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**TRAINING NEEDS  
OF INFORMATION SERVICES  
IN AGRICULTURAL RESEARCH  
AND EDUCATIONAL  
ORGANIZATIONS IN ASIA:  
A 9-COUNTRY SURVEY**

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TRAINING NEEDS OF INFORMATION SERVICES IN AGRICULTURAL  
RESEARCH AND EDUCATIONAL ORGANIZATIONS IN ASIA:  
A 9-COUNTRY SURVEY<sup>1</sup>

ABSTRACT

The objectives of the study were to 1) determine the educational and training needs and communication priorities as perceived by administrators and information officers in Asian agricultural research and educational organizations, 2) describe information services provided by agricultural development organizations, 3) determine the resources and problems of information units, and 4) compare the perceptions of administrators and information officers of the functions that information services should perform.

Administrators and information officers felt that their most important short-term training needs were in technical writing, publication editing, audiovisual production, and information retrieval. Priority requirements for graduate education for information professionals were in development communication theory and research and in the management of information systems. The respondents felt that undergraduate education should emphasize technical writing, editing, and audiovisual education technology.

Organizations surveyed usually allocated 1-3% of their budgets to information services. Most information units provided a range of technical services but few had in-house facilities for printing and typesetting. Information units produced a range of visual, audiovisual, and print media but only a few self-instructional materials or films. They had more photographers than editors, technical writers, librarians, and audiovisual specialists, and expected the number of positions in their units to increase at least 50% by 1987. The most important problems in organizing and maintaining information services were (in order of priority) lack of adequately trained support staff, finances, equipment, professional staff, and in-service training programs.

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TRAINING NEEDS OF INFORMATION SERVICES IN AGRICULTURAL RESEARCH AND EDUCATIONAL ORGANIZATIONS IN ASIA: A 9-COUNTRY SURVEY

Most developing countries in Asia have well-established agricultural research and educational institutions. The development of the international agricultural research centers (IARCs) has further strengthened the research capabilities of the national systems. A knowledge explosion in agriculture has resulted from increased national capacities and international cooperation. This scientific knowledge must be adapted and packaged before it can be used by farmers, its ultimate beneficiaries.

Information service units of agricultural research and educational organizations facilitate communication by adapting information to an easily usable form to speed the *knowledge-production-and-utilization* (KPU) process.

Information units support agricultural improvement programs by providing services such as technical writing and editing, graphic arts, photography, audiovisual production, typesetting, printing, library units, information retrieval, and mailing.

Although some system of information services evolved naturally at any agricultural research or extension organization, the concept of developing formal units, staffed by professionals with backgrounds in both agriculture and communication, is probably most fully developed in the USA. In the U. S. land grant universities, for example, have information units, perhaps because the USA pioneered in offering agricultural journalism as an undergraduate degree program.

The International Rice Research Institute (IRRI) established a Communication and Publications Department (CPD) (previously the Information Services Department) in 1964. Today CPD has a staff of almost 50, including editors, graphics and audiovisual specialists, typesetters, printers, and photographers.

In recent years, requests from national rice improvement programs that CPD take trainees and interns in agricultural communication have increased.

This research project was primarily initiated to survey agricultural communication training needs in Asia. It is hoped that IRRI and other international organizations can use this study to develop communication training programs.

LITERATURE REVIEW

Coombs (1969) stated that the role of extension education in the dissemination of agricultural technology has been unimpressive partly because communication media support for extension personnel is lacking. Coombs and Ahmed (1974) evaluated nonformal education programs in Asia and Africa and observed that although most developing countries have knowledge generation and delivery systems, they are not sufficiently reinforced with mass media and

other communication support.

Madamba (1981) stated that because of a lack of information services, Asian researchers are often isolated from scientific events in developed countries as well as in their own countries, and that agricultural extension programs suffer from the absence of mass media support.

Read (1980) observed an alarming shortage of educated, trained, and experienced rural communication specialists in Asia. He noted that relatively few national universities in Asia offer courses in agricultural journalism and stressed the need to establish a regional center for training in agricultural communication. Byrnes (1980) suggested that IARCs could assist national programs by providing short courses and internships for information workers and that relevant audiences of IARC communication efforts should be defined and priorities and budget allocations for communication training be established.

Metcalf (1979) surveyed IARC administrators and found that most prefer that holders of a Ph D in communication head their information service units – even if they have less professional experience than non-Ph D holders.

Agricultural scientists, administrators, and information officers from IARCs and national programs discussed these and similar problems at the IRRI conference on Communication Responsibilities of International Agricultural Research Centers (ADC and IRRI 1980).

Participants concluded that agricultural communication as a discipline and service is not sufficiently advanced in developing countries and that, as centers of the KPU process, the IARCs have no less a responsibility to provide training in agricultural communication to professional communicators in national programs than, for example, Center entomologists have to train national entomologists. Conference recommendations suggested that the IARCs train professional communicators in a *train the trainer* manner, and that such training be responsive and sensitive to the needs of individual countries. Participants also recommended that IARCs study the level of development of scientific communication in developing countries.

OBJECTIVES AND METHODOLOGY

This study was designed at IRRI to determine the types of resources agricultural improvement organizations have for information production and dissemination and the current and future needs for training in agricultural communication.

Its specific objectives were to 1) determine the priorities for training and education in agricultural communication as perceived by administrators and information officers; 2) describe information services now provided by

**Table 1. Number of agricultural development organizations in South and Southeast Asian countries included in the study.**

Country	Agricultural development organizations (no.)			
	Teaching	Research	Extension	Total
Bangladesh	1	6	2	9
India	24	45	26	95
Indonesia	9	14	13	36
Malaysia	1	6	1	8
Nepal	1	1	1	3
Pakistan	2	9	2	13
Philippines	26	12	11	49
Sri Lanka	2	7	4	13
Thailand	7	8	5	20
Total	73	108	65	246

agricultural teaching, research, and extension organizations; 3) determine the resources and problems of information units; and 4) compare the perceptions of administrators and information officers of the functions that information services should perform.

The survey included 73 teaching (agricultural universities and colleges), 108 research, and 65 national and regional extension organizations from 9 South and Southeast Asian countries (Table 1). The key respondents were 76 information officers and 126 administrators who manage funding and direct information services.

An international mail survey was used to collect data. Questionnaires were prepared using the *total design method* recommended by Dillman (1978) and pretested at agricultural organizations in the Philippines. Separate, color-coded questionnaires were prepared and printed as booklets for information officers and administrators. A questionnaire packet consisting of a cover letter, one questionnaire for the organization's senior administrator and one for its information officer, and two self-addressed envelopes was mailed to administrators. The cover letter requested that the administrator transmit the relevant questionnaire to the information officer to be filled out.

**Table 2. Needed programs for information service personnel as perceived by administrators and information officers.<sup>a</sup>**

Major program	Graduate education				Undergraduate education			
	Administrators (n = 75)		Information officers (n = 76)		Administrators (n = 75)		Information officers (n = 76)	
	% responding	Rank	% responding	Rank	% responding	Rank	% responding	Rank
Development communication theory and research	60	1	52	2	14	6	18	4
Management of information systems	55	2	57	1	17	4	15	6
Technical writing and editing	32	3	32	3	53	1	51	1.5
Audiovisual education technology	19	4	24	4	52	2	51	1.5
Journalism	15	5	16	5	14	6	17	5
Agricultural sciences	11	6	10	6	14	6	4	9
Radio and television broadcasting	4	7.5	6	7	9	8	7	8
Printing and production technology	4	7.5	3	8	21	3	29	3
Graphic arts	0		0		6	9	8	7
Total	200		203		200		210	

<sup>a</sup>Each respondent was allowed to give two responses.

The first questionnaires were mailed in early April 1982. A reminder letter was sent 1 week later to all contacts. A second batch of questionnaires, with a modified cover letter, was sent to the contacts who had not returned questionnaires by 29 May. Responses received after 16 August were not included in the analysis. The response rate, based on returns from administrators, was 62%.

As a reward mechanism, each organization that returned completed questionnaires received a complimentary set of eight color maps and booklets: *Agroclimatic and Dry-season Maps of South, Southeast, and East Asia* and *Rice Area by Type of Culture: South, Southeast, and East Asia*.

The data were computerized and statistically treated using the statistical package for social sciences (SPSS). Frequency, percentage, mean, and rank order were used to interpret the data. Kendall's coefficient of concordance was used to analyze mutuality of perceptions of training needs; the Wilcoxon matched-pair sign-rank test was used to analyze information service functions.

## RESULTS

### Need for graduate and undergraduate education

Administrators and information officers indicated that the

**Table 3. Hierarchy of short-term training needs of information services personnel as perceived by administrators and information officers.**

Hierarchy of needs	Rj values <sup>a</sup>
Technical writing	450
Publication editing	469
Audiovisual production	596
Information retrieval	615
Photography	782
Graphic arts	912
Librarianship	981
Printing	1057
Typesetting	1226
Mailing service	1307

<sup>a</sup>Kendall coefficient of concordance  $W = .48$ ,  $\chi^2 = 652.3$   $P < .001$ ,  $Df = 9$ ,  $\chi^2 = 27.88$ .

**Table 4. Number of information service personnel that administrators and information officers, classified by organizations, would like to send for graduate and undergraduate education.**

Number per level	Administrators			Information officers		
	Teaching n = 30 (%)	Research n = 23 (%)	Extension n = 23 (%)	Teaching n = 30 (%)	Research n = 23 (%)	Extension n = 23 (%)
<b>Graduate education</b>						
0	3	8	8	6	4	4
1 to 4	71	80	71	61	84	78
5 to 9	20	8	13	27	4	8
More than 9	6	4	8	6	8	8
<b>Undergraduate education</b>						
0	23	8	8	20	4	13
1 to 4	44	71	57	44	70	66
5 to 9	13	13	13	16	13	13
More than 9	20	8	22	20	13	8

most important fields in which graduate education programs in agricultural communication were needed for professional information specialists were in the development of communication theory and research and management of information systems, followed by technical writing, editing, and audiovisual education technology. For undergraduate education, the greatest needs were in technical writing, editing, and audiovisual technology (Table 2).

*Short-term training needs.* Administrators and information officers felt the most important short-term training needs of their information personnel were in technical writing, followed by publication editing, audiovisual production, and information retrieval (Table 3).

The coefficient of concordance test, used to rank data on short-term training needs, showed agreement among the priorities of the 151 administrators and information officers ( $X^2$  value associated with  $W = .48$  was 652.3  $P < .001$ ).

Lilley (1969), Sheahan (1982), and Mizal (1975) reported that researchers and information specialists felt a need for training in effective writing and information retrieval.

*Number of personnel to be trained.* Most of the administrators and information officers felt that they would like to send one to four of their professional personnel for graduate and undergraduate studies in agricultural communication.

The need for further education was greater for teaching and extension organizations than for research organizations (Table 4). Most respondents felt short-term training courses in information skills were needed by six or more of their personnel (Table 5).

*Sources of funding for training.* Most administrators indicated that they had no funds within their organizations to support the training abroad of professional and technical personnel and that financing for such training would have

**Table 5. Number of information service professionals that administrators and information officers, classified by organization, would send for short-term training.**

No.	Administrators			Information officers		
	Teaching n = 30 (%)	Research n = 23 (%)	Extension n = 23 (%)	Teaching n = 30 (%)	Research n = 23 (%)	Extension n = 23 (%)
0	0	21	0	6	9	9
1 to 6	53	50	25	37	66	38
7 to 12	37	18	45	34	21	28
More than 12	10	11	30	23	4	25

**Table 6. Administrators' perception of the availability of funding sources for training of information professionals abroad.**

Percentage of funds	Administrators' (n = 64) perception (%) of funding sources			
	Within the organization	State government	National government	International agencies
0	58	76	51	34
1 to 10	24	9	16	3
11 to 30	9	6	14	5
31 to 50	6	3	13	9
More than 50	3	5		49

**Table 7. Technical services that administrators and information officers of teaching, research, and extension organizations indicated were offered in-house by information units.<sup>a</sup>**

Technical service	Teaching n = 58 (%)	Research n = 45 (%)	Extension n = 48 (%)	Av (%)
Photography	88	86	94	89
Library	89	93	83	88
Publication editing	83	75	85	81
Technical writing	84	91	69	81
Mailing	76	71	81	76
Audiovisual production	67	49	73	63
Graphic arts	64	60	81	61
Information retrieval	58	51	67	59
Printing	62	28	52	49
Typesetting	40	26	33	34

<sup>a</sup>Each respondent was allowed to give more than one answer.

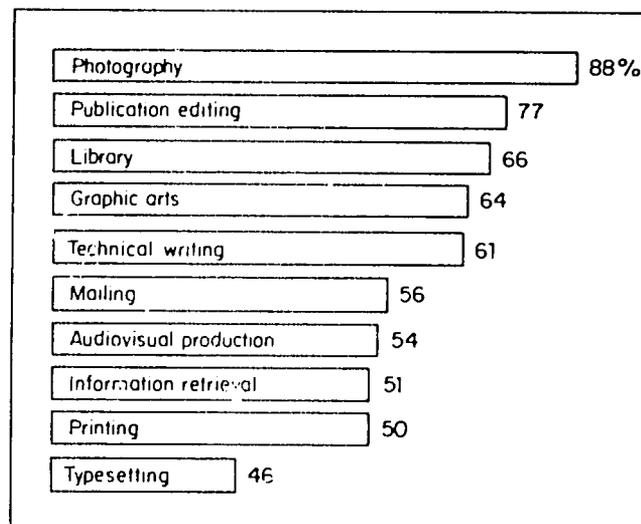
to come from international agencies (Table 6).

### Information services offered

Most information units in teaching and extension organizations provided 9 of 10 technical services in-house (few had in-house typesetting) (Table 7). Research organizations tended to provide fewer in-house technical services. Among all organizations, the most commonly offered technical service was photography, followed by library, publication editing, technical writing, mailing, audiovisual production, graphic arts, and information retrieval. Most organizations contract typesetting and printing to outside agencies.

*Budget allocated to information services.* From 1 to 3% of the total organization budget generally was allocated to information services. In extension organizations, budget allocation to information was greater than it was in research and teaching organizations (Table 8).

Administrators perceived that a higher percentage of the organizational budgets went to information. Information officers of the same organizations felt that the percentage was lower. Perhaps the administrators considered not only the budgets of the information units but also the hidden costs – the portions of other department budgets spent on communication. The information officers, on the other hand, may know only the operating budget. Moreover, administrators know the total budget (which includes overhead, building maintenance, etc), which information



1. Professionals, specialists, and technicians on the staffs of information units.

may not have been considered by, or accessible to, the information officers.

The percentage of the total organizational budget allocated to information services in national programs was about the same as what Barghouti (1979) reported for IARC information units – about 3% of the operating budget.

### Personnel working in information units

Skilled personnel – both professional (editors and writers) and technical (photographers, typesetters, etc.) – are essential for information services to function properly. The information officers indicated that: 88% of the units had personnel working in photography, 77% in publication editing, 66% in the library, 64% in graphic arts, and 61% in technical writing (Fig. 1).

*Current positions and expected increase.* The average number of professional and technical staff in information units was 20 at teaching institutions, 15 in research organizations, and 17 in extension organizations. The information officers expect the positions in their units to increase at least 50% by 1987 (Table 9).

### Time allocated to different audiences

Extension organizations spent 37.5% of their professional

**Table 8. Percentage of organizational budget allocated to information services as perceived by administrators and information officers of teaching, research, and extension organizations.**

Percentage of the budget	Administrators			Information officers		
	Teaching n = 30 (%)	Research n = 23 (%)	Extension n = 23 (%)	Teaching n = 30 (%)	Research n = 23 (%)	Extension n = 23 (%)
1 to 3	71	61	57	80	70	71
4 to 6	6	9	9	10	13	8
7 to 10	17	21	17	6	13	8
More than 10	6	9	17	4	4	13
Total	100	100	100	100	100	100

**Table 9. Increase expected in the total number of positions in information units of different organizations, as perceived by information officers.<sup>a</sup>**

Type of organization	Av no. of positions/unit		Increase (%)
	Current	Expected by 1987	
Teaching	20	32	56
Research	15	27	84
Extension	17	25	50

<sup>a</sup>Average of 30, 23, and 23 respondents from teaching, research, and extension organizations, respectively.

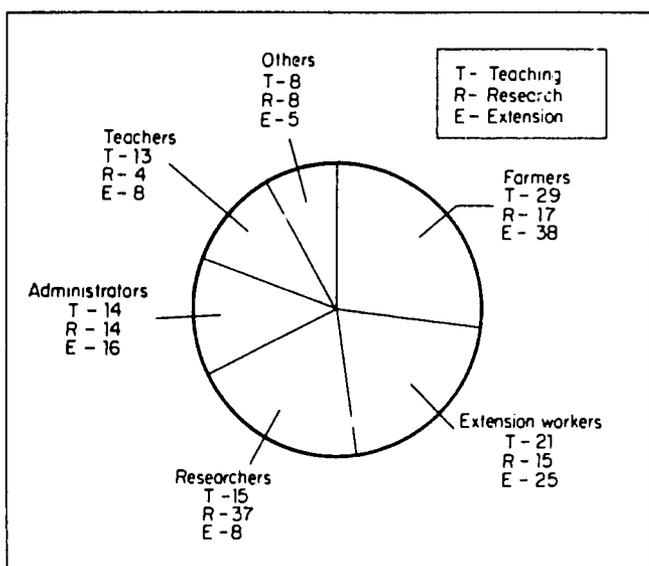
time communicating with farmers, and 25.9% communicating with extension personnel (Fig. 2). Trends in teaching organizations were similar, but information units in re-

search organizations spent more time communicating with researchers (37.4%) than with farmers (16.7%) and extension personnel (14.5%).

Administrators and information officers felt that more time should be spent communicating with farmers than with extension workers, researchers, teachers, and administrators (Fig. 3). Administrators of teaching organizations wanted their information units to increase time spent in support of teaching activities.

**Production of communication media**

From 56 to 86% of the information units of all three categories of organizations produced visual aids (charts, posters, graphs, slides) and written publications, but only a few produced audiovisual materials for self-instruction (slide-tape

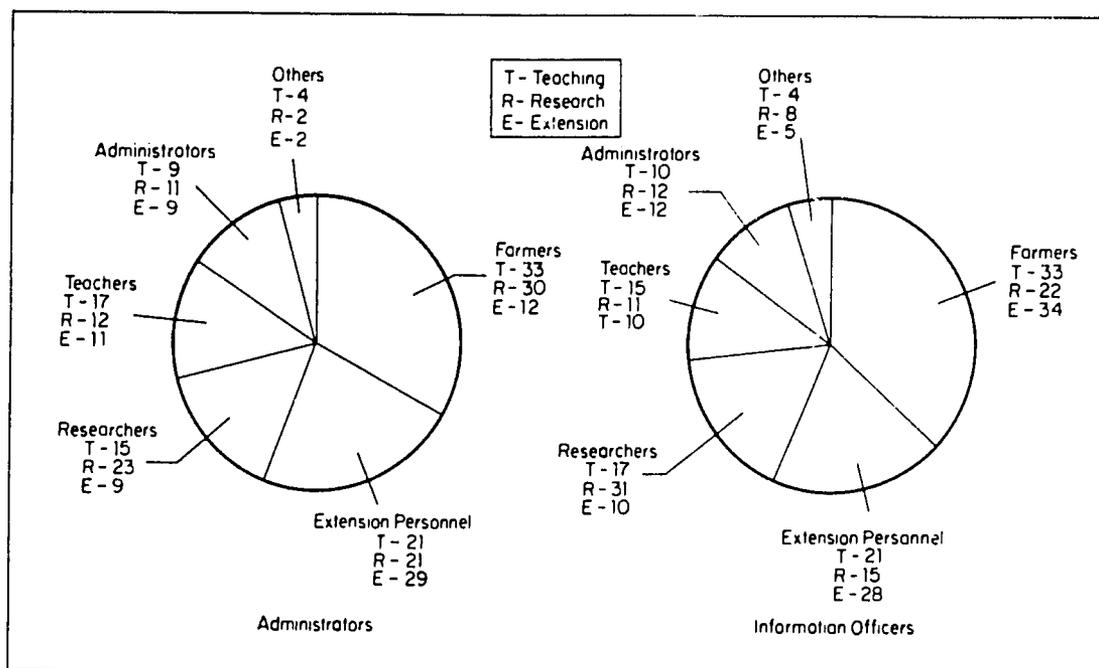


2. Time spent (%) by information officers serving different audiences.

**Table 10. Type of communication media produced by information units according to information officers.<sup>a</sup>**

Type of communication media	Teaching n = 30 (%)	Research n = 23 (%)	Extension n = 23 (%)	Av (%)
Charts, posters, graphs	80	78	86	81
Photographs	73	82	91	81
News releases	80	78	82	80
Slides	66	86	69	73
Radio broadcasts	66	65	91	73
Leaflets	80	52	86	73
Research and technical articles	79	86	39	68
Periodicals	59	74	60	64
Booklets	66	65	56	63
Books	58	43	39	47
Television broadcasts	29	60	52	46
Tape-slide instruction materials	39	17	39	32
Movies	9	30	30	22

<sup>a</sup>Each respondent was allowed to give more than one answer.



3. Time (%) that administrators and information officers feel should be spent by information offices serving different audiences.

**Table 11. Problems of information services as perceived by administrators and information officers of teaching, research, and extension organizations.<sup>a</sup>**

Problem	Teaching n = 58 (%)	Research n = 48 (%)	Extension n = 48 (%)	Av (%)
Lack of adequately trained staff	91	95	83	90
Lack of financial support	89	69	83	81
Lack of equipment	87	84	64	79
Availability of professional staff	76	86	77	79
Lack of in-service training program	62	77	66	68
Low government priority	52	24	52	44
Bureaucracy and red tape	39	26	56	41
Lack of coordination between information service sections	34	33	31	33
Lack of support from administrators	31	31	35	32
Lack of demand from teachers, scientists, and extension workers	32	17	16	21
Lack of response from farming community	8	13	14	11

<sup>a</sup>Each respondent was allowed to give more than one answer.

**Table 12. Perception by administrators and information officers of information functions performed by their organizations.<sup>a</sup>**

Information function	Teaching n = 66 (%)	Research n = 46 (%)	Extension n = 41 (%)	Av (%)
1. Edit scientific and technical publications	75	95	58	77
2. Review and interpret agricultural research and rewrite to a level understandable to subject matter specialists, extension workers	72	71	72	72
3. Gather, store, and disseminate agricultural research findings	69	76	73	72
4. Report current research results through newsletters	69	76	63	70
5. Produce programs on agricultural technology for radio broadcasting	65	67	70	67
6. Identify information needs for farmers and extension agents	65	58	68	64
7. Publish farm magazines and other periodicals	71	59	56	63
8. Publish research journals	80	69	21	61
9. Process and reproduce visual aids required by teachers, researchers, and extension agents	60	59	63	60
10. Organize a mailing service by collecting addresses of target audiences	63	69	46	60
11. Participate in the policy formulation of the organization	54	71	48	58
12. Evaluate and advise agricultural technology for the use of extension workers and farmers	68	56	41	57
13. Act as liaison between government and private agencies in agriculture	54	63	49	55
14. Train information specialists through short-term courses	62	54	36	53
15. Process and design publication materials for the use of donor agencies and policy makers	54	56	49	53
16. Provide guidance in formulation of extension programs	59	49	41	50
17. Conduct evaluation of extension programs	59	46	36	48
18. Design agriculture information campaigns	47	41	53	47
19. Process tape-slide and written self-instruction materials on agricultural technology	43	47	46	45

Continued on opposite page

Table 12 continued

Information function	Teaching n = 66 (%)	Research n = 46 (%)	Extension n = 41 (%)	Av (%)
20. Maintain a printing press for printing technical books, research journals, farm magazines, and other periodicals	53	28	41	42
21. Organize undergraduate and graduate teaching in agricultural information communication	59	21	9	34
22. Develop television programs on agricultural technology	33	34	29	32
23. Produce movie films on agricultural technology	15	35	38	27

<sup>a</sup>Each respondent was allowed to give more than one answer.

sets) and films. Eighty-six percent of the research organizations processed research and technical articles vs 79% for the teaching and 39% for the extension organizations. Teaching organizations published more technical books (Table 10).

#### Problems in organizing information services

Ninety percent of the respondents indicated that a lack of adequately trained staff was a major constraint to their information programs (Table 11). Other major constraints included inadequate financial support (81%), lack of equipment (79%), unavailability of professional staff (79%), and lack of in-service training (68%). Teaching and extension organizations tended to consider "low government priorities for communications activities" a problem, and 56% of the extension organizations indicated "bureaucracy and red tape" as a hindrance.

#### Information functions offered

Most of the respondents – whether they had formal information units or not – indicated that their organizations offered 18 of the 23 information functions listed in the questionnaire. Teaching and research organizations provided more information functions than extension organizations (Table 12).

A comparative analysis of the opinions of administrators and information officers showed that both felt that information units should perform all the 23 functions. Similarly, when tested for mutuality of perception of the functions, the opinions of administrators and information officers from the same organizations seldom differed significantly.

#### Demographic data

Of the administrators surveyed, 86% were more than 40 years old. Most had a Ph D in agricultural sciences from another country, had more than 20 years experience in agricultural development, and belonged to more than 2 professional organizations (Table 13).

Half of the information officers were more than 40 years old. Twenty-six percent had the Ph D degree, and

Table 13. Personal characteristics of respondents.

Personal characteristic	Administrators n = 126 (%)	Information officers n = 76 (%)
Age		
Above 50	46	14
40 to 50	40	36
30 to 40	11	39
20 to 30	3	11
Total	100	100
Education		
Diploma	2	9
BS	20	23
MS	26	42
Ph D	52	26
Total	100	100
Major study		
Agric. Communication	1	18
Agric. Extension	11	23
Agric. Sciences	76	24
Communication Arts	0	10
General Arts and Sciences	12	25
Total	100	100
Place of graduation		
Outside the country	53	22
Within the country	47	78
Total	100	100
Organizational membership		
Above 6	15	0
5 to 6	9	0
3 to 4	19	22
1 to 2	35	39
No membership	22	39
Total	100	100
Training		
Communication		25
Agric. subject matter		1
Both		6
No training		68
Total		100
Length of experience		
Above 20 years	56	25
15 to 20	16	31
10 to 14	10	16
9 to 5	12	18
Below 5	6	10
Total	100	100

42% had the MS degree. Only 18% indicated they had specialized in agricultural communication and 23% in extension. Most information officers were educated in their own countries and had no training in information skills or information unit management. Their experience in agricultural development varied from 5 to 20 years. Thirty-nine percent did not belong to any professional organization.

#### CONCLUSIONS AND RECOMMENDATIONS

This study supports the observations of other researchers that degree-oriented and short-term training in agricultural communication are urgently needed in Asia.

Opportunities for such training are scarce. There are no easy or simple solutions to these problems, but they must be faced.

For the long-term development of professional systems of agricultural communication in Asia, the authors suggest that Asian educational institutions consider offering undergraduate degrees in agricultural journalism. The course work could be similar to that required by U.S. land grant universities, where students must complete all agricultural

courses required for a general agriculture degree (such as for a degree in agricultural economics or education) plus all journalism courses required for a journalism degree. Journalism courses should stress technical writing and editing, and audiovisual education technology.

The problem is complicated because, outside of the USA, journalism (not to mention agricultural journalism) often is not regarded as a profession that merits university study. Few Asian or European universities offer undergraduate course work in practical communication skills (i.e. writing concisely and clearly; condensing 100 words to 60 words without changing the meaning; structuring an article so that the most important elements are in the first paragraph, the second most important elements in the next, etc.).

We suggest that an international agency organize a team of agricultural communication and education specialists to study the problem and recommend a strategy to fill the vacuum of agricultural journalism in Asia. A short-term (4- to 6-mo) training course in agricultural communication might be considered for immediate alleviation of the problem.

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