Student Views About Increasing Non-Farm and Female Enrollment In Agronomy Courses

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Abstract

Fifteen students at each of 49 responding colleges of NASULGC were asked to give their views regarding the potential impact of increased urban and female enrollments on their academic training and future employment. Most non-farm males and females seek farm experience training to help them prepare themselves for jobs in agronomy because more than one-third of them feel disadvantaged compared to farm males and females. Over three-fourths of agronomy enrollees consider the question of farm vs. city background an important problem in job placement whereas fewer than half of these students consider the question of sex (male vs. female) an important problem in getting a job. Class sizes in the Northeast states especially are restricting student opportunities to receive individual aid, e.g., field trips, teacher-student interaction.

Introduction

Many agricultural administrators and agricultural staff people have grappled with the impact of the increasing urban and female enrollments in colleges of agriculture (2) and in agricultural teaching programs (1, 3, 4, 5). Many new teaching programs and courses have evolved as a result of the changes in student body composition. How successful have these new programs been? Can we presently assess whether these new programs and courses are hitting the mark? The purpose of this paper is to attempt to answer these and related questions through the views of the student enrollees in agronomy courses throughout the USA.

Materials and Methods

Fifteen students in agronomy courses at each of 75 institutions composing the National Association of State Universities and Land Grant Colleges (NASULGC) were asked 30 questions (Table 1) relating to the impact of increased non-farm and female enrollments on their academic training and job opportunities. The questionnaires were mailed to department heads of agronomy or agronomy teaching coordinators, who, in turn, administered the questionnaires to the students. A total of 645 responses from 49 colleges were returned for processing via IBM 370 MERMAC Test and Questionnaire Analysis Package. Statistical treatment of the data includes appropriate use of analysis of variance, t tests, tests on differences between proportions, and X^2 tests of association.

Burger is professor of Agronomy and Brandenburg is assistant professor of Educational Psychology, University of Illinois-Urbana Champaign. This is the second part of a two-part study conducted during a sabbatical leave (January 1-June 30, 1979) by the senior author. Refer to "Staff Reaction to Educational Needs of a Changing Student Population in Agronomy Courses," NACTA J., December 1979, pp. 4-10 for the first part.

Results and Discussion

Responses to the 30 questionnaire items are displayed in Table 1. In addition to total sample responses, results are given in terms of farm background and sex jointly and classified according to the various American Society of Agronomy (ASA) geographical regions of the USA. Farm background was determined by results to question no. 2 where a response of "None", coded as non-farm and "Summer only" or "Full time" coded as farm. Within this categorization, male or female was added as a further classification. Percentages for each breakdown category were adjusted for omit rates - thus the percentages total 100 in each case.

Items 1 and 2 concern the backgrounds of the respondents. Thirty-six percent of the 645 respondees were from farms, 11 percent from rural non-farms, 18 percent from towns under 10,000, 19 percent from towns of 10,000-50,000, and 16 percent from cities of over 50,000 (item 1). Item 2 indicates that the 645 respondents were best described as follows: 39 percent with no farm experience, 28 percent with farm experience during the summer only, and 33 percent with full time farm experience.

Study Population

Figure 1 shows a graphical display of the proportionate numbers of farm males and females along with the non-farm males and females within the group of 621 valid responses from the total of 645 involved in the survey. Notice that 27 percent of the respondents are female and 39 percent of the respondees are non-farm students. A much higher percentage of the female students have no farm background (57 percent) compared to male students (33 percent). Of the farm students only 19 percent are female whereas 38 percent of the non-farm students are female. Tests of significance were made for items 3-30 by making appropriate comparisons between non-farm males vs. females, farm males vs. females, farm males vs. non-farm males and farm females vs. non-farm females as well as across ASA regions. Other farm-sex comparisons were considered inappropriate.

Items 3-7 pertain to responses from students without farm experience only, items 8-13 are from females only, items 14-19 are from males only, and items 20-22 are from students with farm experience only.

Item 3 indicates that 39 percent of the 1515 non-farm males and 42 percent of the 94 non-farm females felt either very disadvantaged or disadvantaged when taking an agronomy course with students who have had farm experience. Only random fluctuations occurred among various ASA regions on this question.

On Farm Experience Credit

Most non-farm students, both male and female, agreed that a summer credit farm experience course as well as the college providing slides, short films to define farm operations (items 4 and 5) would help provide solutions to their lack of farm background. Most of the non-farm students did not want to be segregated, i.e., one class for farm background students and another with students without farm experience (item 6). In addition item 7 indicates that especially non-farm females, 58 percent, (compared to only 42 percent for non-farm males) were in favor of the college placement office providing special help to students without farm background in placement activities. This difference between non-farm females and non-farm males was significant at the 5 percent level using a t test for a scaled item (1 - would help; 2 - neutral; 3 - wouldn't help).

Non-farm males and farm males, respectively, feel the same toward competition from their female counterparts in agronomy courses (item 8 vs. item 14). Non-farm males and farm males, respectively, did not feel that they should have priority over their female counterparts in non-physical employment and vice versa (item 9 and item 15).

Ability to Compete

Ninety-four percent of the non-farm males compared to only 77 percent of the non-farm females thought that they could compete with the opposite sex in all fields of agronomic employment (items 10 and 16). The difference between the two proportions was highly significant. A significant difference was found also for 91 percent of the non-farm males and only 74 percent of the non-farm females who thought that they could compete with the opposite sex in all fields of agricultural employment (items 11 and 17). Thus it appears that non-farm males are more confident in competing with non-farm females than are the non-farm females with their male counterparts in competing for both agronomic and/or agricultural employment.

Eighty-eight percent of the farm males felt that they could compete with farm females in all fields of agricultural employment while only 78 percent of the farm females felt that they could compete with their male counterparts in all fields of agricultural employment (items 11 and 17). The difference between the two proportions was significant at the 5 percent level.

While 15 percent of the farm females felt that they are more qualified than males for employment in various fields of agronomy (item 12), 27 percent of the farm males felt that they are more qualified than their female counterparts for agronomic employment (item 18). This difference between the two proportions is significant at the 5 percent level.

Males and females, either farm or non-farm, were about equally divided on whether their counterparts should receive specialized training in agronomy (items 13 and 19).

Item 20 indicates that farm males feel more disadvantaged than farm females when taking basic science courses with student from an urban background. The t test indicates that the differences between the scaled mean of farm males, 2.71, is significantly lower than the average for farm females 2.88.

The rating for the need to have a strong basic science background in helping performance in agronomy courses is about equal for farm males and farm females (item 21).

Farm males feel more advantaged than their farm female counterparts in taking agronomy courses with students from an urban background (item 22). The t test indicates that the difference between the scaled mean for farm males, 2.56, is signficantly greater than the scaled mean for farm females, 2.40.

Male vs. Female

Non-farm females consider the question of male vs. female a more important problem in job placement than non-farm males. The t test indicates that the difference between the scaled mean for non-farm females, 2.31, is significantly less than the scaled average for non-farm males, 2.50, (1 - very important, 2 - important, and 3 - not important) (item 24). Farm-males consider the farm vs. city background a more important problem in job placement than non-farm males. The scaled mean, 1.98, for farm males is significantly lower than that for non-

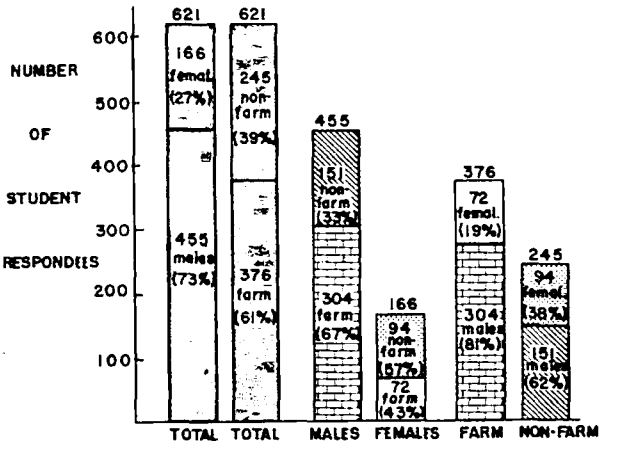

Figure 1. A graphical display of the proportionate numbers of *farm males and females and non-farm males and females* within the group of valid agronomy enrollees 621 out of 645 students in this survey of NASULGC.

farm males, 2.5 (item 23). Non-farm females consider the question of sex (male vs. female) more important than farm-females (item 24). The scaled average for non-farm females is 2.31 which is significantly lower than the scaled average for farm females, 2.53. Stating this another way, 54 percent of the non-farm females consider the question of male vs. female either an important or very important problem in job placement compared to only 42 percent of the farm females.

The majority of the students indicate that class sizes are not restricting students' opportunities to receive important individual aid (e.g., field trips, teacher-student interaction). The notable exception are the student groups in the Northeast states where 61 percent of the respondees indicate large class size is deterrent in receiving individual aid (item 25).

Non-farm males consider internships in industry or in farm work programs more successful than farm males, 63 percent to 37 percent respectively (item 26). The t test on the difference between the scaled average for non-farm males, 1.41, is significantly lower than that for farm males, 1.67 (1 - very successful, 2 - successful, and 3 - not successful).

Internship Credit

The majority of students were not receiving collegiate credit for internships in industry or in farm work programs (item 27). Note, however, that non-farm females were an exception - 60 percent of them earned collegiate credit. All non-farm females received payment for service or internships and farm work programs compared to 67 percent of non-farm males and only 50 percent for farm females. These differences between the two proportions, 67 percent and 50 percent were significantly less than the 100 percent (item 28). Ninety percent of non-farm females were in residence near the internship and/or farm work experience area compared to only 59 percent for the non-farm males. This difference between two proportions was significant (item 29).

Three fourths of the departments of agronomy in NASULGC sponsor an organization which promotes the understanding of agronomy (item 30). Least emphasis on the importance of such undergraduate Agronomy Clubs is given in the Northeastern United States.

Summary and Conclusions

A survey of the students enrolled in agronomy courses at 49 of the 75 National Association of State Universities and Land Grant Colleges (NASULGC) indicates that:

1. Twenty seven percent of the enrollees are female and 39 percent are non-farm students.
2. A much higher percentage (57 percent) of the female students compared to male students (33 percent) have no farm experience.
3. Thirty nine percent of the non-farm males and 42 percent of the non-farm females feel disadvantaged when taking an agronomy course with students who have had farm experience.
4. Most non-farm students agreed that a summer credit farm experience course would help provide solutions to their lack of farm experience. They did not want to be segregated into separate agronomy courses - those for farm and those for non-farm students.
5. Non-farm or farm males are more confident than farm or non-farm females in competing for agricultural and/or agronomic employment.
6. Farm males feel more disadvantaged than farm females when taking basic science courses with urban students; farm males feel more advantaged than farm females in taking agronomy courses with urban students.
7. Non-farm females consider the question of sex bias a more important problem in job placement than non-farm males. Farm males consider farm experience a more important factor in job placement than non-farm males. Non-farm females consider sex bias more important than farm females.
8. Non-farm males (63 percent) consider internships in industry or in farm work programs more successful than farm males (37 percent).
9. While the majority of the students were not receiving collegiate credit for internships in industry or in farm work programs, 60 percent of the non-farm females were earning collegiate credit.
10. While 75 percent of the NASULGC agronomy departments were sponsoring agronomy clubs, least emphasis (61 percent) on this activity was found for the Northeastern states.

References

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Table 1. Replies to Questions Concerning Increased Non-Farm and Female Enrollments from Enrollees in Agronomy Courses at National Association of State Universities and Land Grant Colleges (NASULGC)
Note: Varying numbers of responses for overall total (645), background (621) and ASA regions (507) are reported because of varying number of valid "Mark sense" answer forms under each of the three major column categories.

Question Number and Reply		Overall Total 645	Farm/Sex Classification 621				ASA REGIONS 507			
			NON FARM 151		FARM 304	376	NE 96	NC 123	S 225	W 63
			Males	Females	Males	Females				
All Students		%	%	%	%	%	%	%	%	%
1. Which one of the following best identifies where you lived between ages of 12-18?	1. Rural Farm	36	2	1	58	49	20	50	39	29
	2. Rural Non-farm	11	10	12	13	11	11	8	15	6
	3. Small Town (under 10000)	18	26	22	12	18	27	14	15	14
	4. Large Town (10000-50000)	19	31	36	11	14	24	14	17	32
	5. Large City (Over 50000)	16	31	29	6	8	18	14	14	19
2. During this 7-yr period (age 12-18) which one of the following best describes your farm experience?	1. None	39	100	100	0	0	59	33	30	48
	2. Summer only	28	0	0	43	56	28	16	34	23
	3. Full time	33	0	0	57	44	13	51	36	29
All Students Without Farm Exp.										
3. How do you feel about taking this course with students who have had farm experience?	1. Very disadv.	4	3	4	--	--	3	4	4	6
	2. Disadv.	33	36	38	--	--	30	39	32	28
	3. Equal	63	61	58	--	--	67	57	64	66
Rate the following items (4, 5, 6, and 7) as they might provide solutions to no farm experience disadvantage:										
4. Summer credit farm experience course	1. Would help	75	71	80	--	--	80	69	82	58
	2. Neutral	20	24	17	--	--	16	22	16	35
	3. Wouldn't help	5	5	3	--	--	4	9	2	7
5. College provide slides, short films, etc. to define farm operations during regular classes.	1. Would help	75	72	76	--	--	75	77	80	71
	2. Neutral	22	26	20	--	--	23	19	19	23
	3. Wouldn't help	3	2	4	--	--	2	4	1	6
6. Classes should be segregated --one class for farm background students; another, non-farm background students.	1. Would help	10	8	10	--	--	3	13	12	6
	2. Neutral	20	17	26	--	--	17	32	17	33
	3. Wouldn't help	70	75	64	--	--	80	55	71	61
7. College Placement office should provide special help to students without farm background in placement activities.	1. Would help	47	42	58	--	--	45	42	54	55
	2. Neutral	43	45	35	--	--	42	47	40	35
	3. Wouldn't help	10	13	7	--	--	13	11	6	10
Females only										
8. How do you feel toward competition with male students in this course?	1. Very disadv.	3	--	3	--	3	3	3	4	0
	2. Disadv.	10	--	12	--	6	13	10	6	9
	3. Equal	87	--	85	--	91	84	87	90	91
9. Do you feel that you should have priority over males in non-physical employment?	Yes	11	--	4	--	12	3	8	15	5
	No	89	--	96	--	88	97	92	85	95
10. Can females compete with males in all fields of agronomic employment?	Yes	81	--	77	--	90	71	87	81	83
	No	19	--	23	--	10	29	13	19	17
11. Can females compete with males in all fields of agricultural employment?	Yes	72	--	74	--	78	63	74	75	68
	No	28	--	26	--	22	37	26	25	32
12. Are females more qualified than males for employment in various fields of agronomy?	Yes	17	--	18	--	15	14	24	16	9
	No	83	--	82	--	85	86	76	84	91
13. Should females receive specialized training in agronomy compared to males?	Yes	15	--	14	--	15	13	22	16	18
	No	85	--	86	--	85	87	78	84	82

Table 1. continued

Question Number and Reply		Overall Total 645	Farm/Sex Classification 621				ASA REGIONS 507			
			NON FARM 245		FARM 376		NE	NC	S	W
			151	94	304	72	96	123	225	63
			Males	Females	Males	Females				
14. How do you feel about competition with female students in this course?	1. Very disadv.	1	1	--	1	--	0	0	1	0
	2. Disadv.	2	0	--	2	--	0	2	2	2
	3. Equal	97	99	--	97	--	100	98	97	98
15. Do you feel that you should have priority over females in non-physical employment?	Yes	9	7	--	9	--	3	9	10	2
	No	91	93	--	91	--	97	91	90	98
16. Can males compete with females in all fields of agronomic employment?	Yes	93	94	--	93	--	95	90	88	98
	No	7	6	--	7	--	5	10	12	2
17. Can males compete with females in all fields of agricultural employment?	Yes	89	91	--	88	--	95	89	90	93
	No	11	9	--	12	--	5	11	10	7
18. Are males more qualified than females for employment in fields of agronomy?	Yes	26	25	--	27	--	19	20	31	29
	No	74	75	--	73	--	81	80	69	71
19. Should males receive specialized training in agronomy compared to females?	Yes	10	10	--	11	--	7	9	14	8
	No	90	90	--	89	--	93	91	86	92
Students with Farm Experience only										
20. How do you feel about taking basic science courses (chem., math., etc.) with students from an urban background?	1. Very disadv.	4	--	--	5	0	4	5	6	3
	2. Disadv.	18	--	--	19	12	10	20	22	3
	3. Equal	78	--	--	76	88	86	75	72	94
21. How do you rate the need for a strong basic science background in helping your performance in the course?	1. Much needed	34	--	--	34	37	37	20	40	27
	2. Helpful	59	--	--	60	54	54	71	54	65
	3. Not needed	7	--	--	6	9	9	9	6	8
22. How do you feel in taking this agronomy course with students with urban background?	1. Disadv.	1	--	--	1	0	0	1	2	0
	2. Equal	50	--	--	42	60	43	45	57	43
	3. Advantaged	49	--	--	57	40	57	54	41	57
All Students										
23. Is the question of farm vs. city background an important problem in job placement?	1. Very important	20	17	21	23	14	20	19	23	17
	2. Important	56	52	53	56	61	48	54	57	57
	3. Not important	24	31	26	21	25	32	27	20	25
24. Is the question of male vs. female an important problem in job placement?	1. Very important	9	6	14	9	6	7	10	8	11
	2. Important	39	37	40	38	36	30	27	44	37
	3. Not important	52	57	46	53	58	63	63	48	52
25. Are class sizes restricting students' opportunities to receive important individual aid e.g. field trips, etc.	Yes	44	47	47	41	42	61	37	46	39
	No	56	53	53	59	58	39	63	54	61
Interns only										
26. How successful was this experience in supplementing your lack of farm or industry work experience?	1. Very successful	45	63	60	37	30	43	50	44	67
	2. Successful	50	33	30	58	60	50	50	52	33
	3. Not successful	5	4	10	5	10	7	0	4	0
27. Did you receive college credit for the internship?	Yes	40	41	60	39	25	36	42	40	33
	No	60	59	40	61	75	64	58	60	67
28. Did you receive payment for your services?	Yes	65	67	100	62	50	86	67	53	89
	No	35	33	0	38	50	14	33	47	11
29. Were you in residence near the internship and/or farm work experience area?	Yes	72	59	90	76	63	79	75	72	78
	No	28	41	10	24	37	21	25	28	22
30. Does your department sponsor an organization which promotes the understanding of agronomy?	Yes	75	68	74	78	72	61	80	82	73
	No	25	32	26	22	28	39	20	18	27

Contemporary Forestry

Dendrology Course

Ray R. Hicks, Jr.

Dendrology is a subject which is taught in more than 50 colleges and universities with forestry programs in the United States. Usually the course focuses on woody plant identification; however, recently reported deviations from this theme have opened a discussion regarding course content and teaching methods.

During the past nine years diagnosticians have appraised the health of dendrology teaching. It was found to be ailing, and later pronounced dead (Wiant 1968; Lanner 1969). A resurrection was proclaimed by Confal and Martin (1970) and an audio prosthesis prescribed by Fechner (1972). Recently two authors (Stettler 1976; Brown 1977) describe what could only be the second coming. The latter articles agree in proposing a reincarnation made viable by addition of major borrowings from other disciplines. Stettler suggested that teachers use the dendrology course as a forum for teaching forest genetics, while Brown recommended that we emphasize ecology in dendrology lectures. No matter how "innovative" or "dynamic," these proposals cannot both be incorporated into subject matter universally recognized as a full course load. I submit that there is room for neither.

Will The Real Dendrology Please Come Forward

The unifying theme of dendrology is tree identification and nomenclature. This is the meaning of the word, as accepted by the world's forestry organizations (Ford-Robertson 1971), and this is the role it fills in most forestry curricula. All the suggested new approaches recognize this, despite the tendency of some writers to stretch the field to cover essentially all of forestry. To best serve its basic purpose, dendrology should be supported and strengthened — not weakened or diluted.

The problems alluded to by Brown and Stettler are problems of entire curricula, the optimum interlocking of courses to form an educational whole. Drastic in-

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