participation and reality testing. This stage has three substages.

Fantasy (4-10).--The fantasy occupational preference period is characterized by assuming the role of adult in fantasy. The "dreaming" is concerned with the ends or results of work. The person in this substage has limited

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<sup>5</sup>Ibid., pp. 40-42.

experience and thus little ability to assess himself or the real world of work.

Interest (11-12).--Individual likes and dislikes are the basis of occupational considerations in this substage of the vocational development process.

Capacity (13-14).--Vocational consideration involves not only likes and dislikes carried over from the interest substage, but also involves perceived capacities. Thus, abilities are given more weight and job requirements (including training) are considered by the individual.

#### Exploration Stage (15-24)

The second life stage is the period when an individual tries to understand himself and find his place in the world of work. This stage generally coincides with the period of adolescence where a person becomes ready to assume adult responsibilities which characterize the third stage. The exploration stage has three substages.

Tentative (15-17).--Needs, interests, capacities, values, and opportunities in the world of work are all considered during this substage. Occupational preferences are made and tried out in fantasy, discussion, study, work experience, etc. During this substage, the individual is called upon to crystallize an occupational preference. This crystallization of a professional occupational choice

and thus a curricular choice is a major concern of this study.

Transition (18-21).--This substage occurs at about the time of high school graduation when most individuals realize their approach to occupational choice has been too subjective and they develop an increasing awareness of reality and the realization of the need to act in the choice-making process. This realization leads them to seek advice from significant people in their lives and adopt an instrumental attitude toward work where they consider such factors as working conditions, training required, and financial returns. It is the focus of this study to identify the significant people in the career and curricular choices of the College of Agriculture and Natural Resources students and to identify other factors which are important in the decision-making process.

Trial (22-24).--During this substage, the individual finds an appropriate field and locates a beginning job which is tried out as a life work. An individual may have a series of trial jobs before stability is reached.

#### Related Studies

With the theory of Super and Ginzberg as a base we shall now review some related studies. Bentley and Hemp<sup>6</sup>

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<sup>6</sup>Ralph R. Bentley and Paul E. Hemp, "Factors Influencing Agricultural College Students to Choose Their



found that students who enrolled in agricultural curricula felt that they were influenced in their choice of specialized fields by persons, vocational factors, and publications. Persons cited as being most influential were parents, friends, and teachers of vocational agriculture. Those listed as being of next importance were relatives, county extension agents, college professors, high school principals, and teachers other than in agriculture. Vocational factors cited as having influenced the students most were: economic advantages of the occupation, opportunity for employment, employment before entering college, and social advantages of the job. The study showed that three-fourths of the respondents felt they were influenced by reading agricultural books and magazines, while less than one-half felt they were influenced by college catalogs.

In a 1958 study by Powers,<sup>7</sup> graduates who had been enrolled in agricultural curricula indicated that several factors influenced their choice of occupation and thus their choice of curricula. In order of frequency of reporting, these factors were: natural aptitude and liking for the type of work; availability of positions in the

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Fields of Specialization," Agricultural Education Magazine, XXX, No. 11 (May, 1958).

<sup>7</sup>Billy Gene Powers, "Former Students' Opinions Concerning the Relation of Their College Training to Their Careers" (unpublished Masters thesis, Oklahoma State University, 1958), p. 64.

field; experience while attending college; counsel and influence of an elementary school teacher, county extension agent or high school teacher; experience in the field; parents' desire, approval and/or encouragement; experiences while attending high school; counsel and influence by a college teacher; counsel and influence of college adviser or counselor; and counsel and influence of close relatives.

Freeh<sup>8</sup> in 1961 studied the characteristics of freshmen enrolled in agricultural curricula and compared farm and non-farm youth. Farm youth in agricultural curricula most often reported parents and vocational agriculture teachers as the most influential individuals in their choice of major. Non-farm youth most often reported that employers, adults other than parents or teachers, and college faculty members had influenced their choice. Farm-reared youth rated highly vocational agriculture courses, speeches and publications about agricultural curricula and agricultural careers, visits to the college campus, and experiences in the FFA as sources of influence on their choice of college curricula.

The percentage of non-farm youth enrolled in the College of Agriculture and Natural Resources has risen

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<sup>8</sup>LaVern Adam Freeh, "Characteristics and Influence Patterns of Students Enrolling in Agricultural Curricula at Michigan State University" (unpublished Ph.D. thesis, Michigan State University, 1962), pp. 78-85.

steadily since Freeh's study. Also, the percentage of students who enter as freshmen has declined as more students transfer from other institutions or change their major from other colleges.

In a study at Ohio State University in 1960, Leuthold, Phillips, Rothert and Wells<sup>9</sup> found that 34 per cent of the students enrolled in agricultural curricula had changed their major at least once. About 60 per cent of the students had chosen a career and about one-third of the group had decided on a curriculum prior to entering college. This study focused very heavily on a comparison of farm and non-farm students.

Rhea<sup>10</sup> reported in a 1953 study of Iowa State College graduates that one out of three students entered agricultural curricula after previous college work elsewhere and that one out of five changed majors into agricultural curricula from some other division of the college. His data, however, were not analyzed separately for these transfer and change-of-major students.

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<sup>9</sup>Frank O. Leuthold, G. Howard Phillips, Lowell F. Rothert, and James D. Wells, "Factors Associated with Changes in Majors by Agricultural Students at Ohio State University" (unpublished Graduate Study, Department of Rural Sociology, The Ohio State University, 1960).

<sup>10</sup>Mark B. Rhea, "Present Status and Opinions of Graduates Granted Bachelor of Science Degrees Since 1932 in Agricultural Curricula at Iowa State College" (unpublished Ph.D. thesis, Iowa State College, 1953), p. 122.

Haller and others<sup>11</sup> point out that the choice of curricula is part of a larger system of influences which includes: (1) occupational decisions; (2) changing occupations in a changing society; (3) the immediate situation of youth including available facilities and the expectations of others; (4) the youth's life decisions in areas other than occupations; (5) the youth's personality. They also conclude after a review of research in this area that the two broad factors in the environment of youth having the greatest influence on the total process of entering occupations are: the facilities available to youth and the expectations other people have for them. They state that the ties between occupations and education are becoming increasingly close and that youth who aspire to high-level occupations must go to college if they are to attain them.<sup>12</sup>

The only research identified which studies students in a college of agriculture who were enrolled previously in another college was the Ohio State study (cited previously) by Leuthold, et al. It primarily is a comparison of farm and non-farm youth who have changed majors.

The orientation of the present study is to characteristics and influence patterns of students who enroll in

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<sup>11</sup>Archibald O. Haller, Lee G. Burchinal, and Marvin Taves, Choosing an Occupation, A Report prepared for the North Central Regional Research Committee, Sub-Committee on Youth and the Family, 1961, p. 21.

<sup>12</sup>Ibid., p. 6.

the College of Agriculture and Natural Resources after first enrolling in another college. The emphasis is not on farm and non-farm youth as most relevant studies seem to be. Furthermore, it separates agriculture majors, natural resources majors, and packaging majors, and no similar breakdown was identified.

### Summary

Theories concerning career development are not explicit nor are the actions of people as they select careers and college curricula. The process by which individuals identify with a career has not been sharply defined.

The theoretical framework of vocational development of Ginzberg and Super, though still being tested, serves as the base from which this study is designed.

Numerous studies have been conducted which compare farm and non-farm youth. Very few involve transfer students and change-of-major students who enroll in agricultural curricula.

This study focuses on the characteristics and influence patterns of students who enroll in the College of Agriculture and Natural Resources at Michigan State University after first enrolling in another college.

## CHAPTER III

### PRESENTATION AND ANALYSIS OF DATA

#### Introduction

This chapter presents the results of the study in terms of the responses received from the students. The total sample of students who enrolled in the College of Agriculture and Natural Resources after first enrolling in another college is divided initially into two sub-groups: (1) transfer students, and (2) change-of-major students. Data are presented on characteristics of these students. On the basis of this information it is concluded that these are two very different groups. Therefore the remaining data (the major part) are presented separately, first for the transfer students, then followed by the change-of-major group.

The change-of-major group is divided into three sub-groups: (1) natural resources majors, (2) agriculture majors, and (3) packaging majors. The transfer group, however, is broken down into only two groups. (There were only three packaging students in the transfer group so this subdivision was omitted in the presentation of data.)

Comparison of Characteristics of Transfer  
and Change-of-Major Students

The data in this section are presented for the transfer and change-of-major sub-groups to compare characteristics of the students. In the tables, observed frequencies (fo) and expected frequencies (fe) are shown as well as percentages which indicate the percentage of students who gave the particular response out of the particular group of students (transfer or change-of-major).

Type of Major

When we compare the two groups on the basis of type of major in the College of Agriculture and Natural Resources we find significant differences as can be seen from Table 2. Forty-four and one-half per cent of the

TABLE 2.--Chi-square comparison of transfer and change-of-major groups and type of major.

Type of Major	Transfer (N=108)	Change-of-Major (N=227)
Natural Resources	fo 66 (61.1%) fe 44	fo 71 (31.2%) fe 92
Agriculture	fo 39 (36.1%) fe 30	fo 55 (24.2%) fe 63
Packaging	fo 3 (2.7%) fe 33	fo 101 (44.5%) fe 70
Chi-Square = 60.49*		

\*Significant at the .001 level.

transfer students are in packaging. Nearly twice as many, percentage wise, of the transfer students are in natural resources majors, 61.1 per cent compared to 31.2 per cent in the change-of-major group.

#### Time Decision Made to Pursue Present Major

The two groups (transfer and change-of-major) were found to be significantly different in their responses to the question regarding the time they decided to pursue a major in the College of Agriculture and Natural Resources. Students in the transfer group tended to make their decision on choice of major earlier than the change-of-major group. Indeed, according to Table 3, 46.2 per cent of the transfer students indicated that they had made such a choice before entering college while only 8.5 per cent of the change-of-major group had made this choice by the time of college entrance.

#### Vocational Agriculture in High School

Students in the two groups differ significantly based on enrollment in vocational agriculture in high school. Over 12 per cent of the change-of-major group reported enrollment in vocational agriculture while 25.9 per cent of the transfers had enrolled in the same subject. A chi-square value of at least 10.83 was needed to indicate a statistically significant difference at the .001 level between the two groups and 13.37 was the computed value.



TABLE 3.--Chi-square comparison of transfer and change-of-major groups and time decision made to pursue present major.

Time	Transfer (N=108)	Change-of-Major (N=227)
Prior to high school	fo 9 (8.3%) fe 4	fo 4 (1.8%) fe 8
High school	fo 45 (37.9%) fe 19	fo 15 (6.7%) fe 40
First year of college	fo 11 (10.2%) fe 15	fo 38 (16.7%) fe 33
Second year of college	fo 22 (20.4%) fe 40	fo 105 (46.3%) fe 86
Third year of college and later	fo 21 (19.4%) fe 27	fo 65 (28.6%) fe 58

Chi-Square = 75.59\*

\*Significant at the .001 level.

TABLE 4.--Chi-square comparison of transfer and change-of-major groups and enrollment in vocational agriculture in high school.

Vocational Agriculture	Transfer (N=108)	Change-of-Major (N=227)
Yes	fo 28 (25.9%) fe 18	fo 28 (12.3%) fe 37
No	fo 80 (74.1%) fe 89	fo 199 (87.7%) fe 189

Chi-Square = 13.37\*

\*Significant at the .001 level.

Number of Majors at Michigan  
State University

These two groups vary greatly in this regard. By definition, the change-of-major students must have had more than one major. Over 72 per cent of the change-of-major group had just two majors including the one in the College of Agriculture and Natural Resources. Twenty-two and one-half per cent had three majors.

The transfer students, on the other hand, had just entered Michigan State University and were only included as transfer students if they had not changed majors.

TABLE 5.--Number of majors at Michigan State University.

Number of Majors	Transfer	Change-of-Major
One	100%	. .
Two	. .	72.7%
Three	. .	22.5
Four	. .	3.9
Five	. .	.9

Academic Achievement

It is difficult to make comparisons of grade point averages for these two groups because they have attended different institutions prior to entering the College of Agriculture and Natural Resources. The transfer students had an average of 2.74 prior to enrolling in the College while the change-of-major group had a 2.36 average.

A more realistic and fair comparison is to compare grade point averages after enrolling in the College of Agriculture and Natural Resources. In this case we find the transfers have a 2.64 average and the change-of-major group has an average of 2.41.

TABLE 6.--Average grade point averages before and after enrolling in the College of Agriculture and Natural Resources.

G.P.A.	Transfer	Change-of-Major
Before	2.74	2.36
After	2.64	2.41

From the preceding presentation of data it can be seen that these two groups, the transfers and the change-of-major group, are very dissimilar. Statistically significant differences were found in regard to type of major, time of major choice, enrollment in vocational agriculture in high school, and number of majors. They also differ from each other in terms of academic achievement as measured by grades.

These differences have important implications for persons planning and preparing career and curricular information and career counseling programs. Therefore, from this point the data are presented separately for transfers and change-of-major students and no further comparisons are made between these two groups.

Transfer Students

Distribution of Majors

The two most popular majors are in the natural resources group. Fisheries and wildlife has 32.4 per cent of the total transfer students. Forestry is next with 16.7 per cent.

The agriculture majors are more widely distributed. Only animal husbandry has more than 5 per cent of the total transfer students, having 7.4 per cent. Only 2.8 per cent (3 students) are in the packaging major.

TABLE 7.--Majors of transfer students.

	Number	Per Cent
<u>Natural Resources</u>		
Building Construction	1	.9
Fisheries and Wildlife	35	32.4
Forestry	18	16.7
Park and Recreation Resources	9	8.3
Resource Development	3	2.8
<u>Agriculture</u>		
Agribusiness	4	3.7
Agricultural Biochemistry	0	. .
Agricultural Communications	0	. .
Agricultural Economics	2	1.9
Agricultural Education	3	2.8
Agricultural Mechanization	2	1.9
Agriculture No-Preference	1	.9
Animal Husbandry	8	7.4
Crop Science	5	4.6
Dairy	2	1.9
Food Science	3	2.8
Horticulture Marketing	3	2.8
Horticulture Science	3	2.8
Poultry Science	0	. .
Soil Science	3	2.8
<u>Packaging</u>	3	2.8
Total	108	100.0

### Post-High School Institutions Attended

Community or junior colleges with 43.9 per cent were the major source of transfer students. This percentage is over 50 per cent when you include the 6.5 per cent who attended both a community college and the Institute of Agricultural Technology plus the 7.4 per cent who attended both a community college and a four-year institution. However, four-year institutions were also important sources of students as 32.7 per cent took this route. This percentage can also be increased when consideration is given to the 7.4 per cent who attended a community college as well as a four-year institution.

Nearly 14 per cent of these students have attended Michigan State University's Institute of Agricultural Technology either exclusively or in combination with attendance at a community college.

Specific institutions attended are listed in Appendix E.

### Residence

A majority of agriculture majors come from rural areas with 51.3 per cent coming from farms and 23.1 per cent from rural non-farm homes.

On the other hand, a majority, 53 per cent, of the natural resources majors come from urban areas and only 16.7 per cent from farms.

TABLE 8.--Type of post-high school institutions attended  
(transfer students).

	Number	Per Cent
Community or junior college	47	43.9
Four-year institution	35	32.7
Institute of Agricultural Technology	8	7.4
Community college and Institute of Agricultural Technology	7	6.5
Four-year institution and community college	8	7.4
Two-year technical school	2	1.8

TABLE 9.--Residence (transfer students).

	Natural Resources (N=66)	Agriculture (N=39)
Farm	16.7%	51.3%
Rural Non-Farm	28.8	23.1
Urban	53.0	23.1
Other	1.3	2.6

Size of High School  
Graduating Class

Natural resources students tend to come from larger high schools with 51.6 per cent coming from the largest category. Agriculture majors tend to come from smaller high schools with 56.4 per cent coming from graduating classes of 134 or less.

TABLE 10.--Approximate size of graduating class (transfer students).

Size	Natural Resources (N=64)	Agriculture (N=39)
300 or more	56.6%	20.5%
135 - 299	18.7	23.1
75 - 134	18.7	35.9
1 - 74	10.9	20.5

Academic Achievement

The primary factor which determines admissibility of a student into Michigan State University is academic achievement. Therefore, it is appropriate to report the grade point averages of these students. The natural resources transfer students had an average grade point average of 2.67 at their previous post-high school institutions. The agriculture majors had an average of 2.81 at their previous institutions.

Since the students included in this study were new on the Michigan State University campus in 1969, they had

very few (1-3 terms) terms to establish an academic record. However, acknowledging that fact, the Michigan State University grade point averages are presented to provide additional information on these students. The natural resources majors had an average grade point average of 2.57 at Michigan State University while the agriculture majors had an average of 2.76. These transfer students compare very favorably with the other students in the College of Agriculture and Natural Resources. Fall term 1969, the average grade point average of juniors in the College of Agriculture and Natural Resources was 2.50.

#### Time Choice of Major Was Made

Natural resources transfer students tend to make their decision on a major in the College of Agriculture and Natural Resources earlier than agriculture majors. Fifty-six per cent made this decision by high school graduation. Nearly 44 per cent of the agriculture majors had decided at the same point in their educational progress. Both groups, however, had sizeable percentages of students making this choice even as late as the third year of college.

#### Vocational Agriculture and Conservation Classes in High School

Vocational agriculture was taken in high school by 46.4 per cent of the agriculture majors and only 15.1 per cent of the natural resources transfers.



TABLE 11.--Time choice of major was made (transfer students).

	Natural Resources (N=66)	Agriculture (N=39)
Prior to high school	9.1%	7.7%
High school	47.0	35.9
First year of college	9.1	12.8
Second year of college	18.2	20.5
Third year of college and later	16.7	23.1

TABLE 12.--Vocational agriculture and conservation classes in high school (transfer students).

	Natural Resources (N=66)	Agriculture (N=39)
Vocational agriculture	15.1%	46.4%
Conservation	6.0	7.6

Conservation classes were taken by only 7.6 per cent of the agriculture transfers and 6 per cent of the natural resources majors.

Source From Which Student  
First Heard of Major

Over 21 per cent of the students who transfer into natural resources majors report that they first learned of their major in the University Catalog. The next two important sources were friends, classmates, roommates, etc., 12.1 per cent, and employees in the student's area of interest, 10.6 per cent.

TABLE 13.--Source from which student first heard of major (transfer students).<sup>a</sup>

	Natural Resources (N=66)	Agriculture (N=39)
Friend, classmate, roommate, etc.	12.1%	23.1%
University Catalog	21.2	10.3
College of Agriculture and Natural Resources faculty	3.0	20.5
Employee in student's interest area	10.6	7.7

<sup>a</sup>Only items receiving 10 per cent or more responses in at least one type of major group are listed.

The agriculture majors reported first hearing of their major primarily from two sources. Twenty-three per cent reported friends, classmates, roommates, etc. and

20.5 per cent reported College of Agriculture and Natural Resources faculty. The University Catalog was the source for 10.3 per cent.

Student Perceptions of  
Influences on Choice  
of Major

To evaluate the assistance or influence of individuals and other factors on choice of major, students were asked to indicate the degree of influence as "much," "some," or "none" for various individuals and factors. Responses of "much" and "some" were categorized as favorable and combined for analysis purposes. Percentages reported represent the percentage of natural resources or agriculture transfer students which gave a favorable response to a particular item.

Individuals who influenced choice of major.--

Natural resources transfer students most often reported that one of the individuals who influenced their choice of major was their father (75.8 per cent). Mothers were considered a favorable influence on choice of major by 59.1 per cent of the students. College acquaintances also were high on the list at 43.9 per cent. Other individuals mentioned by 25 per cent or more of the respondents were high school counselors 39.4 per cent, College of Agriculture and Natural Resources faculty 36.4 per cent, high school teachers (other than vocational agriculture) 34.8 per cent, community college counselors 33.3 per cent, high

school acquaintances 33.3 per cent, and community college teachers and employers, both mentioned by 28.8 per cent.

TABLE 14.--Individuals who influenced choice of majors (transfer students).<sup>a</sup>

	Natural Resources (N=66)	Agriculture (N=39)
Father	75.8%	61.5%
Mother	59.1	48.7
High school counselor	39.4	17.9
Vocational agriculture teacher	10.6	36.9
Other high school teacher	34.8	23.1
Community college counselor	28.8	28.2
College of Agriculture and Natural Resources faculty	36.4	53.9
High school acquaintance	33.3	15.4
College acquaintance	43.9	48.7
Employer	28.8	33.3

<sup>a</sup>Percentages are reported only when they exceed 25 per cent for at least one of the sub-groups.

The agriculture majors also most often reported that their fathers were a favorable influence on choice of major with 61.5 per cent responding favorably. College of Agriculture and Natural Resources faculty were in second place with 53.9 per cent. Mothers and college acquaintances

were listed by 48.7 per cent, vocational agriculture teachers 35.9 per cent, employers 33.3 per cent, and community college teachers 28.2 per cent.

Influence of career and curricular exploration activities on choice of major.--The "printed word" appears to be an important influence on natural resources majors. Magazine articles were indicated as an influence by 78.8 per cent of the respondents, career or curricular brochures by 66.6 per cent and newspaper articles by 60.0 per cent. Television programs were rated favorably by 65.2 per cent and discussions with employees by 60.6 per cent.

The agriculture majors most often indicated career or curricular brochures and discussions with employees.

TABLE 15.--Influence of career and curricular exploration activities on choice of major (transfer students).<sup>a</sup>

	Natural Resources (N=66)	Agriculture (N=39)
Career or curricular brochures	66.6%	69.2%
Magazine articles	78.8	66.6
Newspaper articles	60.6	23.1
Television programs	65.2	17.9
Career programs at M.S.U.	16.7	25.7
Discussions with persons employed in interest area	60.6	69.2

<sup>a</sup>Percentages are reported only when they exceed 25 per cent for at least one of the sub-groups.

Both received favorable responses from 69.2 per cent of the respondents. Magazine articles were again an important influence according to 66.6 per cent of the students. Career programs at Michigan State University were given credit for assistance or influence on choice of major by 25.7 per cent of the agriculture majors.

Influence of other factors on choice of major.--

The natural resources students, not surprisingly, were unanimous (100 per cent) in their agreement that "love for the out-of-doors" was a positive influence on their selection of a major. The fact that the curriculum requires courses they like was mentioned by 75.7 per cent. A desire to serve society was an influence indicated by 63.6 per cent. Interest or aptitude tests are perceived by 47 per cent of the respondents to have influenced their choice. Three other miscellaneous items received the nod of over 25 per cent of the students: flexibility of the curriculum 39.4 per cent, prestige of the occupation 37.8 per cent, and employment during college 36.4 per cent.

The agriculture majors perceive the same type of influences as important, however, they also rate two other factors over 25 per cent. Employment during high school was given a favorable response by 41 per cent and the reported high salaries by 25.7 per cent.

TABLE 16.--Influence of other factors on choice of majors (transfer students).<sup>a</sup>

	Natural Resources (N=66)	Agriculture (N=39)
Interest or aptitude tests	47.0%	30.7%
Employment during high school	13.6	41.0
Employment during college	36.4	41.0
Prestige of the occupation	37.8	33.4
Love for the out-of-doors	100.0	77.0
High salaries reported	15.2	25.7
Desire to serve society	63.6	51.2
Curriculum requires courses I like	75.7	69.2
Curriculum allows great flexibility	39.4	61.5

<sup>a</sup>Percentages are reported only when they exceed 25 per cent for at least one of the sub-groups.

### Student Suggestions

Transfer students were asked the question, "In your opinion, what could be done to interest more young people in the majors available within the College of Agriculture and Natural Resources?" Because of the open-ended nature of the question, the replies were difficult to

categorize. Many described the problem rather than propose a solution. Many others gave very thoughtful, constructive suggestions. Several replies are quoted here to represent the type of constructive replies received.

A number of students feel the College should be more forward in its recruiting efforts:

If I hadn't attended Farmers' Week I might have never known what was going on in the College of Agriculture and Natural Resources. This is a fantastic college with a lot of interesting things happening. You should let people know about them more than what you do now.

I have not heard of many programs, if any, offered by the College outside of my major. Therefore, I feel that there is not enough communication with people on the outside. Perhaps more contact with circulars and public talks with prospective students will help to convey the programs and develop interest.

Make information more directly obtainable by students. It would also help if people were talked to about the opportunities offered because nothing is really said to the no-preference student, whereas, if they were to hear what this College has to offer them, more students might enter this College.

Some suggest more should be done to help counselors:

Increased knowledge by counselors at high school and community college level would help.

. . . keeping of small community college counselors better informed as to curriculum and changes in curriculum requirements.

Many transfer students feel the place for career information is the high school:

More information programs at the high school level.

If more speakers who were sincerely interested in agriculture would meet young people in high schools and tell them of the opportunities a degree in agriculture has to offer, more people would become interested.



. . . initiate programs in high schools. In fact, in the high school that I graduated from there were very few conservation courses and no agriculture courses. I would say the prime target should be at the high school level.

More and better informative personal talks to young people at the high school level.

It might be helpful to go to some high schools and inform more people about the opportunities in the College. I am closer to the field than many people and still was not totally aware of the opportunities until just recently.

Some thought more could be done through vocational agriculture classes:

Vocational agriculture teachers should be more aware of the opportunities available and should discuss them with their students in high school.

More recruiting in vocational agriculture classes in high school.

Go into the high school agriculture classes and present a vocational program to inform students of possible occupations and programs in the various agricultural fields.

Others feel that our faculty could do more:

I found that I had to come in on my own for assistance in deciding on a major here. The College should let students know that counseling services and advice are here and are excellent.

Keep showing a real concern and interest in the students themselves and their goal. This was, and I make no exaggeration, poorly lacking in my previous major.

Send professors to high schools to lecture at assemblies or show nature films, etc.

Some students feel actual work experience is helpful:

Encourage field trips to conservation research stations and other places with the opportunity to work alongside the professional in various activities. Reading about career opportunities is fine but I want concrete evidence that I am training for the right career.

Interest encouraged by actual work in a particular field was my strongest belief for inducing students to take up majors in the College of Agriculture and Natural Resources.

### Summary of Findings on Transfer Students

1. Transfer students most often chose fisheries and wildlife as a major, with 32.4 per cent enrolled in this one major. Forestry was the choice of 16.7 per cent. Animal husbandry had 7.4 per cent.
2. Over half of the transfer students had attended a community college and over 40 per cent had attended four-year institutions. Nearly 14 per cent had previously been enrolled in the Institute of Agricultural Technology.
3. Natural Resources transfer students:
  - a. Came most often from non-farm homes.
  - b. In general had attended large high schools (over 50 per cent had graduating classes of 300 or more).
  - c. Had their grade point average decline only slightly at Michigan State compared to their previous institution and had done slightly better academically than the

average student in the College of Agriculture and Natural Resources.

- d. Varied greatly as to the time they chose their major, however, over half made the choice by the time of high school graduation.
- e. Had not been enrolled in vocational agriculture or conservation classes to a very great extent.
- f. Reported that they first learned of their major from the University Catalog, friends, and employees in their area of interest.
- g. Most often reported that their parents were an influence on their choice of major and that college and high school acquaintances, high school and community college counselors, College of Agriculture and Natural Resources faculty, high school and community college teachers and employers were favorable influences.
- h. Most often reported magazine and newspaper articles, career or curricular brochures, television programs, and discussions with employees as being influences on their choice of major.
- i. Were unanimous in the feeling that their "love for the out-of-doors" influenced

their choice of major and other factors included a like for the required courses, and a desire to serve society.

4. Agriculture transfer students:

- a. Came most often from rural areas and over half were from farms.
- b. Had attended smaller high schools than natural resources students but were well distributed among the various sizes of schools.
- c. Had nearly identical grade point averages at Michigan State University compared to their previous institutions and had a better academic record at Michigan State University than the average of their classmates.
- d. Tended to choose their majors later than the natural resources group and over half made their choice after high school graduation.
- e. Were nearly evenly divided between those who had taken vocational agriculture and those who had not.
- f. Most often reported first hearing of their major from friends and College of Agriculture and Natural Resources faculty.

- g. Most often indicated fathers, College of Agriculture and Natural Resources faculty, mothers, college acquaintances, vocational agriculture teachers, employers, and community college teachers as having been favorable influences on choice of major.
- h. Most often reported career or curricular brochures, discussions with employees, and magazine articles as favorable influences on choice of major.
- i. Most often reported that other factors which influenced their choice of major were "love for the out-of-doors," liked courses required, flexibility of the curriculum, desire to serve society, and employment during high school and college.

#### Change-of-Major Students

#### Distribution of Majors

Forty-five and one-half per cent of the students who changed majors into the College of Agriculture and Natural Resources came into one major, packaging. Thirty-one per cent changed into one of the five natural resources majors, with fisheries and wildlife being the most popular. Twenty-four per cent changed into agriculture majors.

TABLE 17.--Majors of change-of-major students.

	Number	Percentage (N=227)
<u>Natural Resources</u>		
Building Construction	16	7.0%
Fisheries and Wildlife	27	11.9
Forestry	4	1.8
Park and Recreation Resources	18	7.9
Resource Development	6	2.6
Total	71	31.2
<u>Agriculture</u>		
Agribusiness	7	3.1
Agricultural Communications	1	.4
Agricultural Economics	3	1.3
Agricultural Education	2	.9
Agricultural Mechanization	5	2.2
Agriculture No-Preference	1	.4
Animal Husbandry	15	6.6
Crop Science	1	.4
Dairy	3	1.3
Food Science	8	3.5
Horticulture Marketing	2	.9
Horticulture Science	3	1.3
Poultry Science	2	.9
Soil Science	2	.9
Total	55	24.1
<u>Packaging</u>	Total	101
		44.5

Colleges From Which  
Students Changed

The largest percentage of students (29.1 per cent) who changed into the College of Agriculture and Natural Resources came from the University No-Preference category. The second most frequent source was the College of Engineering which contributed 28.2 per cent. The next three colleges, in order, were Natural Science (14.5 per cent), Veterinary Medicine (10.5 per cent) and Business (6.6 per

cent). Table 18 gives the complete list of colleges from which students changed. Only Justin Morrill College is not represented.

TABLE 18.--Colleges from which students changed (change-of-major students).

	Number	Percentage (N=227)
University No-Preference	66	29.1%
Engineering	64	28.2
Natural Science	33	14.5
Veterinary Medicine	24	10.5
Business	15	6.6
Social Science	6	2.6
Arts and Letters	5	2.2
Human Medicine	4	1.7
Lyman Briggs	4	1.7
Communication Arts	2	.8
Education	2	.8
Home Economics	1	.4
James Madison	1	.4

### Residence

The majority of natural resources and packaging majors come from urban areas as can be seen from Table 19. Agriculture majors, on the other hand, come primarily from farm and rural non-farm homes.

TABLE 19.--Residence (change-of-major students).

	Natural Resources (N=71)	Agriculture (N=55)	Packaging (N=101)
Farm	14.1%	56.4%	6.9%
Rural Non-Farm	25.4	27.3	29.7
Urban	60.6	16.4	63.4

Size of High School  
Graduating Class

Students who changed majors into natural resources and packaging are very similar in regard to size of high school graduating class. In both groups nearly half (45.1 per cent and 46.5 per cent, respectively) of the students attended large high schools with 300 or more students in the graduating class. This approximates a Michigan Class A high school. The percentages for these two groups, as can be seen in Table 20, decline rapidly with decreasing size of graduating class. Both have a relatively small proportion (8.5 per cent and 8.9 per cent) in the smallest category.

Agriculture majors, in contrast, were fairly evenly divided among the four categories with the following percentages in descending order according to size of graduating class: 27.3 per cent, 20.0 per cent, 30.9 per cent, and 21.8 per cent.



TABLE 20.--Approximate size of graduating class (change-of-major students).

Size	Natural Resources (N=71)	Agriculture (N=55)	Packaging (N=101)
300 or more	45.1%	27.3%	46.5%
135 - 299	28.2	20.0	26.7
75 - 134	18.3	30.9	16.8
1 - 74	8.5	21.8	8.9

Academic Achievement

The average cumulative grade point average for all students in the University fall term, 1969 was 2.64. For College of Agriculture and Natural Resources students the average was 2.58. It can be seen from Table 21 that that change-of-major students in general are below average academically. However, it can also be seen that after enrolling in the College of Agriculture and Natural Resources their grades tend to improve slightly.

TABLE 21.--Cumulative grade point average before and after change-of-major into College of Agriculture and Natural Resources.

	Natural Resources	Agriculture	Packaging
Before	2.43	2.37	2.30
After	2.47	2.41	2.36

When asked whether poor performance in a previous major influenced their choice of a major in the College of Agriculture and Natural Resources, 39.1 per cent indicated that this was a factor. This response and the grade point averages reported above would seem to indicate that academic achievement is an important factor for some students who change into the College.

Time Choice of Major  
Was Made

Natural resources students report making their choice of major at an earlier time than the other two groups. Most of them made their choice by the end of the second year of college. Only 9.9 per cent made the decision in the third year or later.

Agriculture majors tended to make their choice later with 27.3 per cent still not decided at the end of the second year of college.

Packaging majors tend to make their choice very late with 91.1 per cent making the decision in the second year of college or later.

Vocational Agriculture and  
Conservation Classes in  
High School

Nearly half (43.6 per cent) of the agriculture majors took vocational agriculture classes while in high school and 20 per cent had conservation classes.

TABLE 22.--Time choice of major was made (change-of-major students).

	Natural Resources (N=71)	Agriculture (N=55)	Packaging (N=101)
Prior to high school	1.4%	5.5%	0.0%
High school	11.2	9.0	2.0
First year of college	31.0	16.4	6.9
Second year of college	46.5	41.8	48.5
Third year of college or later	9.9	27.3	42.6

TABLE 23.--Vocational agriculture and conservation classes in high school (change-of-major students).

	Natural Resources (N=71)	Agriculture (N=55)	Packaging (N=101)
Vocational agriculture	5.6%	43.6%	. .
Conservation	4.2	20.0	. .

For the other two groups it is a different story. No packaging majors reported having taken either subject. Only 5.6 per cent of the natural resources majors have had vocational agriculture and 4.2 per cent took conservation classes.

Source From Which Student  
First Heard of Major

Students who changed majors first heard of their majors from a variety of sources, however, only four sources were mentioned by 10 per cent or more of the students in any type-of-major group. The most frequently mentioned source was friend, classmate, roommate, etc. (hereafter referred to as acquaintances). Sixty-six per cent of the packaging students indicated that they first heard of packaging from acquaintances. No other single source was mentioned by 10 per cent or more of the packaging majors.

Over one-half of the natural resources students learned of their majors from two sources: 33.8 per cent from acquaintances, and 22.5 per cent from the University Catalog.

The agriculture majors had four sources mentioned by 10 per cent or more of the students. They include: College of Agriculture and Natural Resources faculty 22.5 per cent, University Catalog 14.5 per cent, acquaintances 12.7 per cent and advisers in previous majors 10.9 per cent.

TABLE 24.--Source from which student first heard of major (change-of-major students).<sup>a</sup>

	Natural Resources (N=71)	Agriculture (N=55)	Packaging (N=101)
Friend, class-mate, roommate, etc.	33.8%	12.7%	66.3%
College of Agriculture and Natural Resources faculty	8.5	25.5	3.0
University Catalog	22.5	14.5	5.9
Adviser in previous M.S.U. major	4.2	10.9	4.0

<sup>a</sup>Percentages are listed only when they exceed 10 per cent for at least one of the sub-groups.

Student Perceptions of Influences on Choice of Major

Individuals who influenced choice of major.--Students in the three type-of-major groups perceive their choice of major to be influenced by similar groups of individuals. All three groups perceive parents to be an important influence. They all credit College of Agriculture and Natural Resources faculty with being a positive influence as well as college acquaintances and Michigan State University Counseling Center personnel.

Agriculture majors, in addition to the four influences mentioned above, also credited vocational agriculture teachers, employers, high school acquaintances, and Michigan State University no-preference advisers.

TABLE 25.--Individuals who influenced choice of major (change-of-major students).<sup>a</sup>

	Natural Resources (N=71)	Agriculture (N=55)	Packaging (N=101)
Father	62.0%	54.5%	43.5%
Mother	47.9	54.5	34.7
Vocational agriculture teacher	. .	33.0	. .
Other high school teacher	21.2	18.2	8.0
M.S.U. no- preference adviser	18.3	23.6	22.7
M.S.U. Counsel- ing Center personnel	25.4	21.8	20.8
College of Agriculture and Natural Resources faculty	60.6	65.5	44.6
High school acquaintance	16.9	21.8	16.9
College acquaintance	59.2	49.1	79.2
Employer	16.9	27.2	11.9

<sup>a</sup>Percentages are listed only when they exceed 20 per cent for at least one of the sub-groups.

Michigan State University no-preference advisers were credited by 22.7 per cent of the packaging students as being a positive influence on the choice of a major.

Natural resources majors were the only group to have more than 20 per cent of the students credit teachers (other than vocational agriculture teachers) with being an influence on their choice of major.

Influence of career and curricular exploration activities on choice of major.--Over 70 per cent of the natural resources students mentioned discussions with employees in their interest area and magazine articles as positive influences. They also gave credit to career brochures (66.2 per cent), newspaper articles (50.7 per cent), television programs (46.5 per cent), and career programs at Michigan State University (21.1 per cent).

Agriculture majors credited discussions with employees in interest area (60.0 per cent) and career brochures (52.7 per cent) as the most important influences. Magazine articles were mentioned by 47.2 per cent and newspaper articles by 34.6 per cent. Agriculture majors were the only group to have 20 per cent or more positive responses to speeches by representatives of Michigan State University. They also had 27.2 per cent respond positively to career programs at Michigan State University.

The packaging majors had five categories which received positive response from 20 per cent or more of the

students. These were in descending order: career brochures, 66.4 per cent; discussions with employees in their interest area, 60.4 per cent; magazine articles, 45.6 per cent; newspaper articles, 29.7 per cent; and Michigan State career programs, 25.7 per cent.

TABLE 26.--Influence of career and curricular exploration activities on choice of major (change-of-major students).<sup>a</sup>

	Natural Resources (N=71)	Agriculture (N=55)	Packaging (N=101)
Career or curricular brochures	66.2%	52.7%	66.4%
Magazine articles	70.4	47.2	45.6
Newspaper articles	50.7	34.6	29.7
Television programs	46.5	18.2	19.8
Speech by M.S.U. repre- sentative	5.6	31.0	8.9
Career programs at M.S.U.	21.1	27.2	25.7
Discussion with employees in student's interest area	71.8	60.0	60.4

<sup>a</sup>Percentages are listed only when they exceed 20 per cent for at least one of the sub-groups.



Influence of other factors on choice of major.--

Natural resources students were nearly unanimous in saying that their "love for the out-of-doors" influenced their choice of major. Other important influences, in descending order are: curriculum requires courses I like, 87.3 per cent; desire to serve society, 62 per cent; flexibility of the curriculum, 57.8 per cent; interest or aptitude tests, 43.6 per cent; prestige of the occupation, 38 per cent; poor performance in another major, 28.2 per cent; employment during college, 26.8 per cent; high salaries reported, 26.8 per cent; and employment during high school, 25.4 per cent.

Agriculture majors had the same set of factors receiving positive evaluation by 20 per cent or more of the respondents. Most, in fact, had similar percentages of students responding favorably. One exception was that a higher percentage (52.7 per cent) gave credit to employment during high school. The desire to serve society was listed by only 32.7 per cent of the agriculture majors compared to 62 per cent of the natural resources majors.

Packaging students responded somewhat differently. High salaries attracted 86.1 per cent of them. Other factors ranking high were: curriculum requires liked courses, 84.2 per cent; flexibility of the curriculum, 77.2 per cent; prestige of the occupation, 54.4 per cent; and Placement Bureau reports, 47.5 per cent.

TABLE 27.--Influence of other factors on choice of majors  
(change-of-major students).<sup>a</sup>

	Natural Resources (N=71)	Agriculture (N=55)	Packaging (N=101)
Interest or aptitude tests	43.6%	56.3%	38.6%
Employment during high school	25.4	52.7	7.9
Employment during college	26.8	25.4	20.8
Prestige of the occupation	38.0	27.3	54.4
Love for the out-of-doors	90.1	76.4	7.0
Placement Bureau reports	9.9	12.8	47.5
High salaries reported	26.8	21.8	86.1
Desire to serve society	62.0	32.7	29.7
Curriculum requires courses I like	87.3	80.0	84.2
Curriculum allows great flexibility	57.8	65.4	77.2
I did poorly in another major	28.2	27.2	36.7

<sup>a</sup>Percentages are listed only when they exceed  
20 per cent for at least one of the sub-groups.

### Student Suggestions

Change-of-major students made many helpful suggestions in reply to the question, "In your opinion, what could be done to interest more young people in the majors available within the College of Agriculture and Natural Resources?" Some of their replies are quoted here as examples of ideas they expressed.

Many change-of-major students feel present College of Agriculture and Natural Resources students can be helpful:

Encourage students now in the College to talk to other people about the College. This is what got me considering a major in the College of Agriculture and Natural Resources.

Have students within the College speak to others outside. It was through this type of contact that I became interested.

The best advertising in my estimation is word of mouth. One should encourage people already in the College to spread the word, for it is this close inter-personal contact of student to student where things are really learned. This is how I learned of the School of Packaging and that is how I also spread the word.

Interviews with students already in some field of agriculture could influence an undecided student.

The best way, I believe, is to sell present majors on their field so that this enthusiasm will "rub off" on those who come into contact with them.

There were a large number of comments regarding the availability of brochures and other printed materials:

. . . increased brochures sent to students.

Hand out more information booklets.

Better availability of occupational literature that would tie your majors into positions on the outside.

Since I first became aware of the College through the mail I would recommend that a letter or brochure be mailed to freshmen and maybe sophomores describing all majors, if possible, in the College, especially no-preference students. I received letters about packaging and agribusiness and I looked into both majors, deciding on the former.

Brochures, pamphlets, etc., I didn't even know what packaging was until the sophomore year. I think more leaflets and brochures should be available.

A number of students suggested that information be given to students at summer orientation:

A pamphlet should be given explaining all of the majors available at the time of entrance.

Possibly a handout describing the majors available within the College to be passed around during orientation or the beginning of freshman year would help.

Have a place at the summer orientation program where new students can talk with people who know what careers a major in this College can lead to.

Many students encouraged more publicity and exposure of the majors in the College:

Literature should be made available to new students telling them about the opportunities available. I never saw a pamphlet on my major until I was a sophomore and I never would have heard of it if it hadn't been for the fact that several guys who live on the same floor as me told me about it. Considerably more money and time should be spent on advertising and public relations.

A better dissemination of facts pertaining to the possible majors that are available. . . . I would have switched earlier if I had known.

Advertise more. Become better known. Some students are unaware of majors in the College of Agriculture and Natural Resources. When I heard about a Food Science major it was very attractive. Many students would be very interested in Food Science or the

College of Agriculture and Natural Resources if they knew about the College and what it offers.

Well, for my major I feel the advantages of the field and the courses involved should be publicized more. I would have entered building construction right upon entry into college except I didn't know it was offered.

More announcements to inform students of various majors, employment prospects and salary opportunities. The only way I found out about packaging was through students.

Summary of Findings on  
Change-of-Major  
Students

1. Change-of-major students most often chose packaging as a major, with 44.5 per cent enrolled in this one major. Fisheries and wildlife had 11.5 per cent. The most popular agriculture major was animal husbandry with 6.6 per cent.
2. The largest percentage of students changed from the University No-Preference category with 29.1 per cent making such a change. Twenty-eight and two-tenths per cent changed from the College of Engineering. The other major contributing colleges were Natural Science, Veterinary Medicine and Business.
3. Natural resources change-of-major students:
  - a. Came most often from urban homes.
  - b. In general had attended large high schools.
  - c. Had grades which are lower than the average student at Michigan State University.

- d. For the most part, chose their present major during the first and second year of college.
- e. Had not been enrolled in vocational agriculture or conservation classes to any great extent.
- f. Reported that they first learned of their major from two primary sources, acquaintances and the University Catalog.
- g. Most often reported that parents, College of Agriculture and Natural Resources faculty, college acquaintances, Counseling Center personnel and high school teachers were favorable influences on choice of major.
- h. Most often reported discussions with employees and magazine articles as favorable influences on their major choice (they also credited brochures, newspaper articles, television programs, and career programs at Michigan State University).
- i. Perceived their "love for the out-of-doors," liked courses required, desire to serve society, and flexibility of the curriculum as positive influences on choice of major (other favorable influences included aptitude tests, prestige of the occupation,

poor performance in another major, employment during high school and college, and high salaries reported).

4. Agriculture change-of-major students:
  - a. Came most often from rural areas and over half were from farms.
  - b. Were from smaller high schools than the other two sub-groups with over half having attended schools in the two smallest categories comparable to Class C and D.
  - c. Had grade point averages in general which were below the University average.
  - d. Tended to make their choice of major later than natural resources students, with nearly 70 per cent deciding in the second year of college.
  - e. Reported that 43.6 per cent of their group had taken vocational agriculture in high school.
  - f. Most often reported that they first heard of their major from College of Agriculture and Natural Resources faculty, the University Catalog, acquaintances, and advisers in previous majors.
  - g. Most often indicated that individuals who influenced their choice of major were College of Agriculture and Natural Resources

faculty, parents, college acquaintances, vocational agriculture teachers, employers, high school acquaintances, and no-preference advisers.

- h. Most often reported that career exploration activities which influenced their choice of major were discussions with employees, career brochures, magazine and newspaper articles, speeches by representatives of Michigan State University, and career programs at the University.
- i. Most often reported that their like for courses required in the curriculum and their "love for the out-of-doors" influenced their choice of major (other favorable influences were flexibility of the curriculum, aptitude tests, employment during high school, and desire to serve society).

5. Packaging change-of-major students:

- a. Came most often from urban homes.
- b. In general had attended large high schools.
- c. Were below the average academically of Michigan State University students.
- d. Were very late in choosing packaging as a major with over 90 per cent deciding in



the second year of college or later and 42 per cent the third year or later.

- e. Had not taken vocational agriculture or conservation classes in high school.
- f. Reported overwhelmingly that they first learned of their major from acquaintances.
- g. Most often reported that college acquaintances influenced their choice of major (other major influences were College faculty, parents, no-preference advisers, and Counseling Center personnel).
- h. Most often reported that career exploration activities which influenced them were career brochures, discussions with employees, magazine and newspaper articles, and career programs.
- i. Most often reported that from a list of other influences the major influences were high salaries, liked required courses, flexibility of the curriculum, prestige of the occupation, and Placement Bureau reports.

## CHAPTER IV

### FINDINGS AND RECOMMENDATIONS

Based on the findings, recommendations are made to assist prospective students of the College of Agriculture and Natural Resources in their choice of major. Recommendations are first made which apply to all transfer students. Then recommendations are made based on findings which are specific or unique to natural resources, agriculture, or packaging majors. The same procedure is then followed for change-of-majors.

The recommendations which are presented are based on the findings of this study and the experiences of the writer who has worked with undergraduate students for four years as Coordinator of Student Programs in the College of Agriculture and Natural Resources.

#### Transfer Students

Finding: Nearly half of the transfer students made their decision to enroll in the College of Agriculture and Natural Resources while in high school. Many others (slightly over half) decided while enrolled in a college or technical school.

Recommendation: It is important to provide career information, career exploration activities, and career counseling both in high schools and post-high school institutions.

Finding: Students transferred from three types of institutions: community-junior colleges, four-year institutions, and technical schools.

Recommendation: Efforts should be increased to make career brochures and other career information available to students, counselors, and teachers in the community-junior colleges. While it is more difficult to reach prospective students in four-year institutions, once they are identified they should be invited to the Michigan State University campus and given the assistance they need. The excellent counseling program in the Institute of Agricultural Technology should be continued. Capable students should be encouraged to consider a four-year degree program. This becomes even more important as the entrance requirements for admission of freshmen to Michigan State University continue to rise.

Finding: Nearly one-third of all transfer students came into the fisheries and wildlife major.

Recommendation: Since this major is the one with an unfavorable job market situation, efforts should be made to inform these students of the supply and demand for such graduates. They should be made aware of other majors

in the College and in other colleges which might use similar interests and aptitudes. People in positions to offer assistance to prospective students, such as parents, teachers, counselors, etc. should also be made aware of this situation. However, it should be acknowledged that some students will go on to graduate school and this major offers an excellent background for many fields in the biological sciences.

Finding: Transfer students perceived parents to be an influence and factor of assistance in their choice of major.

Recommendation: It would seem appropriate to provide career information to parents. This might be accomplished by providing speakers for school and community meetings attended by parents; providing career brochures specifically intended for parents; making definite efforts to include parents in career days; and to encourage parents to bring their children to the University campus for discussions of career possibilities and educational opportunities. As career opportunities and job market situations constantly change it becomes more important that they have up-to-date information or they may be misinforming their children.

Finding: Printed career information such as brochures, magazine articles, and newspapers articles were

perceived by students to influence or assist them in their choice of major.

Recommendation: Attractive, informative materials should be developed and made available to high school students and other potential transfer students. Regular releases of career information should be made to the press.

Finding: Students reported first hearing of their major from two primary sources, the University Catalog, and friends.

Recommendation: Special attention should be given to the sections in the University Catalog which explain the programs of the College. Consideration should be given to the image that is being portrayed to prospective students. Since friends and acquaintances are influential in this matter of major choice it might be fruitful to organize a speakers' bureau of present and former students of the College. These representatives, if given assistance with up-to-date brochures, films, etc., could visit students in their former high schools and colleges.

Finding: Employers and discussions with employees in the student's area of interest were perceived to be influences and factors of assistance.

Recommendation: The College of Agriculture and Natural Resources has thousands of graduates working in Michigan. There are hundreds of agricultural, natural resources, and packaging employers in this state. These

people should be encouraged and given the opportunity to be a part of a program which provides meaningful part-time employment for students and puts prospective students in contact with these employers and employees, if only for a discussion.

Finding: High school and community college counselors were found to be of assistance or influential only in the case of natural resources students.

Recommendation: If they are effective with natural resources students, it seems reasonable to assume that they could also assist prospective agriculture and packaging majors. Career and curricular information in all of these areas must be provided so that these key people can assist young people in making well-informed choices.

Finding: College of Agriculture and Natural Resources faculty were found to be of assistance or influential in major choices.

Recommendation: Faculty members should be informed of this and encouraged to do even more in this area. While faculty members were an important factor, extension agents were not mentioned by a single respondent as being a favorable influence or of assistance in their choice of major. Steps should be taken to assist and encourage extension agents to be of assistance to prospective students.

Finding: A "love for the out-of-doors" and a desire to serve society were perceived to be factors in the choice of major by a large percentage of students in this study.

Recommendation: Writers of career information and speakers should be made aware of this as they seek to encourage enrollment in the College. This is especially appropriate with the current emphasis on environmental quality.

Finding: The flexibility of the curricula in the College was perceived to be a favorable influence by a large percentage of students.

Recommendation: This is apparently an advantage of the programs offered by the College and should be stressed in the University Catalog and in other curricular information.

#### Natural Resources Transfer Students

Finding: Natural resources students came primarily from urban areas and large high schools.

Recommendation: Recruitment efforts should be expanded in these areas as well as in the rural areas.

Finding: Natural resources students were the only ones that had a high percentage reporting television

programs as an influence or assistance factor in choice of major.

Recommendation: This is very possibly due to the large number of well-produced nature and outdoors type of programs available. Since this is effective, it might be well to consider improving this means of reaching students. Perhaps television stations would use spot career announcements prepared by the College before and/or after the showing of particular programs or films.

#### Agriculture Transfer Students

Finding: Agriculture transfer students came primarily from rural areas and over half were from farms.

Recommendation: Programs which provide career information to rural students and parents should be continued and improved. However, the majority of people today live in urban areas and the agricultural curricula do not require a farm background. Therefore, efforts must be made to inform urban residents of the opportunities in the agriculture majors. The faculty should seriously consider curricula changes which would attract urban young people and at the same time prepare them adequately for agricultural careers. In those types of careers where an agricultural background is helpful, occupational experience programs should be offered.



Finding: Nearly half of the agriculture transfer students had taken vocational agriculture in high school.

Recommendation: This is a real compliment to vocational agriculture teachers and their programs when it is realized that less than 25 per cent of Michigan high schools offer vocational agriculture and less than 12 per cent of Michigan high school students are in schools offering the subject. Therefore, efforts should be expanded to keep vocational agriculture teachers informed with up-to-date information. Resources such as films, slide-tape sets, brochures, teaching units and speakers should be made available to these teachers.

Also, based on the finding of the value in discussions with employees and the influence of employers, work experience programs should be given encouragement as a part of the vocational agriculture program. Also, increased efforts should be made to reach students, parents, counselors, and teachers in those rural schools which do not offer vocational agriculture.

Counselors, students, parents, and school administrators should be made aware of the fact that vocational agriculture students do go to college. College-bound students with interests in the broad field of agriculture should have the opportunity to enroll in vocational agriculture in high school.



### Packaging Transfer Students

Finding: The packaging major attracted very few transfer students.

Recommendation: Apparently this major is very well known on campus and nearly unknown off campus. Efforts should be made to acquaint the public, counselors, and students with career opportunities and educational programs available in packaging. Based on means that have proven effective for other majors these efforts might include brochures, news releases to magazines and newspapers, and use of present students in specific recruitment activities in their home high schools and in community colleges in their areas.

### Change-of-Major Students

Since potential change-of-major students and potential transfer students are in high school together, the recommendations which are suggested previously for reaching high school students would also apply to potential change-of-major students. Therefore such recommendations will not be repeated here. This section will concentrate on the unique opportunities to assist potential change-of-major students . . . unique because these students are on the Michigan State University campus. These students have met the admission requirements and have in fact enrolled. Helping them find a career in agriculture, natural resources, or packaging does not include the necessity of

encouraging enrollment at Michigan State University or more basic, of encouraging them to seek post-high school education.

Let us look then at the findings of this study and some recommendations which follow from these findings, first for change-of-major students in general and then for the three sub-groups: natural resources, agriculture, and packaging.

Finding: Change-of-major students tended to make their decision to enroll in the College of Agriculture and Natural Resources late, primarily in the second and third year of college attendance.

Recommendation: Judging by the testimonials of students reported in Chapter III and the fact that late major changes often result in additional terms beyond the normal twelve to graduate, it certainly is clear that career and curricular assistance is needed by these students. While some may benefit from a prolonged period of exploration while taking college courses, others could definitely benefit from avoiding this needless waste of time, money, and effort judging by the student suggestions reported in this study. It is therefore recommended that serious consideration be given to improving the career and curricular information and counseling programs of the College of Agriculture and Natural Resources. Further,

the same is recommended for the other units of the University which are in a position to assist these students.

Finding: The most often mentioned source from which change-of-major students first heard of their major was acquaintances (friends, classmates, roommates, etc.).

Recommendation: Students must first hear of a major and know that it exists if they are to have the opportunity to consider it as a major. This is obvious, but apparently many of the majors in the College are not widely known by students. Efforts should be initiated to encourage present students of the College to tell other students of their major. This might be done in a number of ways. For example, the eighteen undergraduate student clubs in the College could be assisted in developing specific programs to accomplish this. Students could be encouraged to "sell" their major as a learning experience in salesmanship. Departments or the College might consider hiring undergraduate assistants as "recruiters." Present students might, at the least, be used to identify potential College of Agriculture and Natural Resources students among their acquaintances. Acquaintances were not only involved in informing other students of their major, but they also were most often reported to be the individuals who were of assistance or influential in the choice of major by students in this study. This gives added emphasis to the need to involve present students

in this task. Students should be encouraged to refer potential majors to faculty members who may be of assistance to them.

Finding: The University Catalog was the second most popular source from which students learned of their major.

Recommendation: Those responsible for preparing the College of Agriculture and Natural Resources section of the University Catalog should seriously consider the potential change-of-major students when preparing the copy. The Dean's Undergraduate Advisory Council and students who have changed majors into the College could be of assistance. The Catalog should definitely not be considered as a mere listing of curricula requirements.

Finding: College of Agriculture and Natural Resources faculty were found to be an influence or a source of assistance in choice of major and as a source from which students first heard of their major.

Recommendation: This is as it should be, for no one else, save perhaps the students, is in a better position to assist potential students. The fact that students perceive faculty to have been of real assistance should be made known to them. Faculty should be encouraged to do a more effective job of this. An organized, well developed program should be instituted to put more faculty members in more contact with students. Participation by faculty

in such activities as student clubs should be increased. Those in administrative roles should be certain that faculty members who like involvement with students, get time and recognition for such activity.

Finding: Parents were found to influence or be of assistance in choice of major.

Recommendation: In addition to the suggestions made in the transfer student section, specific efforts should be made to reach parents. While this is difficult, given the location of parents, nevertheless some things can be done. Faculty could be encouraged to write letters to the parents of students who show an interest in the College to invite them to write or visit the campus to become better acquainted with the major their son or daughter is considering. Academic advisers could be encouraged to write to the parents of all new advisees as a matter of course. This might help in retention. The College might consider a special activity for Parents' Weekend or some other appropriate time.

Finding: Michigan State University Counseling Center personnel and no-preference advisers were perceived as having influenced or assisted students in choosing a major.

Recommendation: The College should have a continuous well-organized program in operation to keep these key people informed of opportunities and changes in the

College and job picture. Personal contact should be continued and expanded so that these people may easily make referrals and be more apt to make them. These people should be made aware of this finding and commended for their assistance to students.

Finding: Discussions with employees in the student's area of interest were perceived to be an influence or of assistance in choice of major.

Recommendation: Means should be sought to increase this type of contact. Contact with faculty of the College was discussed previously. Student clubs might be encouraged to seek graduates or industry representatives as speakers at their meetings where uncommitted students are invited. Teachers of introductory courses might assist (or even require) students to interview people in various positions within their field. Appropriate resource people could be used in classes to supplement lectures by the professor. A listing of resource persons and graduates could be kept by each undergraduate academic adviser from which referrals could be made. Slide-tape presentations of employees "on-the-job" in the various majors could be made available to prospective students.

Finding: Career or curricular brochures were found to be helpful or influential in choice of major.



Recommendation: Attention should be given to making adequate supplies of attractive, well-designed, informative brochures available. Departments which do not have such publications should prepare them.

The availability of these materials is a crucial consideration. These should be made available in the Counseling Center offices, University College no-preference adviser offices and places where students wait for classes, appointments, etc. Present College of Agriculture and Natural Resources students should have them to share with acquaintances. They should be readily available at Summer Orientation for New Students. Brochures or other printed materials might be sent to no-preference students.

Finding: Magazine and newspaper articles were reported by students to be a favorable influence or assistance in their choice of major.

Recommendation: Efforts might be made to better use the Information Services staff to publicize the offerings of the College. New and unique ways of communicating this information to the public are needed. More information is needed on which magazine and newspapers students read.

Finding: A large percentage of students reported that the fact that the curriculum requires courses they like, influenced them to choose a major in the College of Agriculture and Natural Resources.

Recommendation: This suggests that students might learn about majors in the College through courses. It could be worthwhile for the faculty and students to seriously evaluate the introductory courses now offered. It may be that new introductory courses and/or programs to encourage enrollment in existing introductory courses would assist students in choosing majors within the College. New courses aimed specifically at non-majors are also needed.

Finding: Change-of-major students perceived the curricula in the College to be flexible and this to be an influence on their choice of major.

Recommendation: There are many who would believe that curricula in the College of Agriculture and Natural Resources were very narrow, inflexible, limiting, and specialized. The flexibility, the opportunity to "tailor-make" a program for individual students, the opportunity for a broad, liberal education, as well as preparation for job entry . . . these should be made known to prospective students. Curricular brochures, the University Catalog, and other informational materials should stress this. It may be that the present information portrays inflexibility to some but since these students see the curricula as being in fact flexible, this should be communicated.

Finding: "Love for the out-of-doors," prestige of the occupation, and a desire to serve society were all reported to be influences on choice of major.



Recommendation: Persons involved with counseling prospective students, speaking to student groups or preparing printed information should be aware of this finding and use it to assist students considering majors in the College. However, prospective students should be given honest, up-to-date information on job locations, conditions, etc. since many of these careers may be in laboratories and offices and not entirely or even primarily out-of-doors.

Natural Resources Change-  
of-Major Students

Finding: Teachers, other than vocational agriculture, were reported to be of assistance or influential in major choice.

Recommendation: Departments in the natural resources area should consider assisting science teachers and others with up-to-date career and curricular information.

Finding: Television programs were reported to be an influence or of assistance in choice of major.

Recommendation: As suggested in the transfer student section, faculty members in this area might wish to explore means of capitalizing on this finding.

Agriculture Change-of-Major Students

Finding: Vocational agriculture teachers were perceived to be a favorable influence or source of assistance by one-third of the agriculture majors.

Recommendation: College and departmental representatives should be made aware of this and seek ways to assist these teachers in doing an even more effective job. Perhaps vocational agriculture teachers could assist faculty members by identifying former students in other majors at Michigan State University. Faculty members could then offer assistance and be available if the student needed help.

Finding: College of Agriculture and Natural Resources faculty were the major source from which agriculture majors first heard of their major.

Recommendation: Since faculty members in the agriculture majors are so effective in this regard means should be sought to continue and improve this performance.

Finding: Agriculture majors were the only group to have a large percentage report speeches by Michigan State University representatives as an influence or assistance in choice of major.

Recommendation: College faculty members should be encouraged to continue accepting speaking invitations. As representatives of the College speak on various subjects

and to diverse audiences they might be encouraged to include information, even if only in passing, on the academic programs offered by the College.

Finding: Employment during high school was perceived by agriculture majors to be an influence or of assistance in choice of major.

Recommendation: Vocational agriculture teachers, potential employers and others should be made aware of this. Programs to encourage part-time work experience programs should be encouraged. If employment during high school is this effective, there is reason to believe employment during college could also assist students in making a choice of major. Therefore, work experience programs for college students should be encouraged.

Packaging Change-of-Major Students

Finding: Packaging majors were found to be the latest to choose their major.

Recommendation: Studies should be conducted to determine if this late choice is a distinct disadvantage to the student. It would seem that with over 40 per cent of the packaging majors making a change in the third year of college or later that this would cause some problems. Efforts should be made to inform students earlier of this field.



Finding: Packaging majors most often reported that the source from which they heard of their major and the individuals who influenced or assisted in their choice were acquaintances.

Recommendation: School of Packaging faculty and students should be encouraged to continue the efforts they are making to involve students in "selling" their major. Other departments in the College would do well to learn more about what is being done along this line in packaging.

Finding: Packaging students indicated that Placement Bureau reports and the reported high salaries influenced or assisted in their choice of major.

Recommendation: School of Packaging faculty should be encouraged to continue their excellent relations with the Placement Bureau and industry personnel. They should continue to publicize their excellent job opportunity and salary situation.

Other departments should learn a lesson from this and begin to make better use of the Placement Bureau. It is clear that students are influenced by favorable reports from the Placement Bureau.

#### Recommendations for Further Research

This study identified the time at which students perceive their decision was made to enroll in the College of Agriculture and Natural Resources. Many students report that they made their decision after the second year of





college, the time considered by many to be the point beyond which students lose time, credit, etc. Research needs to be done to determine if in fact it is a real detriment for students to choose a major late.

Career and curricular brochures were, according to the findings of this study, important influences or factors of assistance in choice of major. More information is needed as to what an effective, helpful brochure should include.

This study focused on students who change into the College. A major factor determining the number of graduates of the College is the number of College of Agriculture and Natural Resources students who change to majors outside the College. While this has been a much smaller number than those changing in, it would be helpful to know why students change from the College of Agriculture and Natural Resources.

This study found that many students change majors several times. It is likely that of the participants in this study some will change out of the College. They should be followed up to determine their reasons for changing out of the College.

This study found that students are influenced or assisted by magazine and newspaper articles on careers. Much more needs to be known about the types of publications prospective students read and the types of articles which are of assistance to them in selecting careers and curricula.

This study indicates that agriculture majors primarily come from rural areas and natural resources and packaging majors come primarily from urban areas. For those students who are exceptions to this it would be useful to know more about why they chose their particular major.

The College of Agriculture and Natural Resources has a large number of majors. This may contribute to the difficulty some students have in choosing a major. It may be that fewer majors covering broader areas, such as plant sciences, animal sciences, etc. would be helpful. Or, it might be that very general majors such as agriculture no-preference and natural resources no-preference, would be better for freshmen and sophomores. More study of these possibilities is needed.

This study is based on a fundamental assumption that students in the College of Agriculture and Natural Resources view their college education as preparation for a career or vocation. Research is needed to determine if this is the case or if students view their college experience as liberal education and perhaps not directly related to preparation for a job or career.

The number of terminal, technical training students who transfer from the Institute of Agricultural Technology into four-year degree programs is interesting from an educational viewpoint. These students, most of

whom were not admissible to a degree program upon high school graduation, are making remarkable changes in their academic performance. A series of case studies of these students would be helpful to counselors and other educators.

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## APPENDICES



APPENDIX A

QUESTIONNAIRE FOR TRANSFER STUDENTS

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

1969 Student Survey (Transfer)

This questionnaire is designed to provide information on your choice of a major in the College of Agriculture and Natural Resources. We are interested in how you learned about your major, who or what assisted you or influenced you in making your choice of major, etc.

Please answer each question as you come to it. DO NOT turn back to change your answer to a previous question. In the case of questions requiring written answers you do not need to write in complete sentences.

Name \_\_\_\_\_ Major \_\_\_\_\_

- A. Please list all colleges, community colleges, business schools, or technical schools previously attended:

	<u>Name of Institution</u>		<u>Dates</u>
1.	_____	from _____	to _____
2.	_____	from _____	to _____
3.	_____	from _____	to _____
4.	_____	from _____	to _____

- B. Why did you choose your present major? (briefly, in your own words)

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- C. As far as you recall, where (or from whom) did you first hear about your major?

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D. What individuals were the most influential in your choice of your present major? (List up to 4)

	<u>Name</u>	<u>Position or Relationship</u>
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____

E. When did you decide to pursue a major that is available within the College of Agriculture and Natural Resources? (Check one)

\_\_\_\_\_ Prior to high school

\_\_\_\_\_ 9th grade

\_\_\_\_\_ 10th grade

\_\_\_\_\_ 11th grade

\_\_\_\_\_ 12th grade

\_\_\_\_\_ Summer after 12th grade

\_\_\_\_\_ 1st year of college

\_\_\_\_\_ 2nd year of college

\_\_\_\_\_ Other (specify) \_\_\_\_\_

F. Primary residence during high school (check one)

\_\_\_\_\_ Farm

\_\_\_\_\_ Rural non-farm

\_\_\_\_\_ Urban

Please explain if you have lived in more than one of these residence categories: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_





G. Size of high school graduating class (approx.) \_\_\_\_\_

H. Did you take any classes in agriculture while in high school?

\_\_\_\_\_ yes

\_\_\_\_\_ no

I. Did you take any conservation classes while in high school?

\_\_\_\_\_ yes

\_\_\_\_\_ no

J. Parents' occupation and education

Father

Mother

Occupation \_\_\_\_\_

Level of formal education \_\_\_\_\_

K. Assistance or influence on choice of major

Please indicate the amount of assistance or degree of influence for each of the individuals listed. Check only for those with whom you have had contact. Remember you are indicating the degree of assistance or influence on your choice of major.

	MUCH	SOME	NONE	UNCERTAIN
Father	_____	_____	_____	_____
Mother	_____	_____	_____	_____
High school counselor	_____	_____	_____	_____
Vocational agriculture teacher	_____	_____	_____	_____
Other high school teacher	_____	_____	_____	_____
Community college counselor	_____	_____	_____	_____
Community college teacher	_____	_____	_____	_____
MSU no-preference adviser	_____	_____	_____	_____
MSU Counseling Center personnel	_____	_____	_____	_____

K. (continued)	MUCH	SOME	NONE	UNCERTAIN
College of Agriculture and Natural Resources faculty member	_____	_____	_____	_____
High school acquaintance	_____	_____	_____	_____
College acquaintance	_____	_____	_____	_____
Employer _____	_____	_____	_____	_____
Other (specify) _____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

L. Career and curricular exploration activities and their influence on your choice of major

In addition to assistance from individuals, other influences may have helped shape your choice of major. Please respond only to those items which you have participated in or with which you have come in contact. Indicate the degree of assistance or influence on your choice of major.

	MUCH	SOME	NONE	UNCERTAIN
Career or curricular brochure(s)	_____	_____	_____	_____
Magazine article(s)	_____	_____	_____	_____
Newspaper article(s)	_____	_____	_____	_____
TV program(s)	_____	_____	_____	_____
Radio program(s)	_____	_____	_____	_____
Speech by MSU representative(s)	_____	_____	_____	_____
Career program(s) at MSU	_____	_____	_____	_____
Career program(s) at high school	_____	_____	_____	_____
Career program(s) at previous college	_____	_____	_____	_____
Youth group career activities (specify youth group)	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____



L. (continued)	MUCH	SOME	NONE	UNCERTAIN
Discussion(s) with person(s) employed in my career interest area	_____	_____	_____	_____
Other (specify)				
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

M. Other factors and their influence on your choice of major  
(Again do not check those which do not apply to your situation.)

	MUCH	SOME	NONE	UNCERTAIN
Interest or aptitude tests	_____	_____	_____	_____
Employment during high school	_____	_____	_____	_____
Employment during college	_____	_____	_____	_____
Prestige of the occupation	_____	_____	_____	_____
Love for the out of doors	_____	_____	_____	_____
Placement Bureau reports	_____	_____	_____	_____
High salaries reported	_____	_____	_____	_____
Financial aid available	_____	_____	_____	_____
Desire to serve society	_____	_____	_____	_____
Curriculum requires courses that I like	_____	_____	_____	_____
Curriculum allows great flexibility	_____	_____	_____	_____
Curriculum <u>does not require</u> some courses which I dislike	_____	_____	_____	_____
I did poorly in another major	_____	_____	_____	_____
Student club at MSU (specify)				
_____	_____	_____	_____	_____

M. (continued)	MUCH	SOME	NONE	UNCERTAIN
1. ...				
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98. ...				
99. ...				
100. ...				

Other (specify)


N. In your opinion, what do you believe could be done to interest more young people in the majors available within the College of Agriculture and Natural Resources?

[illegible]

## **APPENDIX B**

### **QUESTIONNAIRE FOR CHANGE-OF-MAJOR STUDENTS**

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

1969 Student Survey (Change of Major)

This questionnaire is designed to provide information on your choice of a major in the College of Agriculture and Natural Resources. We are interested in how you learned about your major, who or what assisted you or influenced you in making your choice of major, etc.

Please answer each question as you come to it. DO NOT turn back to change your answer to a previous question. In the case of questions requiring written answers you do not need to write in complete sentences.





Name \_\_\_\_\_ New Major \_\_\_\_\_

A. Please list all majors you have had since coming to Michigan State University:

	<u>Major</u>		<u>Approx. Dates</u>
1.	_____	from	_____ to _____
2.	_____	from	_____ to _____
3.	_____	from	_____ to _____
4.	_____	from	_____ to _____
5.	_____	from	_____ to _____

B. Why did you choose your present major? (briefly, in your own words)

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C. As far as you recall, where (or from whom) did you first hear about your major?

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D. What individuals were the most influential in your choice of your present major? (List up to 4)

	<u>Name</u>	<u>Position or Relationship</u>
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____

E. When did you decide to pursue a major that is available within the College of Agriculture and Natural Resources? (Check one)

\_\_\_\_\_ Prior to high school

\_\_\_\_\_ 9th grade

\_\_\_\_\_ 10th grade

\_\_\_\_\_ 11th grade

\_\_\_\_\_ 12th grade

\_\_\_\_\_ Summer after 12th grade

\_\_\_\_\_ 1st year of college

\_\_\_\_\_ 2nd year of college

\_\_\_\_\_ Other (specify) \_\_\_\_\_

F. Primary residence during high school (check one)

\_\_\_\_\_ Farm

\_\_\_\_\_ Rural non-farm

\_\_\_\_\_ Urban

Please explain if you have lived in more than one of these residence categories: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



G. Size of high school graduating class (approx.) \_\_\_\_\_

H. Did you take any classes in agriculture while in high school?

\_\_\_\_\_ yes

\_\_\_\_\_ no

I. Did you take any conservation classes while in high school?

\_\_\_\_\_ yes

\_\_\_\_\_ no

J. Parents' occupation and education

Father

Mother

Occupation

\_\_\_\_\_

\_\_\_\_\_

Level of formal education

\_\_\_\_\_

\_\_\_\_\_

K. Assistance or influence on choice of major

Please indicate the amount of assistance or degree of influence for each of the individuals listed. Check only for those with whom you have had contact. Remember you are indicating the degree of assistance or influence on your choice of major.

	MUCH	SOME	NONE	UNCERTAIN
Father	_____	_____	_____	_____
Mother	_____	_____	_____	_____
High school counselor	_____	_____	_____	_____
Vocational agriculture teacher	_____	_____	_____	_____
Other high school teacher	_____	_____	_____	_____
Community college counselor	_____	_____	_____	_____
Community college teacher	_____	_____	_____	_____
MSU no-preference adviser	_____	_____	_____	_____
MSU Counseling Center personnel	_____	_____	_____	_____



K. (continued)	MUCH	SOME	NONE	UNCERTAIN
College of Agriculture and Natural Resources faculty member	_____	_____	_____	_____
High school acquaintance	_____	_____	_____	_____
College acquaintance	_____	_____	_____	_____
Employer _____	_____	_____	_____	_____
Other (specify) _____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

L. Career and curricular exploration activities and their influence on your choice of major

In addition to assistance from individuals, other influences may have helped shape your choice of major. Please respond only to those items which you have participated in or with which you have come in contact. Indicate the degree of assistance or influence on your choice of major.

	MUCH	SOME	NONE	UNCERTAIN
Career or curricular brochure(s)	_____	_____	_____	_____
Magazine article(s)	_____	_____	_____	_____
Newspaper article(s)	_____	_____	_____	_____
TV program(s)	_____	_____	_____	_____
Radio program(s)	_____	_____	_____	_____
Speech by MSU representative(s)	_____	_____	_____	_____
Career program(s) at MSU	_____	_____	_____	_____
Career program(s) at high school	_____	_____	_____	_____
Career program(s) at previous college	_____	_____	_____	_____
Youth group career activities (specify youth group)	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____



L. (continued)	MUCH	SOME	NONE	UNCERTAIN
Discussion(s) with person(s) employed in my career interest area	_____	_____	_____	_____
Other (specify)				
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

M. Other factors and their influence on your choice of major  
(Again do not check those which do not apply to your situation.)

	MUCH	SOME	NONE	UNCERTAIN
Interest or aptitude tests	_____	_____	_____	_____
Employment during high school	_____	_____	_____	_____
Employment during college	_____	_____	_____	_____
Prestige of the occupation	_____	_____	_____	_____
Love for the out of doors	_____	_____	_____	_____
Placement Bureau reports	_____	_____	_____	_____
High salaries reported	_____	_____	_____	_____
Financial aid available	_____	_____	_____	_____
Desire to serve society	_____	_____	_____	_____
Curriculum requires courses that I like	_____	_____	_____	_____
Curriculum allows great flexibility	_____	_____	_____	_____
Curriculum <u>does not require</u> some courses which I dislike	_____	_____	_____	_____
I did poorly in another major	_____	_____	_____	_____
Student club at MSU (specify)				
_____	_____	_____	_____	_____



M. (continued)

MUCH

SOME

NONE

UNCERTAIN

Other (specify)


N. In your opinion, what do you believe could be done to interest more young people in the majors available within the College of Agriculture and Natural Resources?

[illegible]

**APPENDIX C**

**INVITATION LETTER**

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

OFFICE OF THE DIRECTOR OF RESIDENT INSTRUCTION • AGRICULTURE HALL

October 20, 1969

TO: New Students, College of Agriculture and Natural Resources

We missed you at the meeting we conducted recently in your residence hall.

There is some information we would like to secure from you which we believe will be helpful to other students. The questionnaire will take only about 20 minutes of your time.

Please stop by the Office of the Dean of Agriculture and Natural Resources, 121 Agriculture Hall, on Wednesday, October 29, anytime between 9 a.m. and 12 noon or 1 p.m. and 3 p.m.

Please call me at 355-0236 if you cannot come on October 29.

Sincerely,

*Norman A. Brown*

Norman A. Brown  
Coordinator of  
Student Programs

b

**APPENDIX D**

**FOLLOW-UP LETTER**



COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

OFFICE OF THE DIRECTOR OF RESIDENT INSTRUCTION • AGRICULTURE HALL

October 7, 1969

TO: New Students, College of Agriculture and Natural Resources

We have planned a series of meetings in the residence halls for new students in the College of Agriculture and Natural Resources to give us an opportunity to get to know you and to answer any questions you may have.

The meeting for students in Shaw Hall is scheduled for Tuesday, October 14, at 7 p.m. The meeting will be brief and refreshments will be served. The meeting will be in the Small Dining Room of West Shaw Hall.

If for any reason you cannot attend this meeting, please call me at 355-0236.

Sincerely yours,



Norman A. Brown  
Coordinator of  
Student Programs

b



APPENDIX E

TABULATED DATA FROM QUESTIONNAIRE  
RESPONSES

TABLE E-1.--Respondents by type of major.

	Natural Resources	Agriculture	Packaging	Total
Transfer	66	39	3	108
Change-of-Major	71	55	101	227
Total	137	94	104	335



TABLE E-2.--Institutions attended by transfer students.

Number of Students		Number of Students	
Community or Junior College			
Grand Rapids	8	Schoolcraft	2
Lansing	6	Washtenaw	2
Northwestern		Bay De Noc	1
Michigan	6	Glen Oaks	1
Alpena	5	Gogebic	1
Muskegon County	5	Highland Park	1
Flint	4	Monroe County	1
Jackson County	4	Montcalm	1
Delta	3	North Central	
Kellogg	3	Michigan	1
Lake Michigan	3	Oakland	1
Henry Ford	2	Southwestern	
		Michigan	1
Four-year Institutions			
Eastern Mich. Univ.	6	University of	
Western Mich. Univ.	5	Michigan	2
Michigan Technologi-		Hillsdale College	1
cal Univ.	4	Hope College	1
Central Mich. Univ.	3	Miami University	1
Ferris State College	3	Michigan Lutheran	
Northern Mich. Univ.	3	College	1
University of Detroit	3	Moody Bible Inst.	1
Adrian College	2	Spring Arbor College	1
Calvin College	2	Taylor University	1
Iowa State Univ.	2	Trinity College	1
		Wayne State Univ.	1
Technical Schools			
Institute of Agri.			
Tech.	15		
Alfred Agri. and			
Tech. College	2		

Note: These numbers total more than the number of students because several students attended more than one institution.



TABLE E-3.--Residence while in high school.

Residence	Transfer			Change-of-Major		
	Natural Resources	Agri- culture	Packag- ing	Total	Natural Resources	Agri- culture
Farm	11	20		31	10	31
	16.7	51.3		28.7	14.1	56.4
Rural Non-Farm	19	9		28	18	15
	28.8	23.1		26.9	25.4	27.3
Urban	35	9	3	47	43	9
	53.0	23.1	100.0	43.5	60.6	16.4
Other	1	1		2		
	1.3	2.6		1.8		

Note: In each cell percentages are shown below corresponding frequencies.



TABLE E-4.--Approximate size of high school graduating class.

Size	Transfer			Change-of-Major				
	Natural Resources	Agri- culture	Packag- ing	Total	Natural Resources	Agri- culture	Packag- ing	Total
300 or more	33	8	3	44	32	15	47	94
	51.6	20.5	100.0	40.6	45.1	27.3	46.5	41.3
135 - 299	12	9		21	20	11	27	58
	18.7	23.1		20.8	28.2	20.0	26.7	25.8
75 - 134	12	14		26	13	17	17	47
	18.7	35.9		24.5	18.3	30.9	16.8	20.9
1 - 74	7	8		15	6	12	9	27
	10.9	20.5		14.1	8.5	21.8	8.9	12.0

Note: In each cell percentages are shown below corresponding frequencies.





TABLE E-5.--Time choice of major was made.

Time	Transfer				Change-of-Major			
	Natural Resources	Agri- culture	Packag- ing	Total	Natural Resources	Agri- culture	Packag- ing	Total
Prior to high school	6 9.1	3 7.7	0 0	9 8.3	1 1.4	3 5.5	0 0	4 1.8
High school	31 47.0	14 35.9	0 0	45 37.9	8 11.2	5 9.0	2 2.0	15 6.7
First year of college	6 9.1	5 12.8	0 0	11 10.2	22 31.0	9 16.4	7 6.9	38 16.7
Second year of college	12 18.2	8 20.5	2 66.7	22 20.4	33 46.5	23 41.8	49 48.5	105 46.3
Third year of college or later	11 16.7	9 23.1	1 33.3	21 19.4	7 9.9	15 27.3	43 42.6	65 28.6

Note: In each cell percentages are shown below corresponding frequencies.



TABLE E-6.--Vocational agriculture and conservation classes in high school.

	Transfer			Change-of-Major		
	Natural Resources	Agri- culture	Packag- ing	Total	Natural Resources	Agri- culture
Vocational Agriculture	10 15.1	18 46.4	0	28 25.9	4 5.6	24 43.6
Conservation	4 6.0	3 7.6	0	7 6.4	3 4.2	11 20.0
						0
						28 12.3
						14 6.2

Note: In each cell percentages are shown below corresponding frequencies.

TABLE E-7.--Source from which student first heard of major.

	Transfer				Change-of-Major			
	Natural Resources	Agri- culture	Packag- ing	Total	Natural Resources	Agri- culture	Packag- ing	Total
Friend, class- mate, room- mate, etc.	8 12.1	9 23.1	2 66.7	19 17.6	24 33.8	7 12.7	67 66.3	98 43.2
Career or curricular brochure	2 3.0	2 5.1		4 3.7	2 2.8		2 2.0	4 1.8
Academic dept. letter					6 8.5		7 6.9	13 5.7
Newspaper or magazine	5 7.6			5 4.6			1 1.0	1 .4
Radio or television	3 4.5			3 2.8	3 4.2	1 1.8		4 1.8
Speech by representa- tive of MSU						3 5.5		3 1.3
University Catalog	14 21.2	4 10.3		18 16.7	16 22.5	8 14.5	6 5.9	30 13.2
Adviser in previous MSU major					3 4.2	6 10.9	4 4.0	13 5.7

MSU Counseling Center							2	2	
							2.0		.9
College of Agri. and Natural Resources faculty	2	8							
	3.0	20.5							
				10	6	14	3	23	
				9.3	8.5	25.5	3.0	10.1	
Faculty or counselor at previous institution	4	1		5			2	3	
	6.1	2.6		4.6			2.0	1.3	
MSU Administrations staff									
				1					
				.9					
High school counselor	5	1		6			1	4	
	7.6	2.6		5.6			1.0	1.8	
Vocational agriculture teacher									
				3				3	
				2.8				1.3	
Other high school teacher	5	1		6	2	1	2	5	
	7.6	2.6		5.6	2.8	1.8	2.0	2.2	
Employee in student's interest area	7	3		11	2	2	2	6	
	10.6	7.7		33.3	2.8	3.6	2.0	2.6	

Note: In each cell percentages are shown below corresponding frequencies.



TABLE E-8.--Individuals who influenced choice of major.

	Transfer			Change-of-Major				
	Natural Resources	Agri- culture	Packag- ing	Total	Natural Resources	Agri- culture	Packag- ing	Total
Father	50 75.8	24 61.5	1 33.3	75 69.4	44 62.0	30 54.5	44 43.5	118 51.9
Mother	39 59.1	19 48.7	1 33.3	59 54.5	34 47.9	30 54.5	35 34.7	99 43.6
High school counselor	26 39.4	7 17.9		33 30.5	14 19.7	9 16.4	6 6.0	29 12.7
Vocational agriculture teacher	7 10.6	14 35.9		21 19.3		18 33.0		18 7.9
Other high school teacher	23 34.8	9 23.1		32 29.5	15 21.2	10 18.2	8 8.0	33 14.5
Community college counselor	22 33.3	6 15.4		28 25.9	6 8.4	6 10.9	5 5.0	17 7.4
Community college teacher	19 28.8	11 28.2		30 27.7	4 5.6	5 9.1	4 4.0	13 5.6
MSU no-preference adviser	4 6.0	7 18.0		11 10.1	13 18.3	13 23.6	23 22.7	49 21.5



MSU Counseling Center	9 13.7	5 12.9	14 12.9	18 25.4	12 21.8	21 20.8	51 22.4
College of Agriculture and Natural Resources faculty	24 36.4	21 53.9	46 42.5	43 60.6	36 65.5	45 44.6	124 54.6
High school acquaintance	22 33.4	6 15.4	28 25.9	12 16.9	12 21.8	17 16.9	41 17.9
College acquaintance	29 43.9	19 48.7	48 44.4	42 59.2	27 49.1	80 79.2	149 65.5
Employer	19 28.8	13 33.3	33 30.5	12 16.9	15 27.2	12 11.9	39 17.1

Note: In each cell percentages are shown below corresponding frequencies. Percentages in a given column total over 100 since a respondent could indicate influence or assistance from more than one source.



TABLE E-9.--Influence of career and curricular exploration activities on choice of major.

	Transfer			Change-of-Major				
	Natural Resources	Agri- culture	Packag- ing	Total	Natural Resources	Agri- culture	Packag- ing	Total
Career or curricular brochure(s)	44 66.9	27 69.2	1 33.3	72 66.6	47 66.2	29 52.7	67 66.4	143 6.29
Magazine article(s)	52 78.8	26 66.6	2 66.7	80 74.0	50 70.4	26 47.2	46 45.6	122 53.6
Newspaper article(s)	40 60.6	9 23.1	2 66.7	51 47.2	36 50.7	19 34.6	30 29.7	85 37.4
Television program(s)	43 65.2	7 17.9	2 66.7	52 48.0	33 46.5	10 18.2	20 19.8	63 27.7
Radio program(s)	12 18.2	3 7.7		15 13.8	7 9.9	10 18.2	5 5.0	22 9.6
Speech by MSU representative(s)	13 19.7	9 23.1		22 20.3	4 5.6	17 31.0	9 8.9	30 13.1
Career program(s) at MSU	11 16.7	10 25.7		21 19.4	15 21.1	15 27.2	26 25.7	56 24.6

Career program(s) at high school	14 21.2	4 10.3	18 16.6	6 8.5	5 9.1	1 1.0	12 5.5
Career program(s) at previous college	11 16.6	5 12.9	16 14.7	2 2.8	2 3.6		4 1.7
4-H career activities	3 4.5	4 10.2	7 6.4	2 2.8	7 12.8		9 3.9
FFA career activities	2 3.0	5 12.8	7 6.4		7 12.8		7 3.0
Scout career activities	4 6.0		4 3.6	3 4.2		1 1.0	4 1.7
Discussion(s) with person(s) employed in interest area	40 60.6	27 69.2	69 63.8	51 71.8	33 60.0	61 60.4	145 63.7

Note: In each cell percentages are shown below corresponding frequencies. Percentages in a given column total over 100 since a respondent could indicate influence or assistance from more than one source.



TABLE E-10.--Influence of other factors on choice of major.

	Transfer				Change-of-Major			
	Natural Resources	Agri- culture	Packag- ing	Total	Natural Resources	Agri- culture	Packag- ing	Total
Interest or aptitude tests	31 47.0	12 30.7		43 39.7	31 43.6	31 56.3	39 38.6	101 44.4
Employment during high school	9 13.6	16 41.0	1 33.3	26 23.9	18 25.4	29 52.7	8 7.9	55 24.2
Employment during college	24 36.4	16 41.0	2 100.0	40 39.7	27 26.8	15 25.4	55 20.8	97 23.7
Prestige of the occupation	25 37.8	13 33.4	2 66.7	40 36.9	27 38.0	15 27.3	55 54.4	97 42.7
Love for the out-of-doors	66 100.0	32 77.0		98 90.7	64 09.1	42 76.4	7 7.0	113 49.7
Placement Bureau reports	3 4.5		1 33.3	4 3.7	7 9.9	7 12.8	48 47.5	62 27.2
High salaries reported	10 15.2	10 25.7	3 100.0	23 21.2	19 26.8	12 21.8	87 86.1	118 51.9

Financial aid available	2 3.0	2 5.1	4 3.7	2 2.8	3 5.5	4 4.0	9 3.9
Desire to serve society	42 63.6	20 51.2	1 33.3	63 58.2	44 62.0	18 32.7	30 29.7
Curriculum requires courses I like	50 75.7	27 69.2	1 33.3	78 72.1	62 87.3	44 80.0	85 84.2
Curriculum allows great flexibility	26 39.4	24 61.5	3 100.0	53 49.0	41 57.8	36 65.4	78 77.2
I did poorly in another major	4 6.1	1 2.6	5 4.6	20 28.2	15 27.2	37 36.7	72 31.6
Student club at MSU	12 18.2	1 2.6	1 33.3	14 12.9	4 5.6	7 7.0	15 6.6

Note: In each cell percentages are shown below corresponding frequencies. Percentages in a given column total over 100 since a respondent could indicate influence or assistance from more than one source.

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