Staff Reaction to Educational Needs of a Changing Student Population In Agronomy Courses

A. W. Burger and
D.C. Brandenburg

Abstract

A survey sent to Agronomy Teaching Coordinators and/or Department Heads of Agronomy at all of the members of the National Association of State Universities and Land Grant Colleges (NASULGC) indicated a need for modifying teaching programs and courses to satisfy the educational needs for increasing numbers of urban enrollees in agronomy classes. The results pointed to needs of both males and females for a farm background or farm experience to meet the challenge of face to face interaction with a farmer. Many NASULGC Colleges now provide to students without farm experience training in the task performance aspects of farming through cooperative education programs, farm internships, work-study projects, summer work experience. Many schools are providing more field laboratory work, practicums, and "hands-on" experiences; however, some institutions find these added programs very expensive on a limited budget. Provision of farm experience training for non-farm agronomy enrollees can lead to an enormous demand on departmental resources, depending on the rural or urban location of the University.

Introduction

Considerable effort has gone into the study of the changing makeup of our College of Agriculture enrollees. (2) Students from non-farm backgrounds and females are making up an increasingly greater proportion of the total enrollment in colleges of agriculture (1, 3, 4, 5, 6, 7, 8). Dramatic enrollment growth in Colleges of Agriculture has resulted from renewed interest in food production and agricultural profitability as well as general expansion of agri-business. An ever growing population's demand for better nutrition in the developing countries will require sizeable increases in world food supplies. As production agriculture expands, new supportive businesses also are needed. Agriculture is becoming more enticing to "get into" rather than to "get out of." These new interests in agriculture have put new strains on agricultural education at many institutions of higher learning. There is likely a point at which facilities and faculty can absorb no more and still put out a quality product — a well trained student to meet future problems in agriculture.

In this paper the authors have assessed the changing needs of agronomy students as reported by agronomy faculty in higher education.

Materials and Methods

A major objective of this investigation was to study the educational needs of a changing student population in agronomy courses. A questionnaire was developed from suggestions made to the authors by mail from either the agronomy teaching coordinator and/or department head of agronomy at all National Association of State Universities and Land Grant Colleges (NASULGC). The resulting questionnaire was mailed to the same teaching coordinators and/or department heads for completion. Seventy five NASULGC individuals were contacted and 49 replies were received by the deadline date for data processing on the IBM 370 MERMAC Test and Questionnaire Analysis Package. Data analysis consisted of appropriate usage of analysis of variance, t-tests, tests of differences between two proportions, and X^2 tests of association depending on the type of input data.

Results and Discussion

Responses to survey questions are summarized in Table 1. Results are presented for the total group and broken down for comparison among American Society of Agronomy (ASA) regions, agronomy staff size, and Agricultural College undergraduate enrollment. Percentages are adjusted for those respondents omitting questions (very small in most cases) so that individual sets of percentages always total 100.

More than one third (37 percent) of the colleges found that lack of farm background was a significant problem in the placement of agronomy majors following graduation (See item 1). Moreover, there was a highly significant differential response between colleges of more than 2000 (69 percent) versus those with an agricultural college enrollment (25 percent) of less than 2000. (See Table 1.)

The problem of placement for female graduates (item 2: 20 percent of NASULGC) appears to be a smaller problem than that of placing students without farm background (item 1: 37 percent of NASULGC). See also item 3. Institutions with enrollments above 1000 show lack of farm experience to be a more severe challenge in job placement than the sex of students (item 3).

This interaction was highly significant. Lack of farm background was also more important than sex for job placement for the Northeast and North Central regions but not in the Southern and Western regions.

Placement of female graduates with low grade point averages appears to be a special problem with about 35 percent of the colleges (item 4). Note the differential response, however, among ASA regions and between schools of high and low enrollment. Placement problems of females with low grade point averages are more severe (a) in the Northeast and North Central States than in the South and West, and (b) in schools with over 2000 compared to those with an agricultural college undergraduate enrollment of less than 2000.

Sixty-two percent of the colleges felt that females cannot compete successfully with males in all fields of agronomy (item 5). This opinion was stable for comparisons among ASA regions, college enrollment, and staff sizes.

The next set of questions focused on how lack of farm experience was taken into account by the colleges.

"Some" to "considerable" emphasis is placed on summer work experience, work study programs, cooperative education programs, as a basis for providing practical experience to students at 98 percent, (48 of 49) of the Colleges (item 6). Summer work experience and work study programs are used by 82 percent of the colleges while slightly over 1/2 of the colleges employ cooperative education programs (see items 7, 8, and 9). Other programs used by various colleges to provide practical experience to students include agricultural internships, student trainee programs, independent study credit, summer employment of majors on the research farm, work on research projects, community students living on the family farm, and non-credit farm practice (see item 10).

Sixty-five percent of the colleges experienced problems in supplying urban students with the necessary farm experience to qualify them for many positions. The Western region appeared to have the lesser challenge in this goal (item 11).

Nearly half, 24 of 49, of the colleges felt that the non-farm student was at a disadvantage when entering agronomy courses at their institutions (see item 12). There was a highly significant differential response between colleges of low versus high enrollments. Only 29 percent (5 of 17) of the colleges with fewer than 1000 students compared to 63 percent (12 of 19) for colleges with enrollments of 1000-2000 and 54 percent (7 of 13) for colleges with enrollments of over 2000 indicated non-farm students to be at a disadvantage when entering agronomy courses. The Western and Northeastern regions considered their non-farm students to be at a lesser disadvantage than the North Central and Southern regions when entering agronomy courses at their respective institutions.

Eighty-four percent of the colleges find increasingly more students interested in the fringe areas (e.g., environmental concerns, vegetation of disturbed lands, land use planning) of agronomy (see item 13).

Three fourths of the institutions reporting (36 of 48) indicated that course needs of agronomy majors differ from those of non-agronomy agriculture majors (see item 14).

A majority of the colleges (27 of 49) felt that students with non-farm backgrounds would have trouble applying what they know in their jobs after graduation (item 15).

Without exception the majority of colleges (41 of 49) in all regions and regardless of enrollment or staff size, feel that students need greater exposure than they now have to farming methods, machinery, and practices before graduation (item 16).

Only 1 of 49 colleges reporting felt the need for segregating classes into students with urban and farm background (item 17). Eighty-one percent (39 of 48) of the colleges considered females and urban students weak in practical farm application of subject matter taught in agronomy classes. Only in the Western Region were the colleges equally divided on this question (item 18).

Item 19 indicates that 47 of 48 colleges reporting (98 percent) have 20 percent or more students lacking a farm background registered in classes. Forty-two of 48 (88 percent) have more than 30 percent, thirty-six of 48 (75 percent) have more than 40 percent, and twenty-eight of 48 (58 percent) have more than half of their students lacking farm background. (Fig. 1) Notice the rather high percentages of students without farm background in the Northeast region (Table 1, item 19, under ASA Regions).

Somewhat parallel to item 19 is the report from the colleges concerning nearest percentage of those majoring in agronomy who lack farm background. (Table 1, item 20 and Fig. 1). Ninety-one percent, 42 of 46 of the colleges reporting, have 20 percent, or more of their agronomy majors without farm background. Seventy-six percent of the colleges have 30 percent or more, fifty-seven percent of the colleges have 40 percent or more, and thirty-nine percent of the colleges have 50 percent or

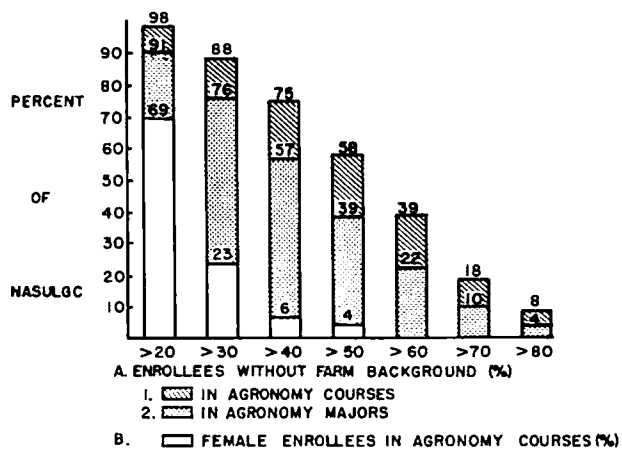

Figure 1. Percentages of National Association of State Universities and Land Grant Colleges (NASULGC) reporting varying percentages of females and students without farm background in agronomy courses and majoring in agronomy.

more of their agronomy majors without farm background (Fig. 1.) Note again the high percentages of agronomy majors in the Northeast region without farm background (Table 1, item 20).

"Some" to "considerable" value is placed on the teaching of an "informational-service, general education" course in agronomy to non-agronomy majors in departments of agronomy at 51 percent of the colleges (item 21). The North Central and Western regions appear to be doing the least in this area. The majority of the schools, 25 of 46 reporting, do not favor giving degree credit for the above mentioned service course (item 22). Notice the highly significant differential response of small schools (enrollment less than 1000) who favor giving degree credit, 12 of 15 (80 percent) compared to schools with enrollments of 1000-2000 and over 2000 who do not favor giving degree credit, 5 of 19 (26 percent) and 4 of 12 (33 percent) respectively.

Fifty-three percent, 26 of 49, of the respondents thought that the college should accept the responsibility of teaching urban and other non-farm students the task performing aspects of farming (item 23). Note the highly significant differential response between small schools and large schools. Whereas the majority of the schools with enrollments above 1000 would accept this responsibility, the majority of schools with fewer than 1000 enrollees would not.

Fifty-three percent, 26 of 49, of the colleges reporting felt that our agronomy courses should be adjusted for urban students (item 24). However, the majority (59 percent) of schools with enrollments of less than 1000 did not feel that agronomy courses should be adjusted for urban students, whereas the majority of schools with enrollments of 1000-2000 (53 percent) and the majority of schools with enrollments above 2000 (69 percent) felt that courses should be so modified. The interaction was significant at the 2 percent level.

Future employers appear to favor male over female when selecting an employee at 30 of 45 or two-thirds of the colleges reporting (item 25).

Only 35 percent of the colleges felt that the American Society of Agronomy should accredit agronomic training programs (item 26). Only one-third of the schools felt that organizing the curriculum so that courses will prepare students for a specific job is an important task (item 27).

The majority of schools (86 percent) favored the increase of work experience and "hands-on" training for students in agriculture (item 28).

Only 31 percent of the colleges favored the requiring of part-time agronomic jobs to facilitate agronomy students' learning and comprehension (item 29). Notice that the majority of the Southern region schools (59 percent) favored this requirement, however.

With but two exceptions at schools with less than 1000 enrollment, all schools felt that summer work programs enhance the appeal of non-farm students to prospective employers (item 30).

Seventy-eight percent of the Colleges favored expansion of formal industry and farm internships (item 31).

While both work experience and internships were acceptable for college degree credit at a majority of the Colleges, the internship was preferred (items 32a and 32b). Notice that schools with enrollments above 2000 do not favor work experience for credit while the combination of all schools with less than 2000 enrollees do. In addition, the Northeast and West regions do not favor work experience for collegiate credit while the North Central and Southern regions do. The latter is a highly significant differential response.

Ninety-four percent of the colleges favor pay for work experience toward college credit (item 33). Only six percent of the Colleges require farm background or work experience for the college degree (item 34). Some schools previously requiring these items have changed to a policy of strongly recommending them. Note that 24 percent of the schools favor a change to requiring farm work experience for an agronomy major degree (item 35).

Lack of availability of facilities to give the students more practical experience in the proper methods of crop farming is a problem at 73 percent of the colleges (item 36).

Large class sizes much more than the safety of the student are restricting opportunities to receive individual aid (field trips, student-teacher interaction, etc.) at the majority of the colleges (items 38a and 38b). Notice the highly significant differential responses among regions, between staff sizes, and among different enrollment classes. The majority of the Western region schools find large class no deterrent to individual aid while the other regions do. The majority of colleges with a staff size of less than 20 find large class size no deterrent while those with staff size over 20 indicate some detrimental effects. The majority of schools with enrollments of less than 1000 find large class size no deterrent while those with enrollments over 1000 do.

Seventy-five percent of the colleges reported that employers favor students with a farm background (item 39). Such favoritism was much more evident at colleges with enrollments over 1000 than at those with less than 1000. The interaction is significant at the 5 percent level.

Sixty percent of the colleges reported that the basic science background of rural students is somewhat weaker than that of urban students (item 40). The Western region schools are an exception.

Fifty-three percent of the colleges indicated that a lack of farm background among students in various classes poses an instructional problem (item 41). Once again institutions with enrollments of less than 1000 find lack of farm experience a lesser problem than do those with enrollments above 1000. The interaction is highly significant. Eighty-four percent of those finding problems in instruction resulting from students' lack of farm experience are either providing special opportunities to obtain farm experience or making farm experience mandatory prior to matriculation (item 42).

Twenty-four percent of the colleges find it difficult to teach principles and concepts and relate these to farm practices (item 43) while 80 percent of the schools feel the need for more meaningful field laboratory exercises for all students (item 44).

Forty-four percent of the colleges considered their students lacking motivation to take basic science courses (item 45).

Half of the schools considered their students better prepared in pre-college education than the students of a decade ago. However, the majority of schools with staff size over 20 and enrollments above 1000 considered their students better prepared while the majority of colleges with staff size below 20 and enrollments below 1000 indicated that their students were less well prepared. This differential response was significant at the 5 percent level (item 46).

Fifty-four percent of the colleges could see a relationship between pre-college farm background experience and high acceptance for student employment (item 47). However, significant differential responses were noted for schools with differing enrollments and for schools in different ASA regions. The majority of schools with enrollments of more than 1000 as well as the majority of the colleges in the North Central and Southern regions found a high relationship between pre-college farm background experience and acceptance for student employment while the majority of schools with less than 1000 enrollment and the Northeastern and Western regions found no relationship.

The majority of schools found no correlation between the research objectives in the department and the educational-occupational goals of their undergraduate students (item 48).

Eighty-six percent of the colleges did not envision a five-year professional agronomy degree; however, 60 percent either have or envision a professional non-thesis master's program in agronomy (items 49 and 50).

More than two-thirds of the colleges have 20 percent or more female enrollees in their agronomy courses (item 51 and Fig. 1). Highly significant differential responses were found among ASA regions and schools with differing enrollments. The majority of schools with enrollments over 2000 and the Northeast region had greater than 20 percent female enrollees, whereas the majority of schools with enrollments of less than 2000 as well as the Southern, Western, and North Central regions had either 10 or 20 percent female enrollees.

Summary and Conclusions

A mail survey of the NASULGC (National Association of State Universities and Land Grand Colleges) Teaching Coordinators and/or Department Heads of Agronomy indicates that there are many challenges to meet regarding instructional programs, agronomy courses, and facilities necessary to satisfy the needs of the increasing urban and female students enrolling at their schools. Replies from 49 of the 75 colleges indicate that:

1. Increased urban and female enrollment in agronomy is becoming more commonplace throughout the USA. However, especially the Northeast compared to the Western region and schools with agricultural college enrollments greater than 2000 compared with schools with less than 2000 enrollment are experiencing higher percentages of females and urban students in their classrooms.
2. Staff size, agricultural college undergraduate enrollments, and ASA region appear to be determinants of varying problem intensities in providing farm experience training to urban students and in placing students in agronomy employment.
3. While some colleges are experiencing some difficulty in placing female students in agronomy, many female graduates, especially those with farm experience, are finding excellent job opportunities in agronomy. Many employers appear to favor male agronomy graduates especially for the more physical jobs, however.
4. Many colleges are finding it increasingly more difficult to give farm experience training to the increasing numbers of non-farm students. Staff needs for giving farm experience training are becoming greater, and giving such experience is very time consuming and demanding.
5. Internships which are set up for farm experience training appear to be much more acceptable for collegiate credit than farm work experience at most colleges. The Northeastern and Western ASA regions especially are reluctant to grant collegiate credit for work experience per se. Other ways of providing practical experience to students include trainee programs, independent study credit, summer employment of majors on research farms, community students living on their family farms, and summer trainee programs.

Implication of Conclusions

Results from most surveys, like those reported here, oftentimes pose more questions than answers. If NASULGC institutions do not attempt to meet the educational and experience needs of present and future agronomy students, a more serious employment problem is likely to result. Not only do our results point to significant efforts to supplement classroom activities, but potential changes for textbook publishers as well as attitude changes for agricultural faculty and agri-business employers.

Table 1. Replies to Questions Concerning Increased Non-Farm and Female Enrollment in Agronomy Courses from Agronomy Teacher Coordinators and/or Department Heads of Agronomy at National Association of State Universities and Land Grant Colleges (NASULGC)

Question # and Reply		Total		ASA Regions								Staff Size				Agric. College Undergraduate Enrollment					
				NE		NC		S		W		<20		>20		<1000		1000-2000		>2000	
		#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
1. Does lack of farm background become a significant problem in the placement of your agron. majors following graduation?	Yes	18	37	4	50	4	40	7	32	3	33	5	29	13	41	4	24	5	26	9	69
	No	31	63	4	50	6	60	15	68	6	67	12	71	19	59	13	76	14	74	4	31
2. Are you having problems in placing female graduates?	Yes	10	20	2	25	2	20	5	23	1	11	1	6	9	28	1	6	3	16	6	46
	No	39	80	6	75	8	80	17	77	8	89	16	94	23	72	16	94	16	84	7	54
3. Is the problem in placement referred to in questions 1 & 2 primarily one of a lack of farm background rather than sex?	Yes	19	46	4	67	5	56	7	37	3	43	5	36	14	52	3	21	9	60	7	58
	No	22	54	2	33	4	44	12	63	4	57	9	64	13	48	11	79	6	40	5	42
4. Do you have a special problem in placing females with low GPA's?	Yes	16	35	5	71	6	60	2	10	3	43	3	19	13	45	2	13	6	33	8	72
	No	29	65	2	29	4	40	18	90	4	57	13	81	16	55	14	87	12	67	3	28
5. Can females compete successfully with males in all fields of agronomy?	Yes	18	38	3	37	3	30	8	38	4	44	7	44	11	34	6	38	6	32	6	46
	No	30	62	5	63	7	70	13	62	5	56	9	56	21	66	10	62	13	68	7	54
6. What emphasis do you place on summer work experience, work study programs, coop education programs, etc. as a basis for providing practical experience to your students?	Considerable	25	52	5	63	2	20	15	68	3	33	10	59	15	47	9	53	9	47	7	54
	Some	23	46	3	37	8	80	7	32	5	56	6	35	17	53	7	41	10	53	6	46
	None	1	2	-	-	-	-	-	-	1	11	1	6	-	-	1	6	-	-	-	-
Do you have any of the following programs referred to in question #6 above?																					
7. Summer work experience	Yes	40	82	4	50	10	100	20	91	6	67	13	76	27	84	13	76	17	89	10	77
	No	9	18	4	50	-	-	2	9	3	33	4	24	5	16	4	24	2	11	3	23
8. Work study programs	Yes	40	83	5	71	9	90	19	86	7	78	14	88	26	81	13	81	12	89	10	77
	No	8	17	2	29	1	10	3	14	2	22	2	12	6	19	3	19	2	11	3	23
9. Cooperative education programs	Yes	25	52	3	43	5	50	13	59	4	44	11	69	14	44	10	63	10	53	5	38
	No	23	48	4	57	5	50	9	41	5	56	5	31	18	56	6	37	9	47	8	62
10. Other	Yes	13	27	4	50	2	20	5	23	3	33	5	29	8	25	3	18	7	37	3	23
11. Do you have a problem in supplying to urban students the necessary farm experience to qualify them for many positions and to do a satisfactory job with these positions?	Yes	32	65	7	88	6	60	15	68	4	44	11	65	21	66	11	65	11	58	10	77
	No	17	35	1	12	4	40	7	32	5	56	6	35	11	34	6	35	8	42	3	22
12. Is the non-farm student at a disadvantage when entering agron. courses at your institution?	Yes	24	49	3	38	7	70	12	55	2	22	8	47	16	50	5	29	12	63	7	54
	No	25	51	5	62	3	30	10	45	7	78	9	53	16	50	12	71	7	37	6	46
13. Are increasingly more students interested in the "fringe" areas of agronomy (e.g., environmental concerns, vegetation of disturbed lands, land use planning)?.	Yes	41	84	8	100	7	70	17	77	9	100	14	82	27	84	15	88	16	84	10	77
	No	8	16	-	-	3	30	5	23	-	-	3	18	5	16	2	12	3	16	3	23
14. Is there a difference in the course needs of agron. majors vs. non-agron. agricultural majors?	Yes	36	75	6	86	6	60	16	73	8	89	13	81	23	72	12	75	14	74	10	77
	No	12	25	1	14	4	40	6	27	1	11	3	19	9	28	4	25	5	26	3	23
15. Do you feel that students with non-farm backgrounds have trouble applying what they know on their jobs after graduation?	Yes	27	55	5	63	4	40	11	50	7	78	10	59	17	53	11	65	8	42	8	62
	No	22	45	3	37	6	60	11	50	2	22	7	41	15	47	6	35	11	58	5	38
16. Do you feel that students need greater exposure, than they now have, to farming methods, machinery, and practices before graduation?	Yes	41	84	7	88	6	60	20	91	8	89	16	94	25	78	15	88	15	79	11	85
	No	8	16	1	12	4	40	2	9	1	11	1	6	7	22	2	12	4	21	2	15
17. Should classes be segregated as to urban background vs. farm background?	Yes	1	2	1	12	-	-	-	-	-	-	1	6	-	-	-	-	1	5	-	-
	No	48	98	7	88	10	100	22	100	9	100	16	94	32	100	17	100	18	95	13	100
18. Are female and urban students weak in practical farm application of subject matter taught in agronomy classes?	Yes	39	81	7	88	9	90	19	86	4	50	12	71	27	87	11	65	17	89	11	88
	No	9	19	1	12	1	10	3	14	4	50	5	29	4	13	6	35	2	11	1	12
19. What is the nearest percentage of students registered in your classes who lack farm background?	10	1	2	-	-	1	10	-	-	1	11	-	-	1	3	-	-	1	5	-	-
	20	5	10	-	-	1	10	3	15	1	11	3	18	2	6	2	12	3	17	-	-
	30	6	13	-	-	2	20	3	15	1	11	1	6	5	17	1	6	2	11	3	23
	40	8	17	-	-	2	20	5	24	1	11	4	24	4	13	5	29	1	5	2	15
	50	9	19	-	-	2	20	6	29	4	44	2	12	7	23	4	24	4	23	1	8
	60	10	21	3	38	1	10	2	9	1	11	5	29	5	17	2	12	5	28	3	23
	70	5	10	1	13	1	10	2	9	-	-	-	-	5	17	2	12	-	-	3	23
	80	3	6	3	38	-	-	-	-	-	-	2	12	1	3	1	6	1	5	1	8
	90	1	2	1	13	-	-	-	-	-	-	-	-	1	3	-	-	1	5	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

20. What is the nearest percentage of those majoring in agronomy who lack farm background?	10	4	9	-	-	1	10	3	15	-	-	2	13	2	6	2	13	2	11	-	-
	20	7	15	-	-	2	20	4	20	1	11	3	20	4	13	1	6	5	28	1	8
	30	9	20	-	-	3	30	4	20	2	22	1	7	8	26	3	19	2	11	4	31
	40	8	17	1	14	2	20	3	15	2	22	5	33	3	9	4	25	2	11	2	15
	50	8	17	2	29	1	10	2	10	3	33	3	20	5	17	3	19	4	22	1	8
	60	5	11	1	14	1	10	3	15	-	-	1	7	4	13	1	6	2	11	2	15
	70	3	17	1	14	-	-	1	5	1	11	-	-	3	9	1	6	-	-	2	15
	80	1	2	1	14	-	-	-	-	-	-	-	-	1	3	1	6	-	-	1	8
	90	1	2	1	14	-	-	-	-	-	-	-	-	1	3	-	-	1	5	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21. What value do you put on the teaching of an "Informational-service-general education" course in agronomy to non-agronomy majors in your department?	Considerable	10	20	4	50	1	10	5	23	-	-	5	30	5	16	4	24	3	16	3	23
	Some	15	31	1	13	3	30	6	27	5	56	6	35	9	28	7	41	5	26	3	23
	Little	24	49	3	38	6	60	11	50	4	44	6	35	18	56	6	35	11	58	7	54
22. Should agronomy majors taking the above course be allowed credit toward a degree?	Yes	21	46	3	43	4	40	10	45	4	57	10	63	11	37	12	80	5	26	4	33
	No	25	54	4	57	6	60	12	55	3	43	6	37	19	63	3	20	14	74	8	67
23. Should the college accept the responsibility of teaching urban and other non-farm persons the task performance aspects of farming?	Yes	26	53	4	50	5	50	15	68	2	22	9	53	17	53	7	41	10	53	9	69
	No	23	47	4	50	5	50	7	32	7	78	8	47	15	47	10	59	9	47	4	31
24. Do you feel that our courses should be adjusted for the urban students?	Yes	26	53	5	63	6	60	13	59	2	22	8	47	18	56	7	41	10	53	9	69
	No	23	47	3	37	4	40	9	41	7	78	9	53	14	44	10	59	9	47	4	31
25. Do future employers favor male over female when selecting an employee in your area?	Yes	30	67	3	50	7	78	15	71	5	56	10	67	20	67	9	64	13	68	8	67
	No	15	33	3	50	2	22	6	29	4	44	5	33	10	33	5	36	6	32	4	33
26. Do you feel that agronomy course planning is coming to a point in time when the American Society of Agronomy should accredit agronomic training Programs?	Yes	17	35	4	50	3	30	8	38	2	22	7	44	10	31	6	37	6	32	5	38
	No	31	65	4	50	7	70	13	62	7	78	9	56	22	69	10	63	13	68	8	62
27. Is organizing the curriculum so that courses will prepare students for a specific job an important task?	Yes	16	33	3	37	3	30	7	32	3	33	3	18	13	41	4	24	7	37	5	38
	No	33	67	5	63	7	70	15	68	6	67	14	82	19	59	13	76	12	63	8	62
28. Should more work experience or "hands-on" experience be provided to the agriculture student?	Yes	42	86	6	75	8	80	20	91	8	89	14	82	28	88	13	76	17	89	12	92
	No	7	14	2	25	2	20	2	9	1	11	3	18	4	12	4	24	2	11	1	8
29. Should part-time jobs in agronomy be required to facilitate agronomy students learning and comprehension?	Yes	15	31	1	12	-	-	13	59	1	11	6	35	9	28	7	41	4	21	4	31
	No	34	69	7	88	10	100	9	41	8	89	11	65	23	72	10	59	15	79	9	69
30. Do summer work programs enhance the appeal of non-farm students to prospective employers?	Yes	47	96	8	100	10	100	21	95	8	89	16	94	31	97	15	88	19	100	13	100
	No	2	4	-	-	-	-	1	5	1	11	1	6	1	3	2	12	-	-	-	-
31. Should formal industry and farm internships be expanded over your present activities in this area?	Yes	38	78	7	88	6	60	18	82	7	78	11	65	27	84	11	65	16	84	11	85
	No	11	22	1	12	4	40	4	18	2	22	6	35	5	16	6	35	3	16	2	15
32a. Is a work experience an adequate item for college credit?	Yes	25	51	3	38	7	70	12	55	3	33	10	59	15	47	8	47	12	63	5	38
	No	24	49	5	62	3	30	10	45	6	67	7	41	17	53	9	53	7	37	8	62
32b. Is an internship an adequate item for college credit?	Yes	38	78	5	62	9	90	17	77	7	78	15	88	23	72	13	76	17	89	8	62
	No	11	22	3	38	1	10	5	23	2	22	2	12	9	28	4	24	2	11	5	38
33. Should a student getting college credit for a work experience be allowed to receive pay for the work experience?	Yes	45	94	6	75	10	100	20	95	8	100	17	100	28	90	17	100	18	95	10	83
	No	3	6	2	25	-	-	1	5	-	-	-	-	3	10	-	-	1	5	2	17
34. Do you require farm background or farm work experience for the college degree?	Yes	3	6	1	12	1	10	1	5	-	-	1	6	2	6	1	6	1	5	1	8
	No	46	94	7	88	9	90	21	95	9	100	16	94	30	94	16	94	18	95	12	92
35. Should a farm background or farm work experience be required for an agronomy major degree?	Yes	12	24	1	12	2	20	7	32	2	22	6	35	6	19	5	29	4	21	3	23
	No	37	76	7	88	8	80	15	68	7	78	11	65	26	81	12	71	15	79	10	77
36. Is the lack of availability of facilities to give the students more practical experience in the proper methodology of crop farming a problem in your department?	Yes	35	73	7	88	6	60	14	67	8	89	12	75	23	72	10	63	14	74	11	85
	No	13	27	1	12	4	40	7	33	1	11	4	25	9	28	6	37	5	26	2	15
37. Do you feel that agronomy can be learned from a book?	Yes	10	23	3	43	2	22	3	14	2	29	3	20	7	24	6	37	1	6	3	30
	No	34	77	4	57	7	78	18	86	5	71	12	80	22	76	10	63	17	94	7	70
38a. Are large class sizes restricting opportunities to receive individual aid (field trips, student-teacher interaction)?	Yes	32	65	4	50	8	80	17	77	3	33	6	35	26	81	8	47	15	79	9	69
	No	17	35	4	50	2	20	5	23	6	67	11	65	6	19	9	53	4	21	4	31
38b. Is safety of the student restricting opportunities to receive individual aid (field trips, student-teacher interaction)?	Yes	40	43	3	43	4	40	11	50	2	25	5	29	15	50	5	29	10	56	5	42
	No	27	57	4	57	6	60	11	50	6	75	12	71	15	50	12	71	8	44	7	58

39. Do employers in your area give priority to students with farm backgrounds?	Yes	33	75	4	80	8	80	16	76	4	57	10	63	23	82	8	50	16	89	9	90
	No	11	25	1	20	2	20	5	24	3	43	6	37	5	18	8	50	2	11	1	10
40. Are rural students somewhat weaker in basic sciences (physical and biological e.g., chemistry and biology) than urban students?	Yes	28	60	6	86	6	60	14	64	2	25	12	71	16	53	10	59	11	61	7	58
	No	19	40	1	14	4	40	8	36	6	75	5	29	14	47	7	41	7	39	5	42
41. Does lack of farm background among students in your classes pose an instructional problem to you?	Yes	26	53	3	37	6	60	12	55	5	56	8	47	18	56	5	29	11	58	10	77
	No	23	47	5	63	4	40	10	45	4	44	9	53	14	44	12	71	8	42	3	23
42. If the answer to ques. #41 is yes, what measures are being taken to rectify this situation?	Nothing being attempted	5	16	1	25	1	14	1	8	2	34	1	10	4	20	1	16	2	15	2	18
	Farm Exp. Req. Prior to matriculation	2	7	1	25	-	-	-	-	1	16	1	10	1	5	-	-	5	8	1	9
	Spec. Opportunities provided	23	77	2	50	6	86	12	92	3	50	8	80	15	75	5	84	10	77	8	73
43. Do you find it difficult to teach principles and concepts in courses, and relate these to farm practices?	Yes	12	24	-	-	1	10	8	36	3	33	5	29	7	22	5	29	4	21	3	23
	No	37	76	8	100	9	90	14	64	6	67	12	71	25	78	12	71	15	79	10	77
44. Do you feel the need for more meaningful field laboratory exercises for all students in your department?	Yes	39	80	7	88	8	80	19	86	5	56	15	88	24	75	12	71	16	84	11	85
	No	10	20	1	12	2	20	3	14	4	44	2	12	8	25	5	29	3	16	2	15
45. Do your students lack the motivation to take basic sciences courses?	Yes	21	44	4	50	6	60	9	43	2	22	8	47	13	42	5	29	11	58	5	42
	No	27	56	4	50	4	40	12	57	7	78	9	53	18	58	12	71	8	42	7	58
46. Do you consider your students to be better prepared in pre-college education than the students of a decade ago?	Yes	24	50	5	63	4	44	11	50	4	44	5	31	19	59	5	31	11	58	8	62
	No	24	50	3	37	5	56	11	50	5	56	11	69	13	41	11	69	8	42	5	38
47. Do you see a relationship between pre-college farm background experience and high acceptance for student employment?	Yes	26	54	1	14	8	80	14	64	3	33	7	44	19	59	6	35	12	67	8	62
	No	22	46	6	86	2	20	8	36	6	67	9	56	13	41	11	65	6	33	5	38
48. Is there a high degree of correlation between the research objectives in your department and the educational-occupational goals of your undergraduate students?	Yes	18	37	2	25	4	40	9	41	3	33	5	29	13	41	7	41	8	42	3	23
	No	31	63	6	75	6	60	13	59	6	67	12	71	19	59	10	59	11	58	10	77
49. Do you have, or envision, a five-year professional agronomy degree?	Yes	7	14	2	25	-	-	3	14	2	22	6	35	1	3	4	24	2	11	1	8
	No	42	86	6	75	10	100	19	86	7	78	11	65	31	97	13	76	17	89	12	92
50. Do you have, or envision, a professional non-thesis master's program in agronomy?	Yes	29	60	5	63	5	50	12	57	7	78	9	56	20	63	10	63	10	53	9	69
	No	19	40	3	37	5	50	9	43	2	22	7	44	12	37	6	37	9	47	4	31
51. What percentage of the enrollees in agronomy courses are female?	10	15	32	1	13	3	30	9	43	2	22	9	53	6	19	8	47	7	38	-	-
	20	22	46	1	13	5	50	11	52	5	56	6	35	16	52	8	47	9	50	5	38
	30	8	16	4	50	2	20	1	5	1	11	1	6	7	23	1	6	-	-	7	54
	40	1	2	-	-	-	-	-	-	1	11	-	-	1	3	-	-	1	6	-	-
	50	2	4	2	25	-	-	-	-	-	-	1	6	1	3	-	-	1	6	1	8

References

1. Anderson, Monte R. and Donald M. Elkins. 1978. Urban Students in Agriculture — Disadvantaged? **NACTA J.** 22: 4-7.
2. Armstrong, David L. 1977. **Impact of Enrollments and Student Body Composition on Academic Program, Design, and Delivery — A RICOP Report.** Michigan State University. 458 pp.
3. Elkins, D.M. and D. W. Lybecker. 1977. Teaching Introductory Field Crop Production to Non-farm Students. **NACTA J.** 21:17-19.
4. Hess, Carrol V. 1977. Agriculture and Natural Resources from the Kansas State Point of View. pp. 349-364 of **RICOP** report cited in 2 above.
5. Stoskopf, N,C. 1973. Agriculture for Non-Agricultural Students. **NACTA J.** 17(2):29-30.
6. Turner, Deane A. 1977. Program Adjustments for a Changing Student Profile. **NACTA J.** 21:4-7.
7. Waldren, K. P. 1976. A Summer Training Program to give Undergraduates Practical Experience in Agronomy. **Agron. Abst.** p. 2.
8. University News Service. 1976 (Aug. 27) "City Slickers" Moving to Ag Classes. **Daily Egyptian** 58 (5):3.