available in a shorter time. For example, cross-fostering of pigs could only be covered in a limited way before. Now, with all litters at approximately the same age, large and small litter sizes can be equalized. Also, with all litters being born at the same time, more students can observe the reviving of the occasional pig that needs assistance. Or more students can have a chance to deal with the problem sow, or perhaps realign or pull a pig when the need arises. The students' responsibilities before and after farrowing have not changed, however, Lutalyse® allows for a more intense farrowing instruction.

Conclusion

The benefits of planned farrowing by using prostaglandins are readily evident for the swine producer and should be discussed fully in the swine production course. However, what the student may not realize is that by using prostaglandins in the swine laboratory, he or she receives a much more detailed education in swine farrowing. The procedure has certainly benefited students and instructors at UMW.

ANALYSIS

Job Placement and Career Advancement of Ag Graduates

Joe T. Davis, Lori E. Garkovich and Loys L. Mather

Introduction

Undergraduate education in agriculture has undergone numerous changes over the years in response to the ever changing nature of the agricultural sector. Universities have responded to these changes by revising curricula, developing new methods of delivery, and addition of new programs designed to better prepare graduates for their role in the work force. The forecast is for even more change in the agricultural sector in the future. Johnson and Wittwer have indicated that the changes projected in the next fifty years will require substantial increase in the use of highly skilled farm workers, entrepreneurs, civil servants and research scientists in both the public and private sectors. It is projected that overall annual demand for college graduates with expertise in the food and agricultural sciences will exceed the available supply by 13 percent during the 1980's (National Association of State Universities and Land-Grant Colleges, 1983).

Among the purposes of undergraduate education is one to prepare students for productive roles in the agricultural sector. This training is expected to culminate in the student's securing a job in the area in which they have been trained. However, we in the University community often lose track of the development and career patterns of our students after they receive their undergraduate degrees. We are often unaware of the contribution of our training to the student's acquisition of a job or career advancement. Moreover, we are not aware of the career changes which occur over subsequent years. As a result, our assessment of how our curricula contribute to the career success of our students is grounded in how we think the work world functions as opposed to how those involved experience it.

This article reports on a survey conducted by the University of Kentucky College of Agriculture's Curriculum Review Committee. The survey was a means of involving our former students in an evaluation of the undergraduate curriculum. The survey was a means of better understanding the nature of employment for which we prepare our students and eliciting their views on how successful we have been in preparing them for entry into and advancement in their career.

The Survey and the Sample

A mail survey was conducted of the graduates of the University of Kentucky College of Agriculture. The survey was sent to approximately 2000 members of the College of Agriculture's Alumni Association. The single round of mailings produced a sample of 457, for a response rate of 23 percent. The sample is composed primarily of males (85%), with the most recent group of graduates having the largest number of women respondents (28%). Three quarters of the total sample are employed full time, yet this ranges from a low of 21 percent among those who graduated prior to 1943, to a high of 97% among those who graduated between 1974 and 1978.

Table 1: Distribution of Respondents by Year of Graduation and Undergraduate Major

	Pre 1944	1944-1953	1954-1963	1964-1973	1974-1978	1979-1983	All Years
Respondents	74	68	63	80	72	100	457
Major				Percent of Total			
Ag. Economics	10.9	13.2	20.6	22.5	20.8	25.0	19.3
Ag. Education	13.5	20.6	20.6	8.8	12.5	10.0	13.8
Ag. Engineering	—	—	—	5.0	2.8	2.0	1.8
Agronomy	12.1	17.7	12.7	11.3	12.5	15.0	13.6
Animal Sci.	37.8	32.4	23.8	40.0	25.0	12.0	27.8
Food Sci.	—	1.5	—	—	1.4	4.0	1.3
Forestry	—	—	—	3.8	5.6	5.0	2.6
Home Economics	18.9	10.3	14.3	5.0	1.4	0	7.7
Horticulture	2.7	1.5	3.2	1.3	8.3	9.0	4.6
Prod. Agriculture	1.4	—	—	—	8.3	8.0	3.3

Davis and Mather are associate professors of Agricultural Economics and Garkovich is associate professor of Sociology at the University of Kentucky.

Table 2: First and Current Occupation of Graduates by Year of Graduation.

	Pre 1944	1945-1953	1954-1963	1964-1973	1974-1978	1979-1983	All Years
First Occupation				Percent of Total			
Prof/Tech.	70.7	55.7	49.4	57.1	46.3	36.8	52.3
Mgr/Adm.	12.0	20.6	24.1	17.9	25.4	25.3	20.9
Sales	2.7	7.2	7.6	10.7	10.5	17.9	9.7
Clerical	—	1.0	1.3	2.4	—	1.0	1.0
Farmers/Mgrs.	8.0	14.4	12.7	7.1	9.0	12.6	10.9
Farm Laborers	—	—	1.3	—	4.5	4.2	1.6
Service	4.0	1.0	2.5	1.2	3.0	1.1	2.0
Other	2.6	—	1.3	3.6	1.5	1.0	1.6
Current Occupation							
Prof/Tech.	17.9	16.4	29.2	37.5	31.4	35.5	29.6
Mgr/Adm.	39.6	56.2	41.7	38.8	47.1	31.2	42.1
Sales	7.1	8.2	9.7	8.8	8.6	10.8	9.2
Clerical	—	1.4	—	1.3	—	3.2	1.2
Farmers/Mgr.	22.1	13.7	19.4	10.0	11.4	14.0	14.9
Farm Laborers	3.6	4.1	—	—	—	1.1	1.2
Service	—	—	—	—	1.4	2.2	.7
Other	—	—	—	3.8	—	2.0	1.1

Results

Academic Majors and Occupations

The sample was analyzed as a group and by year of graduation in order to delineate any changes which have occurred over time. Table 1 presents the number of respondents by year of graduation and undergraduate major. The largest number of respondents graduated in the last ten years, but sufficient numbers of respondents appear in the other categories to allow analysis over time. The students' reported major indicates that the respondents to the survey followed very closely the enrollment trends in the various departments with the College. Agricultural Economics has experienced a rather steady growth over time while Agricultural Education has been declining. Agronomy and Animal Sciences have shown considerable variability in the number of majors over the time covered in this study.

Table 2 presents the classification of first and current jobs of the graduates. For the total sample, over half of the graduates from the College of Agriculture secured their first employment in the professional or technical fields. However, over time, this percentage has declined from a high of 71% for those graduating prior to 1943 to a low of 37% for those graduating since 1979. Increasingly, graduates have been securing their first job in the areas of management/administration and sales during the last 20 years. For the total sample, the proportion of graduates in the professional and technical areas has declined while the proportion in management/administration has increased, along with those in farming. Part of the shift to the management category is due to longevity on the job and promotion, but all of the changes cannot be attributed to this factor. The growth in the middle management sector of the labor force and the shift to the production of services as opposed to goods are also important factors. This does not, however, explain the increase in the number of persons reporting farming as a current occupation compared to the number reporting farming as their first occupation.

The American worker is usually characterized as one who is highly mobile, frequently changing jobs while moving up the career ladder. This survey found that 63 percent of the graduates had switched jobs since they graduated. However, almost one-third of the respondents were found to have the same job now that they had immediately after graduation. A similar result was found across the time intervals used in this analysis.

The above discussion indicates the types of jobs that the agricultural graduates have but does not indicate the type of industries in which these jobs are located. Table 3 provides a detailed industry classification for first and current jobs of the graduates. Nearly three out of ten (28%) work in agricultural production or other agricultural services such as forestry and fishing. One of the largest single industry groups was finance, insurance, and real estate (F, I, RE). It was also found that more than one in ten were manufacturing, primarily food or grain processing firms; and one in ten hold jobs in public administration. Analysis of changes in industry of employment between first job following graduation and current job indicated that the proportion employed in finance, insurance and real estate more than doubled, while the proportion in Extension and elementary/secondary education dropped precipitously. Examining the industry of employment across graduate groups revealed that retail trade and manufacturing have become an important industry of employment for the most recent graduates. Alternatively, education and the military have declined in importance as an industry of employment.

At first glance it would seem that a relatively small proportion of agricultural graduates are actually employed in agriculture. But this is deceptive, since an examination of the detailed industries of employment indicates that the majority of graduates are involved in agribusiness firms. For example, a significant number of those in finance, insurance, and real estate are employed in agriculturally-related firms such as Production Credit Associations, Bank of Cooperatives, or Farm and Home Administration.

Factors Affecting Job Placement and Career Advancement

There are numerous factors which affect the type of job which a student will secure upon graduation, as

Table 3: Initial and Current Industry Classification of Graduates

Industry Classification	Pre 1944		1945-53		1954-63		1964-73		1974-78		1979-83		All Years	
	Initial	Current	Initial	Current	Initial	Current	Initial	Current	Initial	Current	Initial	Current	Initial	Current
	Percent of Total													
Ag. Production	8.0	35.7	14.7	16.4	11.4	16.7	8.3	11.3	11.8	8.6	19.6	17.2	12.6	15.6
Other Ag.	1.3	—	16.8	12.3	7.6	12.5	14.3	17.5	10.3	12.9	12.0	12.9	10.8	12.7
Construction	—	3.6	—	—	—	4.2	1.2	1.3	—	1.4	2.2	4.3	.6	2.4
Manufacturing	8.0	14.3	12.6	17.8	18.2	9.7	6.0	6.1	16.2	15.7	15.2	19.4	12.1	13.7
T.C.U.	—	—	1.1	2.7	5.1	1.4	2.4	2.5	2.9	1.4	—	1.1	1.8	1.7
Wholesale Trade	1.3	—	1.1	4.1	—	—	—	2.5	4.4	5.7	2.2	1.1	1.4	2.4
Retail Trade	—	—	1.1	2.7	5.1	2.8	4.8	3.8	7.4	10.0	7.6	3.2	4.3	4.1
F.I. RE	6.7	17.9	2.1	11.0	5.1	19.4	10.7	22.5	8.8	18.6	10.9	11.8	7.3	16.6
Vets	—	3.6	2.1	—	1.3	1.4	8.3	8.8	5.9	4.3	4.4	5.4	3.7	4.1
Elem/Sec. School	34.7	7.1	19.0	4.1	20.3	16.7	14.3	10.0	11.8	4.3	4.4	4.3	17.0	7.7
Colleges	1.3	—	3.6	6.9	—	1.4	3.6	3.8	2.9	5.7	5.4	3.2	2.8	3.9
Extension	22.7	—	9.5	1.4	3.8	—	6.0	—	5.9	—	4.4	4.3	8.5	1.2
Other Prof. Ser.	4.0	3.6	7.4	1.4	3.8	5.6	4.8	2.5	1.5	4.3	3.3	3.2	4.3	3.4
Military	5.3	—	7.4	1.4	13.9	1.4	7.1	—	—	—	—	—	5.7	.5
Public Adm.	6.7	14.3	2.1	16.5	7.6	6.9	8.3	7.5	10.3	5.7	8.7	8.6	7.1	9.4

well as how they perform in that job. Many of these factors are directly related to the University and the curriculum they studied, while others relate directly to the individual. An attempt was made in the survey to determine how graduates viewed the relative influence of these various factors.

Respondents were asked to rank a number of factors as to their importance in locating a first job upon graduation. A rank of one indicated the factors were very important, while a rank of five indicated the factor was not important at all. As reported in Table 4, almost half of the graduates considered their personal qualities (commitment, perseverance, self-confidence, etc.) to be very important in securing their first job. Previous work experience also ranked very high with four out of ten indicating that it was very important.

While a substantial proportion indicated that the College of Agriculture faculty were very important in securing their first job, only a few noted the assistance of the University Placement Service in finding that first job. This is not surprising since the agriculture faculty have a reputation for establishing closer relationships with their students as advisors and instructors. Moreover, agriculture faculty often have closer ties to the firms and industries that make up the agribusiness sector. However, a distressing trend appears when the sample is viewed as a series of discrete graduate groups. Assistance by College of Agriculture faculty as a factor in locating first job is the one factor to demonstrate a clear and persistent decline over time. Perhaps this should serve as a reminder that we need to re-evaluate the priority of student-faculty relationships vis-a-vis other demands. If nothing else, these results should prove that the time and effort we put into counseling and one-to-one interaction with students is remembered and valued by our graduates.

Student clubs were also cited as important factors in first job placement although only one in seven said they were very important. But since not all college clubs promote activities that would have direct effects on job placement, the proportion of students citing their contribution to job placement suggests that organized extra-curricular activities make an important contribution to employment mobility.

Overall, the impression that emerges is that personal characteristics and the personal contacts students develop while in college are perceived as significant factors in obtaining employment following graduation. This interpretation is reinforced by the responses to the open ended question "What were the three most important things which have helped you in your career?" Here, one-third of the spontaneous responses fell into the categories of personal development and interpersonal relationships.

For purposes of curriculum change and development, it is necessary to determine those factors which influence the career development of our graduates. Respondents were asked to rank the importance (on a scale of 1 to 5) of several skills and experiences in the advancement of their careers. The results of these rankings appear in Table 5.

Once again, personal qualities such as perseverance, self-confidence, self-organization, dedication, etc., are cited as very important factors in career advancement by two out of three graduates. Interpersonal skills such as listening effectively, speaking with clarity, speaking persuasively, the ability to organize and lead groups, and writing with clarity were also considered to be very important. These

Table 4: Importance of Various Factors in Securing First Job.

Factor	Rank of Importance[1]				
	1	2	3	4	5
	% of Respondents				
Previous Work Experience	41.0	14.0	12.9	7.3	24.9
Assistance from University Placement	10.3	5.4	6.0	9.6	68.8
Assistance from Faculty	30.5	18.0	12.2	5.2	34.1
Club Activities	12.7	19.6	20.7	12.3	34.8
Personal Qualities	49.7	31.3	11.1	1.9	5.8

[1]Rank 1 was very important
Rank 5 was not important

rankings are remarkably consistent across graduate groups with two exceptions: the ability to write clearly which shows a steady decline since 1973 and the ability to organize and lead groups which also shows a steady decline since 1963.

Several points can be drawn from the ordering of these factors and their relative stability over time. First, the perception that personal qualities are very important in career advancement is consistent with research on occupational mobility. Given two individuals with comparable educational skills, the one who will achieve the most success is the one with the personal qualities which facilitate the achievement of organizational goals: the ability to manage time, self-organization and self-motivation, or dedication. The importance of interpersonal skills is also noteworthy, especially the primacy of being an effective listener.

Table 5. Importance of Various Skills and Experiences in Career Advancement.

Skill or Experience	Rank of Importance				
	1	2	3	4	5
	------% of Respondents------				
Write with Clarity	44.6	27.4	21.3	4.3	2.5
Speak with Clarity	59.9	26.5	9.8	2.7	1.2
Speak Persuasively	55.6	30.3	11.0	1.8	1.2
Listen Effectively	63.8	28.7	5.9	.4	1.2
Read with Understanding	58.6	30.3	7.6	1.8	1.6
Organize and Lead Groups	47.2	29.1	12.8	7.1	3.9
Identify and Prioritize Problems	56.8	33.1	7.6	1.7	.8
Deal with Qualitative Problems	27.4	21.4	29.7	10.2	6.4
Utilize Data to Solve Problems	49.1	37.5	9.7	2.9	.8
Act as an Effective Group Member	37.9	39.3	15.8	5.4	1.7
Apply Basic Concepts or Theories	42.1	32.8	17.9	5.0	2.3
Personal Qualities	65.0	27.9	5.3	.4	1.4

This is a skill which is usually not formally included in academic work, although it could be argued that success in academia does depend in part on being able to understand and integrate what we hear. The importance of speaking persuasively and with clarity is underscored by the spontaneous responses to the open-ended question: "What is the one thing you wish you could have added to or gained from your education at UK which would have helped you in your career?" Public speaking is the second most frequently cited item, preceded only by more business adminstration courses.

These comments and rankings challenge the traditional ways in which we go about the business of higher education. There is a tendency to view college education as a vehicle for transmitting the substantive content of particular disciplines. This, of course, presupposes that disciplinary concepts and theories are the tools of the specialist, and, once having acquired the tools, specialists can become practitioners. It appears that the factors most important in career advancement are those related to the form of education more so than its content. This is not to slight, however, the role of specific courses or knowledge areas, because the open-ended questions did elicit numerous comments on the importance of business administration, agricultural economics, computers, agronomy, animal science, and many other courses in career mobility. But, overall, these more focused comments represented one-fifth of the open-ended responses, while the comments on interpersonal skills, personal contacts, and reasoning skills represented the bulk of the open-ended responses.

Summary and Conclusions

Utilizing the results of a mail survey of College of Agriculture graduates from the University of Kentucky, the article describes the employment characteristics and the factors that were important in securing employment upon graduation and facilitating career advancements.

Major changes have occurred in the types of jobs that graduates find upon leaving school and the types of jobs they currently hold. The increasing importance of sales, management and administration occupations has implications for changes in curricula that might be considered by Colleges of Agriculture. It would appear that additional training in areas such as management principles and communication skills, and interpersonal relations would be valuable additions to our curricula. However, this will require hard decisions regarding the relative importance of these areas vis-a-vis the more traditional technical training of our current curricula. Such changes would also require a reassessment of the total number of hours required for a college degree.

Graduates indicated that personal qualities, previous work experience, and assistance from college faculty were very important factors in securing their first job. These findings indicate that programs designed to give students hands-on experiences during their college careers should receive high priority. This could be accomplished through co-op education, internships, or work-study programs. Reaffirming the significance of faculty-student interactions in the classroom, in job placement and counseling is also necessary.

The survey indicated that communication skills were influential in career advancement, as well as the ability to organize and lead groups and to engage in prioritized problem solving. These skills can be fostered within our curricula through oral and written presentations, group-oriented activities, peer tutoring.

Finally, the pre-eminence of personal qualities in the graduates' assessments of job placement and career advancement should not be ignored on the assumption that higher education cannot influence or affect these qualities. Less structured approaches to teaching, such as learning contracts, independent study, or individually paced learning modules can contribute to

the fostering of those personal traits highlighted by the graduates - self-motivation, self-organization, perseverance, time management, etc.

The results of this survey challenge us to evaluate the form and content of our curricula in terms of how they contribute to the career success of our graduates. The structural changes in the market place should be taken into account when revising our curricula. We must be aware that we no longer, if we ever did, train students only for positions in highly specialized or technical careers. Rather our students are encountering a work world that demands interpersonal and integrative skills for success.

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Combatting Teaching and Administration Stress With Good Nutrition

Glenna D. Harrison
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Abstract

Today's college level agricultural teacher and administrator is likely to face psychological or emotional stress related to workload, budget cuts, tenure concerns, student evaluations, time pressures, work relations with peers and perhaps personal relations concerns. Managing stress is a combined nutritional-psychological task. Understanding this relationship can help faculty and staff successfully cope with work and home environments.

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Symptoms of Stress

Symptoms of stress include:

irritability	stomach upset
fatigue	frequent worry
intestinal cramps	insomnia
withdrawal	restlessness
high blood pressure	backache
headache	muscle spasms

(Lawhon, 1982; Rossman, 1981; and Cherrington, 1983)

People react in different ways to stress. A person may have one or more symptoms and the severity of the symptoms may vary. Many persons are slow to recognize the symptoms as they are more concerned with the demand that is causing the stress.

Nutritional Implications of Stress

In general, the nutritional effects of the stressed individual are influenced by previous nutritional status, as well as heredity, illnesses, and health abuses. These same factors affect the amount and type of nutrients lost from the body. Furthermore, the nature, frequency, intensity, and duration of the stressor influence the nutritional status of an individual. The three ways in which nutrition and stress can interact are:

1. A nutritional deprivation itself can evoke a stress response.
2. An individual's nutritional status can affect his/her response to a stressor.
3. Stress can produce nutritional deficiencies.

Recommended Dietary Allowances (RDAs) have been established by the Food and Nutrition Board of the National Academy of Sciences/National Research Council (1980). Amounts of specific nutrients are recommended for various age groups and for males and females within the various groups. Nutrients identified in research as affected by or affecting stress include: kilocalories, protein, and possibly vitamin C and calcium.

Research has shown that stress such as fever, immobilization, burns, or surgery, increases the kilocalorie requirement of the body (Beisel, 1976). These types of stress are sometimes called physical stress, excluding physical exercise. Carbohydrates, fats, or proteins may furnish the kilocalories required for the increased metabolic needs. Normally, protein is not used for energy needs, but is spared for its special functions of building and maintaining cells and regulating body processes.

If a person has long-term physical stress, there will be a loss of nitrogen, indicating protein is being lost from muscles and organs to be used for energy instead of carbohydrates and fats (Whitney and Cataldo, 1983). This occurs even if there are sufficient carbohydrates or fats in the body to provide the additional kilocalories required.

The best defense against excessive protein loss is good protein status. This isn't achieved overnight, but a person who consistently has good protein intake as recommended by the RDAs will be in a better position to handle the nitrogen-protein loss during periods of emotional stress.