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ABSTRACT

A random sample of 157 of the 265 agricultural/extension faculty listed in the 1993 "Directory of Teacher Educators in Agriculture" were mailed surveys regarding their perceptions of faculty productivity. Usable responses were received from 102 (65%) faculty. The respondents' ranged in age from 28-64 years (average age, 46). Ninety-two percent held doctoral degrees, 90% were professors (full, associate, or assistant), and nearly 71% were tenured. On average, they devoted 18% of their time to research. Seventy-one percent had graduate research involvement, 65% had directed/co-directed research, and 16% had no involvement in research. On a 5-point scale, respondents ranked the importance of faculty productivity components as follows: teaching (3.76), advising (3.66), publishing (3.59), research (3.50), extension (3.49), service (3.33), and professionalism (3.27). According to a t-test and analyses of variance, responses were significantly correlated with the following respondent characteristics: nature of position (tenured versus nontenured), years of experience at present institution, involvement in graduate student research, and experience as a research project director/codirector. It was recommended that faculty be provided with opportunities for advising undergraduate students and serving on graduate committees and be given training to help them develop expertise in writing. (Contains 10 references.) (MN)

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DETERMINANTS OF FACULTY PRODUCTIVITY: PERSPECTIVES OF AGRICULTURAL AND EXTENSION EDUCATION FACULTY

ED 380 549

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INTRODUCTION

Agricultural and extension education faculty members' perceptions of faculty productivity is crucial to their evaluation and career advancement. Faculty productivity assessments affect an individual's salary, promotion, tenure, and opportunities for future professional growth and advancement. Increased emphasis is being placed on faculty productivity relative to teaching, research, extension, service, advising, publishing and professionalism (Barrett, Narveson, Wright, Bernstein, & Burkholder, 1992).

Several researchers have examined faculty productivity issues relative to their disciplines. Wilson and Wilson (1989) examined the perceptions of home economics department chairpersons relative to productivity of home economics faculty. Writing for publications was perceived as a major contributor to faculty productivity, followed by teaching, faculty morale, and faculty development. However, chairpersons perceived that computer literacy of faculty and participation in professional activities made no significant contribution to faculty productivity.

Kelly and Warmbrod (1985) examined the research productivity of faculty in five vocational education service areas: agricultural education, home economics education, business office education, distributive education and vocational education. Eight variables (number of presentations, books, journal articles, popular articles, research reports, doctoral committees successfully chaired and completed) were examined to determine research productivity of faculty. Findings indicated that faculty in agricultural education and home economics education were less productive than faculty in other areas of vocational education.

Further, Kelly and Warmbrod classified the experiences which contributed to the research productivity of faculty in three categories: 1) content--courses in research methods and statistics, computer use, proposal and research critiques and work on actual research projects; 2) context--work with other researchers, teach and discuss research, research emphasis placed by the department and the university; and 3) collaborative--help from advisers, having a research grant and developing strong management skills by the example of others. They concluded that the absence of these content, context and collaborative experiences inhibits research productivity of faculty members.

Behymer (1974) determined the research productivity of faculty in arts and sciences, humanities, natural sciences, or social sciences in major research universities and four-year colleges. Behymer measured research productivity by considering the total number of articles published and the number of articles published over a two-year period. Findings revealed strong relationships between research productivity and type of institution. Faculty in major research institutions tend to publish more journal articles than faculty in four-year colleges. Further, expressed interest in research over teaching was found to be the single best predictor of research productivity.

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Singh and Singh (1992) examined the scientific productivity of 163 women scientists employed in Indian Council of Agricultural Research, New Delhi, India. Measures of scientific productivity included research papers, published book, edited book, unpublished report or research articles, advising graduate students including chairing and membership on dissertation committees and awards won. Findings indicated that variables such as urban-rural background, age at marriage, occupation of mother, GPA in master's program, and age at Ph.D. significantly contributed to women scientist's research productivity. Women scientists who were from rural areas were more productive than scientists from urban areas. Later the women scientists got married, the more was their scientific productivity. Scientists whose mothers were also in service or employed were more productive than those scientists whose mothers were not in service. Scientists who secured higher GPAs at their master's level were more productive than scientists with lower GPAs. Finally, later the women scientists awarded doctoral degrees, the less was their scientific productivity. These variables together explained 48% of the variance in the scientific productivity of women scientists.

Gorman and Scruggs (1984) measured the productivity of home economics researchers in terms of research involvement, number of contracts and grants and research dissemination efforts. Findings indicated that age, educational level, subject matter area, professional activities, employer type and years of professional employment were significantly related to research productivity. The older and higher the educational level, the higher was the research productivity. The longer the professional experience, the higher the research productivity. Similarly, the research productivity of home economics faculty employed in educational institutions, cooperative extension and non-profit organizations was much higher than those employed in government and private organizations.

Literature pertaining to faculty productivity in agricultural and extension education is somewhat limited. The foregoing review of productivity studies in other disciplines provides a basis for examining perspectives of agricultural and extension education faculty regarding faculty productivity.

PURPOSE AND OBJECTIVES

The purpose of this study was to determine the perceptions of agricultural and extension education faculty relative to faculty productivity. Specific objectives of the study were:

1) to describe demographic, educational, personal, employment, research, publication and professional characteristics of agricultural and extension education faculty.

2) determine the importance placed by agricultural and extension education faculty relative to faculty productivity components--teaching, advising, research, extension, professionalism, publication, and service.

3) determine differences, if any, between perceived importance of faculty productivity components and selected characteristics.

PROCEDURES

Population and Sample

The population for the study consisted of all agricultural and extension education faculty listed in the 1993 Directory of Teacher Educators in Agriculture (1993). This study was limited to 265 (excluding department heads) faculty who held instructor or higher academic rank. A random sample of 157 faculty was chosen for the study. This sample size reflects a 5% margin of error with a 5% risk of drawing a bad sample (Krejcie and Morgan, 1970).

Instrumentation

A mail questionnaire was developed to collect data. Content and face validity were established in two stages. In stage one, a list of statements that measured faculty productivity were sent to all 29 Penn State agricultural and extension education faculty. Faculty were asked to indicate the appropriateness of each statement as a measure of faculty productivity. In addition, they were asked to add additional statements that they considered appropriate. As a result, a total of 50 statements were generated.

In stage two, the 50 statements and other characteristics (education, employment, research, professional and publication) were included in a questionnaire format. The questionnaire thus developed was reviewed again by a panel of experts which consisted of associate deans of resident instruction and extension external to Penn State, two former agricultural and extension education department heads, the chair of promotion and tenure committee, and three senior and two junior faculty members in the department of agricultural and extension education at Penn State. After incorporating the suggestions made by the expert panel, the final questionnaire had eight sections: personal, educational, employment, research, publication, professional, faculty productivity statements and comments. Responses to the 50 statements relative to faculty productivity were measured on a five-point, Likert scale that ranged from 1 "not at all important" to 5 "very important."

Data Collection and Analysis

A cover letter explaining the purpose of the study, a copy of the questionnaire and a return addressed envelope were mailed to the sample on October 21, 1993. After six weeks, a total of 105 faculty had responded with 102 responses being usable (65%). Early and late respondents were compared on key variables as suggested by Miller and Smith (1983). No differences were found between early and late respondents for the key variables and as such the findings were generalized to the population. Data were analyzed using frequencies, means, percentages, t-tests and ANOVA. A post-hoc reliability analysis indicated that the questionnaire had acceptable reliability. The reliability coefficients ranged from a low of .79 (advising) to a high of .91 (extension).

RESULTS

Objective 1--Description of the Faculty

On an average respondents were 46 years old with the youngest being 28 years and the oldest 64 years. Ninety-two percent had earned doctoral degrees. Almost 36% of the respondents were professors, 31% associate professors, 23% assistant professors, and 10% were instructors, research associates and others. Eighty-four percent of the

respondents held tenure track appointments and almost 71% were tenured. On an average, respondents had completed 11.2 years of service at their present institution and 14.4 years when all institutions combined. All but eight respondents held resident instruction appointments with a mean resident instruction appointment of 69%. Sixty-nine percent of the respondents were employed on a 12-month contract, followed by nine month (29%) and other (2%). Fifty-seven percent of respondents indicated that teacher education was their major area of responsibility followed by extension education (15%), administration (9%), international (3%), communications (1%) and other (15%).

On an average respondents devoted 18% of their time to research activities. Seventy-one percent had graduate research involvement, 65% had either directed or co-directed research, and 16% had no involvement in research. The number of dissertations chaired or co-chaired by faculty ranged between 1 and 100 with a mean of seven and a median of two. Similarly the average number of master papers/theses chaired or co-chaired ranged between 1 to 107 with a mean of 13 and a median of five. A majority of respondents had obtained funds from a state agency (64%), followed by a federal agency (46%), experiment station (34%), private agency (28%), foundation (25%) and others (4%).

Objective 2--Importance of Productivity Components

Respondents were asked to indicate on a five-point, Likert scale the importance of teaching, research, publishing, extension, advising, service, and professionalism as a measure of faculty productivity. Teaching (3.76) was perceived as important, followed by advising (3.66), publishing (3.59), research (3.50), extension (3.49), service (3.33) and professionalism (3.27). Within the teaching component, development of innovative classroom teaching techniques received the highest rating (4.21). Similarly advising undergraduate students (3.82), number of research grants secured (3.72), number of educational materials developed (3.83), developing innovative extension programs (3.74), service to state organizations (3.53), and work refereed by peers and others (3.71) received highest ratings respectively for advising, research, publishing, extension, service and professionalism components. Overall, respondents rated fulfilling the responsibilities of the job description the highest (4.43).

Objective 3--Differences in Faculty Productivity

T-test and ANOVA were used to determine differences, if any, between perceived importance of faculty productivity components and selected characteristics. Significant differences were found between nature of position (tenured vs. non-tenured), years of experience at present institution, and all institutions combined, involvement in graduate student research and whether or not faculty have directed or co-directed a research project. Tenured faculty perceived the publication component significantly more important than non-tenured faculty. Faculty who had longer experience in their present institution perceived extension component more important than faculty who had fewer years of experience. Faculty who were involved in graduate student research perceived research, publishing, service and professionalism components significantly more important than faculty who were not involved in graduate student research. Similarly, faculty who have directed or co-directed research project(s) perceived research, publishing and service components significantly more important than those faculty who have not directed or co-directed research project(s). No differences were found between other characteristics and faculty productivity components.

Table 1. Means, Standards Deviations and Rankings for Seven Productivity Components.

Component	Mean	SD	Rank
Teaching			
Development of innovative classroom teaching techniques	4.21	1.20	1
Development of innovative laboratory activities	4.09	1.25	2
Student rating of teacher effectiveness	3.88	1.20	3
Peer rating of teacher effectiveness	3.82	1.40	4
Major revisions of current courses	3.81	1.37	5
Number of undergraduate level courses taught	3.80	1.13	6
Development of new courses	3.75	1.31	7
Number of graduate level courses taught	3.65	1.33	8
Number of workshops conducted	3.29	1.35	9
Number of seminars presented	3.26	1.33	10
Overall	**3.76**	**0.87**	**1**
Advising			
Advising undergraduate students	3.82	1.42	1
Advising graduate students--M.S.	3.81	1.29	2
Number of Ph.D. students advised	3.77	1.94	3
Number of undergraduate students advised	3.70	1.39	4
Number of M.S. students advised	3.64	1.31	5
Advising graduate students--Ph.D.	3.56	1.70	6
Advising student organizations	3.49	1.44	7
Student rating of advising effectiveness	3.46	1.45	8
Overall	**3.66**	**1.11**	**2**
Publishing			
Development of educational materials	3.83	1.29	1
Number of articles published in refereed journals	3.82	1.37	2
Number of papers presented in research meetings	3.67	1.33	3
Number of research papers published in conference proceedings	3.67	1.34	3
Author or co-author of book(s)	3.45	1.38	5
Author or co-author of book chapter(s)	3.39	1.39	6
Number of articles published in non-refereed journals	3.29	1.26	7
Overall	**3.59**	**1.12**	**3**
Research			
Number of research grants secured	3.72	1.46	1
Expertise in grant/proposal writing	3.44	1.35	2
Dollar value of research grants secured	3.33	1.48	3
Overall	**3.50**	**1.33**	**4**

* Mean computed on a scale that ranged from 1=not at all important to 5=very important

Table 1. Means, Standards Deviations and Rankings for Seven Productivity Dimensions (contd...)

Component	Mean	SD	Rank
Extension			
Development of innovative extension programs	3.74	1.56	1
Major revisions to current extension programs	3.40	1.59	2
Number of extension inservice programs conducted	3.33	1.62	3
Overall	**3.49**	**1.50**	**5**
Service			
Service to state organizations	3.54	1.29	1
Extent of participation in departmental committees	3.54	1.40	1
Extent of participation in college committees	3.48	1.29	3
Invited speaker/keynote speaker	3.44	1.25	4
Consulting requested by peers	3.42	1.28	5
Extent of participation in university committees	3.41	1.31	6
Consulting requested by external agencies	3.39	1.32	7
Participation in communities as a representative of the university	3.22	1.38	8
Service to federal organizations	3.12	1.33	9
Service to international organizations	2.77	1.36	10
Overall	**3.33**	**1.08**	**6**
Professionalism			
Work refereed by peers and others in the profession	3.71	1.31	1
Extent of participation in professional organizations	3.59	1.25	2
Editor of a journal	3.41	1.51	3
Membership in professional organizations	3.32	1.26	4
Reviewer of papers	3.22	1.33	5
Member on the editorial board of a journal	3.22	1.45	5
Organizing research conferences	3.19	1.42	7
Discussant of papers	3.13	1.36	8
Involvement in international educational activities	2.97	1.40	9
Reviewer of book(s)	2.95	1.37	10
Overall	**3.27**	**1.16**	**7**

* Mean computed on a scale that ranged from 1=not at all important to 5=very important

Table 2. Results Showing Differences Between Faculty Productivity Components and Selected Characteristics

Characteristic	Productivity Components				
	Research	Extension	Publishing	Service	Profess-ionalism
Nature of position	-	-	+	-	-
Experience at present institution	-	+	-	-	-
Experience when all institutions combined	-	+	-	-	-
Involvement in graduate student research	+	-	+	+	+
Directed or co-directed research project(s)	+	-	+	+	-

+ sign indicates significant differences
- sign indicates no significant differences

CONCLUSIONS AND/OR RECOMMENDATIONS

Agricultural and extension education faculty perceived that teaching, advising, publishing and research as important components to determine faculty productivity. Findings such as these have significant practical implications for both faculty and department heads who are concerned with improving agricultural education faculty productivity levels.

Considerable debate exists at the university level regarding the quality of teaching, especially at the undergraduate level (Boyer, 1987). Obviously faculty in agricultural and extension education departments are considered by peers and department heads to be pedagogical experts. The fact that teaching ranked first is not surprising, and we must continue to deliver the highest quality instruction possible.

Faculty should be provided opportunities for advising undergraduate students and membership on graduate committees. Faculty development programs relative to advising should be offered. Such programs should focus on the importance of advising, various factors involved in effectively advising students, university and college policies, rules, and regulations relative to admissions, and course offerings. As faculty, we must continue to insist that quality advising be recognized by department heads and our peers serving on promotion and tenure committees.

Publications (refereed articles in journals and paper presentations in conferences) are considered to be a very important component of faculty productivity. As evidenced in this study, faculty place greater emphasis on publications. Developing faculty expertise in writing should be included in faculty development programs aimed at improving

faculty productivity. As a profession, we need to be careful as we continue to share research and ideas through quality publications. It is recommended that emphasis be placed on developing procedures or criteria to assess the quality of papers published, the type of journals (refereed versus non-refereed), acceptance rate of those journals and the subject matter areas researched. Such emphases will help us understand, review, and evaluate contributions of agricultural and extension education faculty in meeting the needs of the profession and provide directions for future development.

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