Chapter 4

American Society of Agronomy Member Experiences and Perceptions of the Peer Reviewing-Editing Process

R. E. Sojka
USDA-ARS
Kimberly, Idaho

H. F. Mayland
USDA-ARS
Kimberly, Idaho

E. E. Gbur
Agricultural Statistics Laboratory
University of Arkansas
Fayetteville, Arkansas

ABSTRACT

A membership survey regarding policies and attitudes germane to the peer reviewing and editing practices and policies of the American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America was deemed worthwhile. A second survey queried agricultural experiment station directors on related institutional aspects of the same topic. Briefly, responses indicated good demographic representation of editorial boards with some underrepresentation of non-U.S. addressed members. One-third of the membership has served on the editorial board of some journal, and 1 in 7.4 has served on the editorial board of a Tri-Society journal. Females are used as reviewers one-third as often in proportion to their membership as are males. The publishing membership of the Tri-Societies is essentially those members with Ph.D.'s. Two-thirds of the papers submitted to Tri-Society journals require institutional review before journal submission. There is twice the support among the membership for dual anonymity (author and reviewers) as for reviewer anonymity only (the current policy). Nearly one-half the membership perceived shared responsibility by authors and editors for accuracy of published manuscripts. There was strong concern for seeking qualified reviewers, guaranteeing quality of reviews, admonishing poor reviewers, and instituting training in the Tri-Societies for writing/reviewing/editing. Greater openmindedness was supported for publishing "negative" or unusual results where methodology and analysis were acceptable. Concern was expressed about influence networks undermining the fairness of the review process. Significant support exists for a rapid-publication journal in the Tri-Societies. Two-and-one-half times more authors indicated movement away from Tri-Society journals than to them, with 44% indicating no change. The major reasons for journal migration were gravitation to journals that better reflected some recent shift in research focus, and various aspects of dissatisfaction with Tri-Society journals. Institutional responses indicated a strong rationale for developing and endorsing codes of ethics and limiting Tri-Society responsibility for ethical infractions.

"Publish or perish" is a phrase that has been used since at least 1959 to describe the pressure on academics and researchers to produce scholarly writings (Miller, 1959). Long before then, the published manuscript had already become the universal, if arbitrary, gauge of professional stature. University tenure and advancement systems and the public sponsorship of research have also contributed to the modern focus on published work as a measure of scholarly prowess. Advances in communication have af-

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fected our access to information. Today's abundance of available technical information has made it necessary to limit manuscript publication based on peer assessment of quality.

Yet, this evolution toward refereed journals has proceeded largely as a response to external factors (Burnham, 1992). Publishing scientists, or for that matter the readership, have often been substantially insulated from the development of editorial practices and policies, except in the instances where editorial boards are composed of contributing scientists. Even in these instances the boards, usually composed of mature and recognized scholars, do not represent complete cross-sections of their contributors or readership. Furthermore, a given board may be substantially influenced by established precedents and may be predisposed to affect policies that derive primarily from the editorial point of view. Consequently, they may become somewhat desensitized to the concerns of contributors and readers.

Questions, concerns, and problems regarding the peer-reviewing and editing process are surprisingly universal across disciplines and journals (Lundberg, 1990). The scientific discipline or journal subject matter per se have little direct affect. Although there are marked procedural differences between journals they tend to find their origins in each journal's historical or organizational caprices (Burnham, 1990, 1992; Heichel, 1992).

The performance of journals in providing credible, yet equitable reviews has become a growing concern with the information explosion, the increased emphasis on publication numbers for professional advancement, and the uncovering of numerous publication scandals in the 1980s (Garfield, 1986a,b).

Publication of research results is fundamental to all scientific professions, and is one of the primary functions of the Tri-Societies[1]. The objective of this paper is to report the perceptions and attitudes of Tri-Society members regarding this important aspect of their professional lives and our societies' service to them. Two questionnaires were compiled to help make this assessment. The first polled a sample of the Tri-Society membership on important issues related to the publication of research. The second attempted to define the institutional framework in which the publication process is implemented. This paper analyzes and communicates the results of these polls and the perspectives they reflect.

AMERICAN SOCIETY OF AGRONOMY MEMBERSHIP QUESTIONNAIRE RESULTS AND DISCUSSION

Demographics of Respondents

The authors initially queried the ASA Board about the feasibility of a number of questionnaire formats and distribution/response options. Previous success of questionnaires included in *Agronomy News* was very poor (20–30 responses from a mailing in excess of 10 000). Therefore, a direct mailing was considered to have a greater likelihood of response, based on known survey sampling patterns. Polling methodology is described in detail in Appendix 4-1.

Table 4-1. Response rates of the membership sample by selected respondent characteristics; overall response was 279 of 516 mailed, or 54.1%.

Member characteristics	Distribution in given population: 8940 Members†	516 Sampled†	279 Respondents	Response rate‡
	%			
Gender				
Male	93.6	93.2	94.3	54.7
Female	6.3	6.8	5.7	45.7
Respondent's address§				
U.S.	78.6	76.6	83.5	59.0
Non-U.S.	21.4	23.4	16.5	38.0
Highest degree				
M.S.	22.8	22.9	17.9	42.4
Ph.D.	77.2	77.1	82.1	57.4

† Entries in these columns differ slightly because of excluded individuals for whom information on other stratification variables was not available.

‡ Response rate is defined as the percentage of questionnaires returned by the selected individuals in that category.

§ Respondent's address was taken as the address from which it was returned, which occasionally differed from the address to which it was mailed.

The response to the questionnaire resulted in the demographics shown in Table 4-1. Not every respondent always answered every question. Therefore the individual question response in many instances is some number less than 279. Notably, overall response was 54.1% (279 respondents) of the selected sample (516 potential respondents). The responses were highly reflective of the desired preselected categories identified in the eligible population of 8940 members (Table 4-1). Among the eight strata, male Ph.D.'s with U.S. addresses had the highest response rate (63.8%), and male M.S.'s with non-U.S. addresses had the lowest response rate (23.5%) (Sojka, Mayland, Gbur, 1992, data not shown).

Interpretation of the data requires recognition of several qualifications related to the data. It should be emphatically underscored that the responses analyzed and our *interpretations are based on this sample*, and that these statistics, especially where they imply member demographics are related to the respondents and *not the actual complete membership*. In addition, it is implicitly assumed that the nonrespondents' perceptions and attitudes do not differ substantially from the respondents (i.e., nonresponse was related to factors other than those addressed in the questionnaire).

The responses that reflect attitudes, rather than numerical estimates by the respondents, may require somewhat less qualification in relating them to the overall member-

[1] Indicates one, two, or all three of the societies (American Society of Agronomy, Crop Science Society of America, or Soil Science Society of America) unless specified otherwise by the nonabbreviated name of one or more of the individual societies. In tables and other space-limited contexts the term ASA is meant to imply the same umbrella identification as the term "Tri-Societies."

Table 4-2. Years of work experience and ASA membership of respondents by selected respondent characteristics.

Respondent characteristic	Work experience $\bar{x} \pm$ SE		ASA membership $\bar{x} \pm$ SE	
	yr			
Overall	17.5	0.7	15.6	0.6
Gender				
Male	18.0	0.7	16.0	0.7
Female	8.6	1.6	7.2	1.3
Address				
U.S.	17.1	0.7	16.2	0.7
Non-U.S.	19.4	1.6	12.6	1.4
Highest degree				
M.S.	13.6	1.7	10.4	1.1
Ph.D.	18.4	0.7	16.7	0.7

Table 4-3. Cross-tabulation of editorial experience of respondents.

		Non-ASA editorial experience†		
		Yes	No	Row total
		no., %		
ASA editorial experience	Yes	20 (7.3)	17 (6.3)	37 (13.6)
	No	67 (24.6)	168 (61.8)	235 (86.4)
Column total		87 (32.0)	185 (68.0)	272 (100)

† ASA editorial experience is different ($P < 0.002$) from non-ASA experience.

ship. A further point that should be made, however, is that *other than demographic data, the responses reflect perceptions. These perceptions may or may not be reality*. Nonetheless, it is important to understand what the perceptions of the membership on peer reviewing and editing are, and to examine how these perceptions may impact the process. Furthermore, to the extent possible, the Tri-Societies may wish to explore mechanisms to address these perceptions in order to pursue positive goals related to the publication process. A final qualification is that (although assumed otherwise) the respondents may reflect a sample that is more involved or more concerned about the publishing process than the nonrespondents. This could affect the interpretation of certain questions as noted throughout the text.

Table 4-2 provides a profile of the work experience and membership tenure of the respondents. Membership tenure in the Tri-Societies is only slightly less than the number of years work experience of respondents. This would suggest that professionals view membership in the Tri-Societies as an integral part of their professional experience. Notably, work experience and membership years of respondents with M.S. degrees are 74 and 62% respectively of the Ph.D. years. This may reflect both a higher dropout rate by M.S. vs. Ph.D. holders from the profession and/or Tri-Society membership, or alternatively reflect the movement of M.S. level professionals to the Ph.D. level. In the latter case, years of work and membership are likely counted as Ph.D. level. Responses of the female respondents suggest they make up a younger

Table 4-4. Demographic characteristics of respondents reporting editorial experience.

Respondent characteristic	ASA editors	Non-ASA editors
	no., %	
Gender		
Male	39 (100)	85 (97.7)
Female	0 (0.0)	2 (2.3)
Address		
U.S.	36 (92.3)	66 (75.9)
Non-U.S.	3 (7.7)	21 (24.1)

work force on average. The reasons for this trend may be related to the rather recent entrance of significant numbers of females into a largely male-dominated profession, and/or the more rapid exodus of females from the profession because of family or other considerations. Respondents from non-U.S. addresses, although having somewhat similar years of work experience, had only 78% as long a membership tenure.

Publication Process Experience

One important aspect of the survey was to estimate the extent of the editorial experience of the membership. An analysis of this result is found in Table 4-3. Among the 14% who had Tri-Society editorial experience over one-half also had experience editing other (i.e., non-ASA) journals. Among the respondents having no Tri-Society editorial experience, 25% did have experience editing other journals. This implies that nearly one-third of the respondents have had some editorial experience and two-thirds had no editorial experience. This would suggest that Tri-Society members can expect to have ample opportunity over the course of their careers to serve as editors of a journal in their discipline, although perhaps not for a Tri-Society journal.

An important concern lies in identifying the makeup of editorial boards. The distribution of respondents (Table 4-4) in our sample indicated that 100% of Tri-Society editors were male, although we know that at the time of this polling there were eight female editors on the combined 202 member editorial boards of the Tri-Societies. This is a known female representation of 4% on the editorial boards compared to the overall society female membership of 6.3%. Similarly, 8% of the responding Tri-Society editors had foreign addresses. If we refer to Tables 4-1 and 4-4, there appears to be an underrepresentation of females and foreign addressed members on Tri-Society editorial boards. Those who have had ASA editorial experience, have slightly less representation by women and one-third the representation by foreign addressed members, than did those with only non-ASA editorial experience, and proportions coincide more closely with the ASA membership profile (Table 4-1). There may be some explanations for these underrepresentations on the editorial boards. The journals that are classified as non-ASA journals in this latter group include many foreign-based journals. Therefore, the editorial experience in non-ASA journals implies that edi-

tors are probably serving the journals based in their home countries. The lower representation of non-U.S. addressed respondents on Tri-Society editorial boards may reflect perceived language difficulties and/or logistical and mailing problems that could impair effective editorial service. The low representation of females on Tri-Society editorial boards may simply reflect the shorter work experience and membership tenure seen in Table 4-1.

The combined journals of the Tri-Societies request some 3000 to 4000 manuscript reviews each year. Table 4-5 analyzes the frequency of selection of respondents to review for Tri-Society vs. non-ASA journals. Forty-two percent reported they were asked to review a mean of 1.6 manuscripts each for ASA journals in 1989, whereas 58% reported they reviewed no papers for ASA journals.

Fifty-seven percent reported they reviewed a mean of 3.0 manuscripts each for non-ASA journals. These numbers of reviews seem inflated, particularly if assuming the reviewer cadre of ASA and non-ASA manuscripts is substantially the same. At 1.6 ASA manuscripts per year × 42% of the 8940 members in the eligible population there would be 6008 reviews for the Tri-Societies performed annually. This is an overestimate of 30 to 50%. An inflated estimate could also reflect the fact that the 279 questionnaire respondents represent a more responsible or concerned group, by simple virtue of their response to the questionnaire. The fact that 58% said they had performed no reviews, however, would seem to negate this argument. Further analysis of the responses shows nearly one-third (32%) indicated they had not reviewed any journal paper in the past year. Similarly 31% noted they had reviewed papers for both ASA and non-ASA journals. However, only 11% had only reviewed manuscripts solely for the Tri-Society journals, and 25% had reviewed only non-ASA manuscripts.

Female respondents indicated a much higher probability of being requested to review a non-ASA manuscript than an ASA manuscript. Only 15% of female respondents had reviewed for a Tri-Society journal in the previous year compared to 43% of male respondents. In contrast, 46% of the female respondents reported providing reviews for non-ASA journals in the previous year, compared to 57% of male respondents. The interpretation of this response must be at least somewhat tempered, however, by the small sample size of female respondents. Numbers of respondents reporting no requests to perform reviews were similar for ASA and non-ASA journals among U.S. addressed respondents; however, non-U.S. respondents reported far more opportunity to review papers for non-ASA journals. Conversely, U.S. addressed respondents were less likely to review papers for non-ASA journals than foreign respondents. Again this may reflect logistical and language-related factors.

Perceptions of the peer-reviewing and editing process could be influenced by the individual's own publication frequency. The respondents' self-reported publication

Table 4-5. Numbers of reviews performed by respondents in the preceding year, as related to respondent demographic characteristics.

Respondent characteristic	Reviews for ASA journals			Reviews for non-ASA journals		
	$\bar{x} \pm$ SE		No reviews	$\bar{x} \pm$ SE		No reviews
	—no.—		%	—no.—		%
Overall	1.6†	0.2	58	3.0‡	0.4	43
Gender						
Male	1.7	0.2	57	3.0	0.4	43
Female	0.5	0.4	85	2.1	1.0	54
Address						
U.S.	1.9	0.3	54	2.6	0.4	47
Non-U.S.	0.3	0.1	79	4.6	1.1	28
Highest degree						
M.S.	0.1	0.1	93	0.5	0.2	74
Ph.D.	1.9	0.3	50	3.5	0.4	37

† 1.6 ± 0.2 reviews of ASA manuscripts by the 42% doing reviews.
‡ 3.0 ± 0.4 reviews of non-ASA manuscripts by the 57% doing reviews.

Table 4-6. Numbers of manuscripts authored or coauthored by respondents in the preceding 2 yr, as related to respondent demographic characteristics.

Respondent characteristic	ASA journal papers			Non-ASA journal papers		
	$\bar{x} \pm$ SE		No papers	$\bar{x} \pm$ SE		No papers
	—no.—		%	—no.—		%
Overall	1.0	0.1	62	3.1	0.4	35
Gender						
Male	1.0	0.1	62	3.2	0.4	35
Female	0.5	0.3	69	2.3	0.9	31
Address						
U.S.	1.0	0.1	61	2.6	0.4	37
Non-U.S.	0.8	0.2	68	5.6	1.8	23
Highest degree						
M.S.	0.2	0.1	87	0.6	0.1	59
Ph.D.	1.1	0.1	57	3.7	0.5	30

records for the 2 yr prior to the survey appear in Table 4-6. Essentially one-third of all respondents reported publishing papers in an ASA journal in the previous 2 yr. Approximately two-thirds of the respondents reported publishing papers in non-ASA journals. The publication rate reported for non-ASA journals across all groups indicated about three times the publication rate in non-ASA journals. The Ph.D. respondents were far more likely than M.S. respondents to publish in the previous 2 yr, and to publish far more papers, both in ASA journals and in non-ASA journals. Further analysis (Sojka, Mayland, Gbur, 1992, data not presented) shows that 26% of the respondents had published no paper in the previous 2 yr. Whereas only 9% had published in only ASA journals, 36% had published in only non-ASA journals. Twenty-nine percent had published in both ASA and non-ASA journals. This analysis did not differ based on gender.

Patterns of career-long publication totals appear in Table 4-7. As for their previous 2 yr reported experience, respondents published one-third of their career papers in Tri-Society journals. Respondents averaged 15.4 senior authorships and 13.4 junior authorships. Author gender

Table 4-7. Numbers of manuscripts authored or coauthored by respondents in their careers, as related to respondent demographic characteristics.

Respondent characteristic	Senior authorships			Junior authorships			In ASA journals†
	$\bar{x} \pm$ SE		No papers	$\bar{x} \pm$ SE		No papers	
	— no. —		%	— no. —		%	
Overall	15.4	1.7	10	13.4	1.4	17	33.7
Gender							
Male	16.0	1.8	10	13.8	1.5	17	34.3
Female	4.0	1.1	23	4.8	2.1	31	21.8
Address							
U.S.	14.5	1.9	12	12.8	1.5	19	37.4
Non-U.S.	19.7	3.3	4	15.9	3.6	11	14.4
Highest degree							
M.S.	1.9	0.6	47	2.7	0.6	42	24.6
Ph.D.	18.1	2.0	3	15.5	1.6	12	35.3

† Calculated for total of senior and junior authorships.

Table 4-8. Distribution of respondents with or without authorship experience as senior author, junior author, or combined experience.

Respondent characteristic	Senior author	Junior author	
		Yes	No
		— %† —	
Overall	Yes	77.6	12.1
	No	5.2	5.2
Males	Yes	78.8	11.6
	No	4.6	5.0
Females	Yes	53.9	23.1
	No	15.4	7.7

† Table entries are percentages based on all respondents having the specified characteristics who answered both questions.

influenced the number of reported papers. Males in the sample reported four times the senior authorships and three times the junior authorships as females. This career output difference among males and females contrasts with only twice as great work experience for males. This may reflect a skewing of greater productivity toward later career years, or it may reflect greater genuine impediments to publication by females. These impediments may be related to the publication process, they may relate to conflicting family and social demands outside the workplace, or they may reflect less opportunity to pursue research leading to publication because of other impediments in the workplace.

If extended to differentiate senior and junior authorships (Table 4-8), additional analysis showed that 5% had no career publications whatsoever. Twelve percent published only as senior authors whereas 5% published only as junior authors. The remaining 78% had published both as senior and junior authors. Although there was a very small number (13) of female respondents on which to base a comparison, it appears that female authors were more inclined than males to have only published as senior or only as junior authors and that their career opportunity for both experiences was reduced (54 vs. 78%) compared to males. Interestingly the percentages with neither senior nor junior authorship were practically the same for females as for males.

Non-U.S. residents reported both more senior and junior authorships over their careers than do U.S. residents. This may relate to a slightly longer reported work experience (Table 4-2) or may indicate greater ease of publication in non-ASA journals (or their greater numbers) that this group reported to patronize more heavily (Table 4-6). Another explanation could be that non-U.S. addressed respondents have a more intense interest in publishing than their U.S. counterparts. While U.S. respondents reported publishing 37% of their career publications in Tri-Society journals, non-U.S. addressees reported publishing only 14% of their papers in them.

Whereas 97% of Ph.D.'s reported having at least one senior authored paper, only one-half (53%) of the M.S. respondents reported having ever written a senior authored paper. Similarly, 88% of Ph.D.'s reported having at least one junior-authored paper, compared to 58% for M.S. respondents. Therefore, it is apparent that a large fraction of the M.S. respondents are not actively involved in the publication process.

If one multiplies the reported overall work experience mean of the respondents (17.5 yr) by the reported annual combined senior plus junior authorships of refereed papers (2.05 authorships per year), the product would indicate a career production of 36 papers expected. This contrasts with a reported career output mean of 28.8 senior plus junior authorships. Therefore, respondent perceptions of their personal publication prowess may, in fact, be somewhat inflated (by approximately 25%). Alternatively, it may reflect career growth patterns in which later years are generally more productive of publications, either because of program growth or because in later years as one's acceptance rate increases. Yet another possibility is that there is an increasing emphasis on publish or perish. In any case, the perceptions may be based on more recent performance.

A similar check on accuracy of perceptions might come from the query about respondents' frequency of manuscript rejection. Thirty-nine respondents (14%) declined to answer this question. Of those who did answer, zero, one, two, three, four, and five rejections were reported respectively by 32.5, 25.0, 20.4, 6.7, 4.2, and 4.2% of the respondents. Eight individuals reported having in excess of 10 rejections each. Manuscript releases for the Tri-Society journals typically account for 40% of the manuscripts submitted, and this rate is comparable to other major journals. It seems somewhat surprising, in light of these journal rejection levels, that 78% of the respondents reported having sustained not more than two manuscript rejections. Although this question specifically asked about *sustained* rejections, it appears that many respondents may have interpreted this question to refer to rejection notices, regardless of whether the manuscript was subsequently published. Again, one might ponder the relative performance of the respondents compared to the nonresponding fraction of the sample selected. Our anal-

ysis also investigated possible relationships between numbers of manuscripts published and rejection rate and reported institutional review severity and rejection rate. There was no relationship in either instance.

Internal institutional review practices prior to journal submission may affect author experiences at the journal level. Among the 279 respondents, 19% indicated that no review was required prior to journal submission. Another 19% reported that review was only optional, of these respondents only one-third described the optional internal review as being rigorous. One hundred seventy-three respondents (62%) reported that an internal institutional review was required and nearly two-thirds described these reviews as rigorous. These results strongly parallel the information reported by university experiment stations in a separate questionnaire discussed below.

General Review Process

The question of anonymity and identity of parties to the review process causes concern among many authors. When asked who should be anonymous, 70% of the respondents answered that reviewers should remain anonymous and 49% answered that authors should be anonymous. Only 24% replied that both authors and reviewers should be identified, whereas 43% replied that both should be anonymous. Although 44% of the respondents said that reviewers could surmise the identity of authors even if attempts were made to preserve anonymity, 57% suggested that dual anonymity would still help improve the fairness of reviews. Only 27% of the respondents said that reviewers should be anonymous with authors identified (which is the current practice in all Tri-Society journals). Less than 6% of the respondents said that reviewers should be identified while authors remained anonymous.

Authors are nearly always concerned with the timeliness of the review process. Ninety percent of the respondents agreed that a reviewer should perform the review of a "typical" paper in not more than 30 d. Despite this strong agreement on punctuality, 71% expressed their unwillingness to see editors accept a paper for publication, by default, merely because the reviewer was tardy. Data presented by Heichel (1992) shows that despite their expressed concern about timeliness of the peer review/editorial process, the single most time-consuming step in manuscript processing in Tri-Society journals is the interval between author receipt of reviews and author return of a revised manuscript.

Although quality is viewed as a major consequence of the review process, identification of dishonesty is not. When asked if it was possible to detect and prevent dishonesty in the review process, responses were distributed over the range of strongly agree to strongly disagree, with the greatest fraction (36%) of responses being neutral. Nonetheless, the responsibility for quality of a published manuscript was perceived by 75% of the respondents to be shared by both the author and the editorial process. Accuracy of a published manuscript was perceived by 57% of the respondents to lie with the author, yet 41% said this responsibility was shared by the author and editorial process. Only 2% of the respondents indicated that accuracy or quality was the sole responsibility of the editorial process. It might be argued that the quality considerations of agricultural journals could be less stringent than for other disciplines that may have greater immediate consequences associated with use of the information. When asked if agricultural journals should have the same review rigors as, say, medical journals, the responses were 40% strongly agree, 33% agree, 19% neutral, 7% disagree, and 1% strongly disagree. Clearly the overwhelming response indicated the need for the highest possible quality of review and would suggest that science demands quality and accuracy, regardless of the discipline.

Reviewer Selection and Performance

A major concern for most authors is whether reviewers have adequate subject matter familiarity to provide a credible review. When asked if a peer reviewer should have minimum credentials established by the journal, 81% agreed. Respondents were nearly equally divided, however, when asked if a peer reviewer should have the same or greater technical expertise as the most recognized author on a paper. Thirty-seven percent agreed, 38% disagreed, and the remaining respondents were neutral. It might be argued that the authors themselves are best suited to identify potential credible reviewers. When asked if the author should have the right to select one of the three reviewers only 32% agreed, whereas 47% disagreed.

Since reviews vary greatly in quality, perhaps authors should be allowed to rate the quality of reviews of their manuscripts. Sixty-four percent of the respondents concurred that there should be such a system in the review process and 18% disagreed. Nearly one-half the respondents said that such an evaluation of a review by an author would not be influenced by the harshness of the review, whereas nearly one-third said that the review evaluation would be tainted by its outcome. The fairness and open-mindedness of reviewers may be related to their "professional maturity." However, two-thirds of the respondents maintained that there was no relationship to career longevity for either fairness or open-mindedness.

Given that there are recognizable problems associated with performance of some reviewers, respondents were asked how to deal with slow, unresponsive or consistently inadequate reviewers. Most (61%) said such reviewers should simply not be asked to review papers again. Over one-third (35%) felt that the reviewer should be informed that their reviews were of inadequate quality. Nearly none would go so far as to temporarily ban a poor reviewer from publishing in Tri-Society journals. Furthermore, nearly none said a poor review should be left unnoted to the reviewer. Unfortunately many respondents gave multiple answers to the question on how to handle a sub-

Table 4-9. Respondent perception of their cumulative experience with the review process, expressed as an evaluation of quality of reviews received on manuscripts they have written. Table entries are percentages for that review characterization.

Review characterization	Percentage frequency of encounters†				
	Never	<25	25–75	>75	Always
	% of responses				
Accurate, constructive, concise	0	2.8	42.3	51.6	3.3
Questionable, but constructive	3.4	43.2	37.7	14.4	1.3
Wrong, but polite, concise	18.9	66.5	11.6	3.0	0
Wrong and hostile	52.1	44.1	3.0	0.4	0.4
Accurate, but hostile	47.6	43.7	7.8	0.4	0.4
Biased by reviewer self-interest	26.7	50.8	19.5	3.0	0
Personal attacks	76.9	20.1	2.6	0.4	0
Trivial, whether correct or not	17.2	56.3	20.6	5.9	0

† This question encountered a nonresponse rate that ranged between 33 and 48 respondents of the 279, and averaged 42.8 nonresponses per characterization.

standard reviewer. Only single answer responses were computer coded for analysis. This necessity may have partially diluted the strength of the outcry for action to limit the effect of substandard reviewers. The respondents ovewhelmingly agreed (80%) that the Tri-Societies should have a regularly recurring means of educating and improving reviewer's skills (e.g., articles in *Agronomy News*, seminars at annual meetings, or a chapter in the *Publications Handbook and Style Manual*).

Contents of Reviews

The respondents were asked a series of questions related to the contents of reviews obtained in the peer-review process. Interestingly, the response rate for nearly all sections of the questionnaire approached 90%. The response rate of this section, however, was between 52 to 67%. This would suggest that many of the respondents lacked sufficient exposure to the process to formulate strong perceptions about it. One might well ask that if a significant number of authors are only marginally experienced with the review process, how would these authors objectively evaluate reviews they received, as noted above?

Review quality is affected by both technical objectivity and reflections of reviewer behavior. Despite perennial concerns about all aspects of the peer reviewing-editing process, 55% of the respondents (Table 4-9) answered that reviews they had received were "accurate, constructive, concise" more than 75% of the time, and less than 3% indicated that this occurred less than 25% of the time. Approximately 67% of the respondents indicated that as many as 1 in 4 comments were technically flawed, but that in these instances the review comments were still polite and concise. Likewise, 44% of the respondents indicated that as many as one in four comments were not only technically flawed but were hostile. However, 52% of the respondents said that they had never received comments that were both wrong and hostile.

Upon receipt of reviews the associate editor may recognize certain problems with the review. It may be excessively critical, poorly written or simply cursory, or accompanied with harsh and abusive language. Forty-eight percent of the respondents noted that even if the reviewer is prestigious, editors should seek an alternate review in these instances. Thirty-seven percent said the review should be returned to the reviewer for a rewrite, and only 3% of the respondents favored accepting such reviews as written. When a similar question was posed with regard to courtesy, nearly the identical responses occurred, 51% favored return for rewrite, 28% favored an alternate review, and 15% would accept as is. The balance in either case (12 and 6%, respectively) would have the editor ignore the poor review.

The favorability of a review is often strongly influenced by a manuscript's manner of presentation, rather than its scientific content. When asked what to do with a manuscript that contained good science, but was poorly written, 50% of the respondents disagreed with the suggestion to reject the manuscript. Thirty-three percent favored rejecting the manuscript and 16% were neutral.

Other cases can involve manuscripts containing good science that receive poor reviews related to identifiable factors. One common concern is rejection of papers because they report "negative" results. When asked if they believed that negative results get equal treatment with positive results in the review process; 51% said no, 30% said yes, and 19% were neutral. Similarly, many scientists express concern about the reception of particularly new or innovative concepts. These people will be pleased to know that 92% of the respondents favored publication where methodology and analysis are acceptable but results are contrary to accepted beliefs. Nearly two-thirds of those strongly favored publication. Respondent concern on this point was further underscored by the agreement of 54% that the review process restricts publication of innovative ideas by relying too heavily on accepted standard concepts. Nearly 30%, however, were neutral.

Noncontent Related Factors

Many and varied aspects of the publication process are affected by factors having nothing to do with manuscript content, regardless of technical or presentation quality. Many of these considerations have a potent influence on individual attitudes and motivation. When asked if they worked in a publish or perish environment, surprisingly only 51% of the respondents agreed, and 36% disagreed. Interestingly the response was strongly affected by respondent location in or out of the USA, with 54% of U.S. addressed respondents agreeing and only 36% of non-U.S. respondents agreeing. Nearly two-thirds of the respondents agreed that the need to publish or perish in the arena of agricultural scholarship has become unreasonable; only 14% disagreed.

There was no consensus when asked if the peer review system had proliferated unproductive scientific fads.

However, 56% of the respondents did agree that their publication success was affected by cliques and Good Old Boy systems (influence networks), only 20% disagreed. On a more positive note only 3% agreed that gender affected the likelihood of a favorable review and paper acceptance. Furthermore, 78% of the overall respondents and 85% of the female respondents said gender had no effect. Similarly, only 7% of the respondents agreed that nationality, ethnicity, and/or race had affected the likelihood of favorable review and paper acceptance; 72% overall and 70% of non-U.S. addressed respondents stated that these factors had no effect. Although the initial inclination is to interpret this as a lack of racial, ethnic, or nationality bias, one must pause to question whether perceived bias by 7% of the membership indicates that, in fact, certain minority groups are adversely affected. When asked specifically if the respondent's career had suffered or was slowed down by poor or unfair reviews of an important paper(s) only 10% agreed, and 78% disagreed.

There are numerous political and ethical considerations associated with authorship. When asked about multiple authorships, the respondents were nearly evenly divided on whether or not Tri-Society publications should identify how much and what kind of contribution each author made to a paper. Nonetheless, more than two-thirds agreed that authorships and their order are affected by politics apart from scientific contribution.

American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America Journals

A number of questions evaluated specific aspects of the Tri-Society journals. The first of these questions dealt with the member's perception of the relative prestige of the Tri-Societies' six major journals in the world of scientific publication (Table 4-10). Responses were somewhat affected by the respondent's familiarity with a particular journal. With a score of 1 indicating low prestige and 5 indicating high prestige, the weighted mean evaluation of all six journals was a score of 3.7. The results in Table 4-10 (based on respondent perception of journal prestige) corresponded well with the citation analysis presented by Garfield (1992).

When further queried, nearly one-half of the respondents agreed that there were both journals and topics within journals in which it was more difficult to publish than others. Unfortunately a subsequent question that attempted to identify these divisions in the Tri-Society was poorly understood, and these responses were uninterpretable. The nature of the difficulty suggested a lack of familiarity and/or identification with Tri-Society divisions on the part of the membership.

Despite all of the perils and problems of the publication process less than 3% of the respondents answered that overt dishonesty was a problem in the Tri-Society journals, whereas 74% did not perceive overt dishonesty to be a problem. Even where the problem was described as one of rationalization and misleading presentations of research results, less than 9% agreed that this was a problem in Tri-Society journals, whereas 63% disagreed.

Table 4-10. Respondent perception of the prestige of Tri-Society journals in the world of scientific publication, with prestige ranked from low to high on a scale of 1 to 5.

Journal	No. of responses	$\bar{x} \pm$ SE
Agronomy Journal	248	4.0 0.06
Journal of Environmental Quality	223	3.6 0.06
Journal of Production Agriculture	205	2.9 0.07
Soil Science Society of America Journal	249	4.4 0.05
Crop Science	234	4.0 0.06
Journal of Natural Resources and Life Sciences Education (Journal of Agronomic Education)	201	2.8 0.07
Potential rapid-publication journal†	262	2.3 0.06

† Respondents were queried in a separate question about the need for and relative prestige of a new rapid-publication journal with a streamlined review process. The evaluation format was identical to that for the rest of the data presented in Table 4-10. Therefore, results are shown here for comparison.

The remaining questions in the questionnaire were somewhat focused on possible publication alternatives within the Tri-Societies. Nearly two-thirds of the respondents agreed that Tri-Society journals should provide a mechanism for editing the grammar and punctuation of manuscripts accepted for publication.

Some of this occurs now in Tri-Society journals, but it is apparently the perception of the respondents that it would be advantageous to expand this service. Nearly one-half of the respondents (47%) expressed agreement that Tri-Society journals should publish more philosophical, speculative, and socially analytical papers that interpret and apply the results of agricultural research to social and governmental concerns. One-third of the respondents disagreed with this concept.

Another evaluation of journal focus dealt with journal treatment of properly conducted studies that were, nonetheless, released, merely because they contained so-called "negative results." That is to say, studies in which controls and alternative treatments do not differ, or in which hypotheses failed to be proven. Given a second opportunity to respond on the topic, 83% of the respondents agreed that negative results are valuable and should be published in Tri-Society journals; more than one-half of these strongly agreed. A better adherence to this principle could avoid a substantial repetition of unproductive research by other scientists.

Respondents were asked if the Tri-Societies should have a rapid-publication journal (i.e., submit manuscripts photo-ready, or disk-transcribed) of minimal review, to publish results of limited studies or preliminary findings not suited to full journal articles but that have value to other scientists or educators. Nearly one-half agreed (45%), while 37% disagreed, and 18% were neutral. The respondents ranked the likely prestige of a rapid-publication journal below that of the other Tri-Society journals (a score of 2.3 in Table 4-10).

When asked specifically whether the Tri-Society journals seek enough input from the membership in setting editorial policy, 35% agreed and 25% disagreed. This question was followed by an invitation to identify editorial policies with which the respondents disagreed. Their responses were extemporaneous, and not prompted by key words or multiple choice statements. The authors of this paper have, of necessity, attempted to summarize their comments into major categories of concern. The major points noted included (number of responses are in parentheses):

1. Liberalize acceptance of: presentation styles, statistics, limited audience papers, unconventional ideas, limited but sound speculation, shift some trite papers to notes (23).
2. Limit the possibility of biased or poor reviews; allow authors to identify potential reviewers (20).
3. Shorten the ASA review process; maybe use a cadre of appointed reviewers, maybe pay them (20).
4. Provide more guidance/feedback to reviewers to educate them and/or calibrate their review performance against others, advise authors about which comments to heed (10).
5. Reevaluate the strict adherence to SI units, that are less appropriate than non-SI units in certain cases (9).
6. Conceal author and/or reveal reviewer identity (7).
7. Be more open to international and non-ASA input (5).
8. Seek more member input to improve communication of editorial practices, policies, standards, etc. (5).
9. Select only professionally mature reviewers and associate editors, change editors more frequently (4).
10. Eliminate anonymity, encourage communication (4).
11. Require access to original data, reject poor grammar, tighten up statistics, specify author contribution (3).
12. Standardize review severity among ASA divisions (1).
13. Publish more reviews by top scientists (1).

Interestingly, the greatest volunteered response had numerous comments implying that enforcement of statistical "requirements" in Tri-Society journals is too rigid and sometimes capricious, especially compared to non-ASA journals. In a recent unrelated survey of C-6 members (J.H. Cherney, 1990, personal communication), with 113 responses to 151 questionnaires mailed, 57.5% of the overall respondents expressed the opinion that Tri-Society journals are too statistically oriented, such that important scientific information is occasionally compromised. When this question was analyzed with regard to the respondents' editorial experience, the agreement was 44% among those with editorial experience, and 69% among those without editorial experience. It would seem, therefore, that there is considerable sensitivity among the overall membership on this issue, and that it should not be lightly dismissed. However, in light of the citation analysis presented by Garfield (1992), it should also be noted that Tri-Society journal quality is high compared to non-ASA journals, and the maintenance of high statistical standards is undoubtedly a contributing factor. The question to answer in light of these responses is whether we have exceeded the reasonable need for statistical analysis to uphold the high standards of the journals.

Finally, respondents were asked if, in recent years, they had been more or less likely to publish in ASA journals than in non-ASA journals. Forty-four percent indicated no change, while 40% indicated that they were less likely to publish in Tri-Society journals. Only 16% indicated that they were more likely to publish in ASA than in non-ASA journals. Respondents again were given an opportunity to discuss their reasons for these preference changes. Some of the major themes that were noted included:

More Likely to Publish in ASA Journals Because of:

1. ASA journal prestige and wide circulation (13).
2. Change in research focus (3).
3. *Journal of Production Agriculture*'s provision of a more applied forum for my work (1).
4. Good editing and good reviews (1).

Less Likely to Publish in ASA Journals Because of:

1. Other, more specialized, journals in my field (25).
2. Lack of sufficient international scope (14).
3. Dissatisfaction with the ASA review/publication process (10).
4. Change in research focus (9).
5. Preference for more user-oriented (applied) publications (9).
6. Excessive Tri-Society journal review time (7).
7. High page cost of Tri-Society journals (7).
8. Unreasonable statistical demands (7).
9. Tri-Society journal cliquishness/conservatism (6).
10. SI units (2).
11. Poor photograph reproduction (1).

COLLEGE OF AGRICULTURE QUESTIONNAIRE

Manuscript Review Practices

When asked if manuscripts must be approved by the college/experiment station before submission to journals, 59% responded yes. However, a smaller fraction of the respondents (50%) indicated that an institutional peer review was required before approval was given. Only one respondent indicated that the review required at his institution was accomplished by a "standing review committee." When asked if peer review was an option at the college/department level, 43% responded yes. Inspection of the responses indicate that these individuals were largely the same ones who had indicated that a review was not

a requirement for approval to submit a manuscript to a journal. Of those 50% who indicated that peer review was a requirement for journal submission, 12 respondents, or about one-half in that category, indicated that the author selected the peer reviewer. The remaining 17 respondents indicated that the reviewer was selected at the discretion of an administrator. Most (14) were selected by the department head or his designee. Two respondents indicated that this review was performed by a departmental review committee.

Manuscript Editing

Institutional editing included review by a grammarian at 27% of the institutions responding. A similar service was optionally available at another 31% of the responding institutions. A routine inspection of manuscripts for statistical accuracy was indicated by only one respondent. Though this indicates that statistics are not included formally in the review or approval process, it does not necessarily mean that the review process is devoid of statistical evaluation, or that a statistician is not frequently consulted in the course of the research and its evaluation preceding manuscript preparation. The flow and ultimate fate of manuscripts prepared by the staff of 61% of responding institutions is routinely tracked through to publication.

Faculty Requirements

The importance of publication to the performance evaluation of faculty is reflected in the requirement by 93% of the responding institutions for research publications to qualify for tenure. An integral aspect of this activity is the concomitant requirement by 87% of the responding institutions that faculty are responsible for seeking soft monies to conduct research. These two requirements are simultaneously complimentary and antagonistic. The monies obtained through the grant process are easier to obtain with a proven record of publication, and also enable further publication. Yet, the time invested in grantsmanship and grant writing can detract from performing research and publishing results.

The rigidity of faculty requirements for acknowledgment of and adherence to ethical standards is less uniform. Only 45% of the respondents indicated the existence of a formal code of ethics at their institution. Only one-half of these (20% of all respondents) were obliged to acknowledge the code in writing. The importance of some form of ethical framework is underscored by the response of 30% of the institutions that there had been at least one situation in which an ethical issue had been raised. Only one-third of these (5 respondents) said that the ethical question had resulted in legal action. More than one-half (57%) of the respondents agreed that the existence of a code would not preclude its violation. One in five of the respondents (18%) disagreed, believing that the code itself prevented violations, whereas 9% were unsure. Fifty-seven percent also agreed that the existence of a code assisted in the prosecution of an ethical violator.

Student Training/Requirements

Given the importance of scientific writing to career development and success, several aspects of institutional requirements and programs affecting the publication process were queried. None of the respondents indicated that training in technical writing was a requirement for graduation with an advanced degree. In 86% of the responses, however, training was identified as available at the option of the student or student's committee. The degree to which students availed themselves of such training varied widely among responding institutions. Most respondents stated either that technical writing courses were not heavily utilized, or that they were unaware of the extent of their utilization. Where such courses were available, only about one-half of the respondents familiar with the course material said that the courses simulated the writing, reviewing, and revising process for manuscripts in the students' discipline. More than one-half (52%) of the respondents noted that the ethics of scientific research and publication were addressed in student training through courses, workshops, seminars, or as some other aspect of student training.

Unlike the ubiquitous pressure on faculty to publish research, only 14% of the institutions responding indicated that graduate students were required to publish their research in order to obtain their degree. Similarly only 16% responded that college/department requirements dictated that graduate students should be the senior author of papers published from their theses or dissertations. One in five of the respondents did indicate, however, that the students' prerogative to senior author the paper did eventually expire. The period varied among respondents, but usually was within 2 yr.

DISCUSSION

The results of these two surveys were voluminous and robust. The analysis performed by the authors has been largely in the context of providing valuable information to the Tri-Societies that may prove useful in analyzing its entire posture with regard to the peer reviewing and editing process. The structure of the data set is such that appropriate scholars could use the data for further analysis related to the philosophy and sociology of science by arrangement with the authors.

These survey results provide additional insight to the growing body of literature on the topic of peer reviewing and editing of scientific publications (Garfield, 1986a,b, 1987a,b, 1989). Several aspects of the review process are perennial topics of debate. Among them are anonymity (Schrage, 1990; Glen, 1989; Sun, 1989; Guthery, 1988; Prathap, 1989), authorship (Holmes, 1989), "negative" data (Maddox, 1990; Dufour and Nouchi,

1989), responsibility for accuracy and quality (Hershey, 1989; Stuber, 1989), fraud (Sun, 1989), reviewer qualification (Glaze, 1988; Leopold, 1988), journal glut (Maddox, 1989; Allman, 1988), and bias (Smith, 1988).

Observations and Recommendations

1. Demographic representation on editorial boards is nearly proportional to Tri-Society demographic composition. Some effort to include more females and non-U.S. addressees may be warranted, but there is not a serious underrepresentation of these groups.

2. Demographic representation of reviewers suggests a greater effort is needed to use female reviewers. They are currently utilized about one-third as often in proportion to their membership composition as are males. Non-U.S. addressed reviewers are also underrepresented, but this is largely a reflection of unavoidable logistical considerations.

3. One-half of the M.S. respondents reported never having published either a senior- or junior-authored paper (compared to 3% for Ph.D.'s). Career output of M.S. respondents was usually limited to only a few papers. Many of these authorships, especially junior authorships, may reflect roles as technicians or support staff, or may originate from the respondent's thesis work. The Tri-Society may wish to consider special activities or programs to better address the professional needs of non-Ph.D. members other than the traditional research-report oriented activities aimed at the Ph.D. membership.

4. Thirty-eight percent of the member respondents indicated that institutional review prior to journal submission of a manuscript was either not required or was only optional. Similarly about one-half of the institutions polled made the same response. The Tri-Societies should actively promote robust institutional review prior to journal submission among universities and research organizations. The result would improve manuscripts, thereby benefiting the author, the institution, and the publication process by elevating quality and accuracy and possibly by discouraging misconduct.

5. Nearly twice the support existed among respondents for dual review anonymity (author and reviewer) than for only reviewer anonymity (that is the current practice in ASA journals). Well over one-half the respondents said dual anonymity would improve review fairness even though author identity would sometimes be surmised anyway. In view of the strong support for dual anonymity it would behoove the editorial boards to at least experiment with this approach.

6. Responsibility for *quality* of manuscripts is overwhelmingly perceived as shared by the author and the editors. Nearly one-half of the respondents perceived shared responsibility for *accuracy* as well. Although reviewers and editors routinely check manuscripts for quality and obvious flaws, the Tri-Societies may need to proactively cultivate a greater recognition by authors of their primal responsibility for accuracy. Journals or parent societies may need to go so far as to legally ensure their nonliability for inaccuracies in published research.

7. There is an overwhelming concern by respondents that reviewers be qualified and that authors have an opportunity to rate reviewer performance as a regular part of the review process. This sentiment strongly endorses journal efforts to develop lists of qualified voluntary reviewers. When given options concerning how to deal with poor reviewers virtually none were satisfied to ignore poor review performance. The greatest majority favored excluding the poor reviewer from future use. Many respondents said that *poor reviewers should be informed of their poor performance.* Four-fifths of the respondents endorsed the institution of recurring means of educating and improving reviewer skills in our Tri-Societies (e.g., articles in *Agronomy News* and/or seminars at annual meetings, or perhaps by adding a special chapter on reviewing to the Tri-Society *Publications Handbook and Style Manual*). These responses underscore the editorial responsibility to evaluate reviews and revisions, and to react as needed to ensure the adequacy of the review process.

8. Over one-half of the respondents felt that "negative" results are unfairly treated in the review process and that innovative ideas were too heavily judged using accepted standard concepts. Nearly all respondents favored publication where methodology and analysis were acceptable but results were contrary to accepted beliefs. The Tri-Societies' journals should, therefore, be cautioned against excessively conservative disposition of such manuscripts. That attitude risks the inefficiency of redundant research and loss of innovation by failure to keep an open mind.

9. Little or no bias in the review and editing process was attributed to gender, nationality, ethnicity or race. The greatest perceived corruption of the review process's integrity was thought to stem from the activity of influence networks (cliques and Good Old Boy networks... 56% agreement). Editors bear a particular responsibility to seek reviews from technically knowledgeable reviewers who are free of nontechnical bias.

10. Two-thirds of the respondents agreed that ASA journals should provide a mechanism for editing grammar and punctuation. Although the Tri-Societies provide some such service, a greater need was perceived. Greater institutional review (before journal submission) might help alleviate some of this need.

11. Nearly one-half of the respondents agreed there was a need to publish more articles of a philosophical, speculative, and socially analytical nature in Tri-Society journals. This response endorses the recent trend in this direction, especially as seen in the *Journal of Production Agriculture.*

12. Respondents favored (45% yes, 37% no) development of a rapid-publication (i.e., photo-ready or disk transcribed) journal in the Tri-Societies to publish results of limited studies or preliminary findings that have value to other scientists or educators. Respondents perceived that such a journal would have prestige below that of the existing journals.

13. When asked if respondents were more or less likely in recent years to publish in ASA journals, two-and-a-half times as many respondents indicated movement away from ASA journals rather than toward them. One-third indicated no change. This perception suggests the Tri-Society journals could increase service and recognition and benefit financially by making every effort to accommodate authors in their efforts to use Tri-Society journals as their primary journals of choice. This might include the need to accommodate new agroscience specialties into our journals, which are currently forced to seek publication elsewhere, including an increased focus on international agronomy.

14. Although most institutions offer training in technical writing, only one-half of the offerings simulate the actual writing–reviewing–editing process associated with target journals. Furthermore, no institution indicated such training was *required* for an advanced degree, despite often requiring graduate students to prepare manuscripts for refereed journals as degree requirements. The Tri-Societies should encourage formal training in writing and communication in formats that more nearly simulate the type that will be required for the graduate's professional duties.

15. Responding institutions have indicated the need for and desirability of establishing codes of scientific ethics. In order to ensure the credibility and to limit the opportunity of adverse liability of our journals, the Tri-Societies should encourage development of ethical codes at all research institutions and within our Tri-Societies. A code for the societies should cover not only the ethics of conducting science but the ethics governing conduct of society professional activities and the peer-reviewing editing process.

APPENDIX 4-1

AMERICAN SOCIETY OF AGRONOMY MEMBERSHIP QUESTIONNAIRE—METHODS

The Questionnaire

The Tri-Society member questionnaire queried many aspects of the peer-reviewing and editing process. Questions and issues were compiled from personal experiences, from concerns communicated to the authors as associate editors, from reviewers and manuscript authors, and from current literature related to this topic. Three iterations of the questionnaire, each of approximately 50 questions in length, were distributed to 6 to 10 publishing scientists per iteration for review and revision. Input for the third iteration was also obtained from the Tri-Society headquarters staff. Following the third iteration the questionnaire was restructured to group related questions and ensure that the wording and presentation of the questions conformed to standard polling practices. An effort was made to eliminate apparent ambiguities and to ensure that answers could be compiled according to proper statistical procedures. The questionnaire, as mailed, and distribution of responses to the questions appear in Appendix 4-2.

The Sample

The Sample was selected from the Tri-Society membership list as it existed in December 1989. Self-designated students and retired ASA members were excluded from the eligible population. Members listed as having no graduate degrees were also excluded. The remainder of the membership list was stratified by gender, highest degree earned (M.S., Ph.D.), and region (U.S. address, or non-U.S. address). Within each of the eight strata, a simple random sample with size proportional to the stratum size was selected. The use of this sample design ensured that each group was represented in the selected sample in proportion to its size in the eligible population. In particular, small groups, such as female Ph.D.'s with non-U.S. addresses were not missed from the selected sample "by the luck of the draw." They could be underrepresented in the sample analyzed if they chose not to respond to the questionnaire. Estimators of means and proportions from stratified samples are weighted averages of the individual strata means and proportions, respectively. However, under proportional allocation, these stratified estimators coincide with simple arithmetic means and proportions (Cochran, 1977, p. 91). This alleviated the need to write special computer programs to tabulate the data.

The overall selected sample of 516 Tri-Society members from an eligible population of 8940 represented approximately 5.8% of the population. There were 279 respondents (51.4% of the selected sample). Although statistics were not explicitly calculated, item nonresponse for the returned questionnaires was low. Several questionnaires were returned completely unanswered with attached explanations that those respondents had no publication experience.

COLLEGE OF AGRICULTURE QUESTIONNAIRE

A second questionnaire was prepared to identify institutional policies affecting several aspects of writing, reviewing, and editing of technical papers on research conducted in agricultural colleges, universities, and experiment stations in the USA. The questions and issues addressed were seen as having an impact on the peer reviewing and editing process of manuscripts from these institutions. These issues are also addressed in the section of the paper by Sojka and Moon (1992) that describes the institutional review process in ARS, which is somewhat monolithic in its approach to agency peer review and approval. This survey was developed after sending out the member survey. Because of that experience, there were only two iterations of this survey. The final questionnaire was sent to deans of each state's land grant school plus the University of Puerto Rico (52 surveys mailed). The questionnaire, as mailed, and the distribution of responses appear in Appendix 4-3. The survey was mailed to all likely respondents, and therefore no sampling considerations were employed per se.

Overall response by the agricultural college administration was 44 questionnaires returned (85%). In analyzing the responses it must be noted that not every respondent always answered every question. Therefore, the total number of responses for a given question in many instances is less than 44.

APPENDIX 4-2

PEER REVIEW-EDITORIAL PROCESS QUESTIONNAIRE

Data Appear as Means, Actual Counts, or Percentage of Total Counts

Respondent Characteristics

Number of years of: Professional experience [17.5] ASA Membership [15.6]

Highest degree: M.S. [49] Ph.D. [230] Gender: Male [263] Female [16]

U.S. addressed: [217] Non-U.S. addressed [53]

Affiliation:

Academic, primarily teaching	17	Extension	10
Academic, primarily research	88	Industry	42
Government action/regulatory agency	13	Consultant	19
Government research agency	59	Other (specify)	17

Geographic region:

Northeastern	28	Southern	64
North Central	73	Western	67
Non-U.S.	47		

Divisions of the ASA Tri-Societies that are of primary (1), secondary (2), and tertiary (3) interest.

[Responses were not consistent among repondent's, precluding summarization.]

Agronomy
- ____ A-1 Resident Education
- ____ A-1a Student Activities
- ____ A-2 Military Land Use & Management
- ____ A-3 Agroclimatology & Agronomic Modeling
- ____ A-4 Extension Education
- ____ A-5 Environmental Quality
- ____ A-6 International Agronomy
- ____ A-7 Agricultural Research Station Management
- ____ A-8 Soil and Plant Science Applications (Prov.)

Crop Science
- ____ C-1 Crop Breeding, Genetics, & Cytology
- ____ C-2 Crop Physiology & Metabolism
- ____ C-3 Crop Ecology, Production, & Management
- ____ C-4 Seed Physiology, Production, & Technology
- ____ C-5 Turfgrass Science
- ____ C-6 Crop Quality & Utilization
- ____ C-7 Cell Biology & Molecular Genetics
- ____ C-8 Plant Genetic Resources (Prov.)

Soil Science
- ____ S-1 Soil Physics
- ____ S-2 Soil Chemistry
- ____ S-3 Soil Microbiology & Biochemistry
- ____ S-4 Soil Fertility & Plant Nutrition
- ____ S-5 Soil Genesis, Morphology, & Classification
- ____ S-6 Soil & Water Management & Conservation
- ____ S-7 Forest & Range Soils
- ____ S-8 Fertilizer Management & Technology
- ____ S-9 Soil Mineralogy

Publication Process Experience

1. Have you had experience as an editor, technical editor, or associate editor for

an ASA journal?	Yes	39	No	236
a non-ASA journal?	Yes	87	No	185

2. How many papers have you reviewed in the last 12 months for

an ASA journal?	1.6
a non-ASA journal?	3.0

3. How many refereed papers have you authored or coauthored in the last 24 months in

an ASA journal?	1.0
a non-ASA journal?	3.1

4. How many refereed papers have you published during your career as

senior author?	15.4
junior author?	13.4

5. What percentage of the refereed papers published during your career have been in ASA, CSSA, or SSSA journals? [34%]

6. In my career, I have had [1.9] papers rejected, of which

35%	were later accepted in the same journal
45%	were later accepted in another refereed journal
20%	were later accepted in an unrefereed journal.

(continued on next page)

Appendix 4-2. Continued.

7. The internal review policy of my employer is best described as

51	no internal review process
31	internal review is optional and reviews are cursory
17	internal review is optional and reviews are rigorous
64	internal review is required and reviews are cursory
102	internal review is required and reviews are rigorous.

General Review Process

1. My concept of the ideal review process is best described as:

74	authors identified, reviewers anonymous
65	authors identified, reviewers identified
117	authors anonymous, reviewers anonymous
16	authors anonymous, reviewers identified.

2. It has been argued that author anonymity can't work in agricultural journals because the topic and methods sections give the reviewer a nearly perfect guess as to the source of the paper.

24	94	71	63	18
Strongly agree				Strongly disagree

3. Even if author anonymity were less than perfect in preventing a reviewer from guessing the source of the paper, it would still improve the chance of a fair review.

71	83	50	44	22
Strongly agree				Strongly disagree

4. A reviewer who has accepted a request to review a "typical paper" (i.e., has not immediately mailed back a manuscript) should not need more than 30 d to complete the review.

172	74	12	14	0
Strongly agree				Strongly disagree

5. If a review is not returned in an allotted time, for example 30 d, the review should be automatically regarded as an acceptance.

25	28	26	62	131
Strongly agree				Strongly disagree

6. All reviewer copies of the manuscript should be returned to the author.

163	46	32	21	9
Strongly agree				Strongly disagree

7. It is possible to detect and prevent dishonesty in the review process.

24	73	98	64	10
Strongly agree				Strongly disagree

8. Where does the responsibility lie for the quality of a published manuscript?

61	with the author(s)
6	with the editorial process
203	shared by the author and the editorial process.

9. Where does the responsibility lie for the accuracy of a published manuscript?

155	with the author(s)
5	with the editorial process
110	shared by the author and the editorial process.

10. Agricultural journals should have the same review rigors as, say, medical journals.

105	87	51	18	3
Strongly agree				Strongly disagree

(continued on next page)

Appendix 4-2. Continued.

Reviewer Selection and Performance

1. A peer reviewer should have minimum credentials established by the journal.

110	104	26	20	6
Strongly agree				Strongly disagree

2. A peer reviewer should have the same or greater technical expertise as the most recognized author on a paper.

33	67	67	76	26
Strongly agree				Strongly disagree

3. The author should have the right to select one of the three reviewers.

39	47	59	71	55
Strongly agree				Strongly disagree

4. There should be a system that allows authors to rate the quality of the reviews that are received on a manuscript.

64	110	49	35	13
Strongly agree				Strongly disagree

5. If an author rating system of reviewers were implemented, good and poor reviewer ratings would simply reflect the harshness of the review.

11	69	65	85	38
Strongly agree				Strongly disagree

6. If records of reviewer performance were kept, how should a reviewer who has a reputation for being slow, unresponsive, and for consistently giving poor reviews be treated?

3	no impact
90	informed that he/she is producing poor quality reviews
154	not be asked to review manuscripts in the future
7	temporarily banned from publishing in ASA journals.

7. American Society of Agronomy should have a regularly recurring means of educating and improving reviewer's skills (e.g., articles in *Agronomy News* or seminars at annual meetings).

118	99	26	20	8
Strongly agree				Strongly disagree

8. Who is more open-minded to new concepts, innovative ideas, or radical but provocative and valuable ideas?

47	recent graduates
31	midcareer professionals
7	established professionals
178	no relationship between open-minedness and "professional age."

9. Who provides the fairest reviews?

9	recent graduates
58	midcareer professionals
27	established professionals
170	no relationship between fairness and "professional age."

Contents of Reviews

1. Considering your overall career experience, please rate the contents of reviews of your manuscripts using the following scale: (1) never, (2) less than 25% of the time, (3) 25 to 75% of the time, (4) more than 75% of the time, (5) always (actual count).

	1	2	3	4	5
Accurate, constructive, concise	0	7	104	127	8
Questionable, but constructive	8	102	89	34	3
Wrong, but polite, concise	44	155	27	7	0
Wrong and hostile	123	104	7	1	1
Accurate, but hostile	110	101	18	1	1
Biased by reviewer self-interest	63	120	46	7	0
Personal attacks	180	47	6	1	0
Trivial, whether correct or not.	41	134	49	14	0

(continued on next page)

Appendix 4-2. Continued.

2. If a reviewer rejects a manuscript, but his comments are terse and poorly documented, then, even if the reviewer is pretigious, the editor should

30	ignore the review
97	return it to the reviewer for better documentation
8	accept the review as it was written
125	seek an additional review.

3. If a review lacks courtesy, then, even if the reviewer is prestigious, the editor should

15	ignore the review
134	return it to the reviewer for rephrasing
39	accept the review as it was written
73	seek an additional review.

4. If the communication of an idea or research is poor even though the idea or research is sound, then the manuscript should be rejected.

29	64	42	92	43
Strongly agree				Strongly disagree

5. Negative experimental results get equal treatment with positive results in the review process.

33	48	51	96	40
Strongly agree				Strongly disagree

6. If the reported methodology and analysis are good, but the results are contrary to accepted theory, then the manuscript should be published.

158	91	15	4	3
Strongly agree				Strongly disagree

7. The review process restricts publication of innovative ideas by relying too heavily on accepted standard concepts.

33	112	77	34	11
Strongly agree				Strongly disagree

Noncontent Related Factors

1. I work in a publish or perish environment.

75	64	34	35	63
Strongly agree				Strongly disagree

2. The need to publish or perish in the arena of agricultural scholarship has become unreasonable.

79	93	59	29	8
Strongly agree				Strongly disagree

3. The peer review system has proliferated unproductive scientific fads.

35	70	89	56	20
Strongly agree				Strongly disagree

4. Publication success is affected by cliques and a Good Old Boy network.

39	111	66	36	18
Strongly agree				Strongly disagree

5. My gender has affected the likelihood of favorable review and paper acceptance.

2	7	51	51	156
Strongly agree				Strongly disagree

6. My nationality, ethnicity and/or race has affected the likelihood of favorable review and paper acceptance.

2	16	59	42	151
Strongly agree				Strongly disagree

(continued on next page)

Appendix 4-2. Continued.

7. My career has suffered or has been slowed down by poor or unfair reviews of an important paper(s).

5	22	33	62	145
Strongly agree				Strongly disagree

8. Some research groups have reputations for listing many authors on their publications. American Society of Agronomy publications should identify how much and what kind of contribution each author has made to the paper.

41	58	38	69	65
Strongly agree				Strongly disagree

9. Authorships and their order are affected by politics apart from scientific contribution.

56	125	49	30	10
Strongly agree				Strongly disagree

American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America Journals

1. Please rank each ASA Tri-Society journal as to your perception of its prestige in the world of scientific publications.

	Low prestige				High prestige
Agronomy Journal	0	16	51	100	81
Journal of Environmental Quality	3	21	80	85	34
Journal of Production Agriculture	19	41	105	31	9
Soil Science Society of America Journal	1	5	25	85	133
Crop Science	2	10	52	72	98
Journal of Agronomic Education	21	41	98	34	7

2. It is more difficult to publish in some Tri-Society journals than in others.

37	87	110	15	6
Strongly agree				Strongly disagree

3. Within a Tri-Society journal it is more difficult to publish a paper whose subject matter content relates to certain topics (as defined by the Tri-Society divisions of affiliation on the first page of this questionnaire) than it is for other topics.

29	88	108	19	5
Strongly agree				Strongly disagree

4. If the level of difficulty within a journal does vary by topic (society division), then which Tri-Society division (as defined on the first page of this questionnaire) is the
   most difficult to publish in? see
   easiest to publish in? text

5. Overt dishonesty is a problem in ASA Tri-Society journals.

0	6	60	77	112
Strongly agree				Strongly disagree

6. Rationalization and misleading presentations of research results are a problem in ASA Tri-Society journals.

1	22	73	105	58
Strongly agree				Strongly disagree

7. American Society of Agronomy journals should provide a mechanism for editing the grammar and punctuation of manuscripts accepted for publication.

63	107	34	42	18
Strongly agree				Strongly disagree

8. American Society of Agronomy journals should publish more philosophical, speculative, and socially analytical papers that interpret and apply the society's work to social and governmental concerns.

47	80	49	58	34
Strongly agree				Strongly disagree

(continued on next page)

Appendix 4-2. Continued.

9. Negative results are valuable and should be published in ASA journals.

114	110	36	10	0
Strongly agree				Strongly disagree

10. The ASA Tri-Societies should have a rapid publication journal (i.e., submit manuscripts photo-ready) of minimal review, to publish results of limited studies or preliminary findings not suited to full journal articles, but that have value to other scientists or educators.

55	63	47	59	39
Strongly agree				Strongly disagree

11. How would you perceive the scientific prestige of a rapid-publication journal such as the one described in the previous question?

65	86	75	32	4
Low prestige				High prestige

12. The ASA Tri-Society journals seek enough input from the membership in setting editorial policy.

22	67	101	43	20
Strongly agree				Strongly disagree

13. What editorial policies do you disagree with? Please use the back of this page or a separate sheet for your response if necessary.

14. In recent years I have been more/less likely to publish in ASA journals than in non-ASA journals. Give reasons, if appropriate.

40	More likely
100	Less likely
111	No change

APPENDIX 4-3

AGRICULTURAL COLLEGE/EXPERIMENT STATION QUESTIONNAIRE

Please circle the appropriate response to the following statements as they relate to processing technical reports for journal publication.

	Yes	No
1. Manuscripts must be approved by the college/experiment station before submission to journals.	26	18
2. Peer review is required by the college/experiment station before submission to journals.	22	22
3. Does the college/experiment station have a standing review committee?	1	42
4. Peer review is an option at the college/department level.	19	22
5. If college/department review is required, reviewers are selected by author.	12	18
If no, reviewers are selected by: Department head/Director—13 Review committee—2 Varying processes—3		
6. All manuscripts are edited by college grammarian (e.g., station editor).	12	32
7. Grammar editing is an option provided by the college/experiment station.	19	24
8. A statistician routinely checks all manuscripts to ensure that experimental designs are correct and statistical analyses are appropriate.	1	43
9. Manuscripts prepared by staff (possibly receiving experiment station number) are tracked by department/college through to final publication.	27	16
10. Degree requirements in our college dictate that graduate students prepare research reports for publication in refereed journal. (Several comments of *encouraged* but not *dictated*).	6	35
11. The college/department dictates that graduate students are senior authors on papers based on their thesis or dissertation research. (Several comments of *encouraged* but not *dictated*.)	7	36
12. Does the student's privilege of being senior author expire after a given period of time? If yes, what is the time? Variable procedures; student author privilege expired within 2 years.	9	30

(continued on next page)

Appendix 4-3. Continued.

13. Training in technical writing is required to obtain an advanced degree.	0	43
14. Training in technical writing is available as an option for either undergraduate or graduate students.	38	5
If yes, what percentage of students take such training?		
100% undergraduate and < 10% graduate—4		
< 100% undergraduate and 5 to 10% graduate—10		
< 100% undergraduate and 15 to 30% graduate—5		
< 100% undergraduate and 50 to 90% graduate—6		
Didn't know—11		
New course—1		
15. Does the technical writing course, or other similar training simulate the writing, reviewing, and revising process for journals in the student's discipline?	17	18
16. Are the ethics of scientific research and publication addressed (courses, workshops, seminars) in student training?	23	16
17. Faculty must conduct some research (including publishing) to qualify for tenure.	41	1
18. Faculty is responsible for seeking soft monies to conduct research.	39	1
19. University/college/department has a code of ethics that pertains to scientific research and reporting.	20	22
If yes, does faculty sign a copy of ethics or is this implied with signing of contract?	9	11
If yes, has there been a situation at your installation where an ethical issue was raised?	13	6
If yes, has there been a situation at your institution where an ethical issue was prosecuted?	5	14
20. Would the existence of a code of ethics		
a. preclude violation of the code?	8	25
b. assist in prosecuting the violator?	25	6

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