

Documentation and Dissemination of Agricultural Research Results in Tanzania: Avenues and Challenges

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Abstract

A study was conducted to find out the volume of documented vis a vis generated agricultural research information over a 10-year period and to identify existing avenues for disseminating generated research information to the target population. A questionnaire survey was conducted between December 1996 and February 1998, supplemented with interviews and inspection of records covering agricultural research institutions in all seven agricultural zones in Tanzania. A total of 750 questionnaires were administered and 412 research titles were analyzed. Results indicate that research is being conducted on almost all the major food and cash crops, various types of livestock and other agricultural studies. Eighty-three percent of information generated is documented as annual or progress reports, 29% in conference proceedings and 9% in newsletters, pamphlets and leaflets. About 12% of generated information is documented as journal articles. All other avenues including dissertations, technical reports and coordinating meetings, account for 34% of the documented information. Further, the study revealed that progress reports, which account for largest avenue of documentation, have the most restricted circulation list. It is apparent therefore that the bulk of the research results do not reach a wide circulation. It is further observed that the choice of appropriate dissemination avenue is crucial for success and effectiveness of agricultural research. Also, the funding agency's requirements and the presence of appropriate motivation structure facilitates publication in avenues that have the widest circulation. In this context, researchers too have a clear role to play in facilitating documentation and dissemination of research findings not only by documenting their findings but also through documenting them in avenues with wider circulation.

Key words: Agricultural information, Agricultural research, Dissemination, Documentation avenues, Tanzania.

Introduction

Agriculture is the leading economic sector in the country. It accounts for about 50% of the GDP, over 80% of the recorded export earnings and provides employment to about 90% of the population (MAC, 1996). In the course of promoting sustainable agricultural production, research in agriculture bears the challenge to improve and sustain food security, income generation, employment growth and export enhancement (MAC, 1997) while also maintaining or enhancing the quality of the en-

vironment. Therefore, among the services of the Ministry of Agriculture and Cooperatives (MAC), research activities have been given a priority so that they have an impact to the country's economic development. As a result, the country has a research network comprising of 15 major institutes and eight centres spread over seven zones throughout the country (MAC 1996). Despite a fairly large research network, the impact of the research activities on agricultural development has been far from satisfactory (Wambura, 1988; MAC, 1996). Many fac-

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tors are responsible for this unfortunate state, amongst which is the extensively cited poor research-extension-farmer linkages (ISNAR, 1989; MALDC, 1991; Dahniya, 1993; Nickel, 1997). Poor linkage between researchers, extension and farmers limits the flow of information generated by researchers to farmers and other stakeholders.

Efforts for improving the information flow is also hindered among other things by poor inter-institutional linkage thus researchers themselves particularly those in remote centres are kept less informed of new developments in their fields of study. Not only that, but also, it has been observed that there is a gap with respect to the role that researchers play in making their research results widely accessible by respective end users (Lynam, 1981; Mchombu, 1985; van den Ban, 1990).

The MAC has taken several initiatives towards delivering effective research services through effective dissemination of information. Such initiatives include formation of research co-ordinating committees and consequent meetings where researchers, extension staff and farmers exchange and discuss research findings (Ringia, 1993). In another initiative, Tanzania through the Ministry of Agriculture, Livestock Development and Cooperatives (MALDC) joined CARIS (Current Agricultural Research Information System) so that the country's agricultural research activities are known worldwide (MALDC, 1990). Also, in 1988, the MALDC, in collaboration with the Special Programme for African Agricultural Research (SPAAR) compiled the Tanzania Agricultural Research Database (TARD) containing information on agricultural research in Tanzania from 1900 to 1988 (Kaaya, 1999). The MAC considers the information and documentation services as an essential support of the ministry, and currently it has plans to network Information System through expanding and maintaining the MAC Information System and establishing Rural Information Centres (RIC) (Kaaya, 1999).

This study therefore, examines the activities of agricultural researchers in the generation, documentation and dissemination of their research results, with the purpose of assessing the magnitude of the problem of poor documentation of research results in Tanzania and propose

additional ways for improving the flow of information and effectiveness of agricultural research.

Methodology

Questionnaire Survey

A total of 750 questionnaires were administered to selected researchers in all the seven agricultural research zones, namely Eastern, Central, Northern, Lake, Western, Southern and Southern Highlands. The questionnaires were structured to capture information pertaining to the number and types of research projects undertaken, objectives of the research, modality of documentation of research findings for purposes of dissemination and any other form of reporting. Other aspects covered by the questionnaire were the sources of funding for the research projects, the role of funding agencies and personal influences in choosing avenues for documentation and dissemination of the research results.

A total of 33 research institutes were involved, at least one from each zone. This included all zonal research centres. The Sokoine University of Agriculture (SUA) was also included as one the research institutes. A total of 230 individual researchers participated in the survey. The survey focused on activities and information generated over a ten-year period lasting from 1985 to 1995.

Informal Interviews

Visits were made to six research institutes between February 1997 and March 1998 where informal interviews/discussions were conducted with the respective in-charge of the institute. Topics of the interview included the history of the research centre, achievements in terms of number of research projects undertaken and completed, and the documented results. Other aspects of interview included the mailing list for their reports, material exchange opportunities with other agricultural research units/libraries in the country as well as progress made on collection building and retrievability of items from the built collections.

Survey of written records

A limited survey of research project registers and mailing lists used over the years were consulted with the objective of complementing information obtained from the interviews.

Results and Discussion

Out of the 750 questionnaires distributed, 432 were returned for analysis, thus giving a response rate of 58%. The questionnaires returned presented a total of 412 research titles carried out in 33 research institutes. Different numbers of questionnaires were received from institutes in each of the seven agricultural research zones. The 412 research titles consisted of 250 (61%) of completed ones, 139 (34%) ongoing, and 23 (5%) were titles that had either been terminated or abandoned before arriving at the planned target, mostly due to funding problems. The average duration for each research project was 3.5 years. Altogether the analysed titles covered a total of 72 broad research subjects.

Results indicate existence of research activities in almost all the major food and cash crops as well as horticultural crops (Table 1). There was also a clear indication of research activities being conducted on various aspects related to livestock. However, there was no single activity recorded that indicated involvement in floricultural research.

A relative distribution of documentation of research results in various avenues for selected

research items is detailed in Table 2. It is apparent that about 3% of the titles have been left

undocumented whereas as much as 97% of the research findings have been documented in various avenues. A number of factors have been cited as limiting the extent and avenues in documentation and dissemination of agricultural research results in Tanzania as highlighted in Table 3.

These results indicate that as much as 83% of the agricultural research results are documented in form of institutionalized annual reports, 29% in conference proceedings (CP), and 9% as pamphlets (PL), newsletters (NL), and leaflets (LL). Only 12% are documented as journal articles. Other types of documentation avenues like technical reports, co-ordinating meetings and dissertations together account for as much as 34% (Table 2).

The study revealed that as much as 81% of the research results documented as journal articles emanated exclusively from foreign funded projects. Locally funded projects (the government, parastatal organisations and NGOs), contribute only 15% of the results published in journals, of which 4% are from research projects financed by the government in collaboration with foreign donors (Table 4). On counting research titles whose results were documented as progress reports, and not in any other avenue, it was found that 85% of them were locally funded. Further, 78% of the 23 terminated/abandoned projects titles, were exclusively locally funded while the remaining 22% were collaborative projects funded jointly by local agencies and foreign donors (Table 5). Half

Table 1: Frequency distribution of various research items in the investigated institutions

Research item	Number of research titles
1. Rice	40
2. Animals health	40
3. Maize	28
4. Beans	27
5. Animal Production	26
6. Coffee	26
7. Fertilisers	22
8. Cashew nuts	21
9. Soils	16
10. Farming Systems	16
11. Forestry	16
12. Pests	14
13. Coconut	12
14. Fishery	12
15. All others	96
Total	412

Table 2: Relative distribution of documentation of research results by various avenues for selected research items in the 412 research titles

Item	Reports	CP	Journals	PL/NL/LL	Others	Undocumented
1. Animal Health	21	12	10	1	2	1
2. Animal Production	9	6	3	0	2	2
3. Banana	5	2	0	1	2	1
4. Beans	13	9	2	1	2	0
5. Cassava	6	1	2	1	4	0
6. Coconut/Cashew	43	18	4	7	12	0
7. Coffee	20	6	1	0	3	0
8. Farming Systems	18	11	5	1	4	1
9. Fertilisers	19	4	0	1	6	0
10. Maize	17	12	2	1	5	2
11. Peas/Green gram	11	0	0	1	5	0
12. Rice	35	9	2	1	2	3
13. Soil	8	1	5	1	3	0
14. Sorghum/Millet	11	4	1	0	5	0
15. Wheat/Barley	8	4	3	2	1	0
16. Other Items	105	19	7	17	82	2
Total	341	118	48	36	140	12
Percentage	83	29	12	9	34	3

CP = Conference proceedings; PL/NL/LL = Pamphlets/Newsletter/Leaflets respectively.

Note:

The total of actual counts exceeds the 412 titles on which the results are based due to the fact that results from some of the titles have been documented in more than one avenue.

Table 3: Factors affecting documentation and dissemination of agricultural research information in Tanzania as cited by 97 researchers

Problem	Number of researchers
1. Poor or non-documentation	15
2. Non-dissemination	14
3. Lack of co-ordination/network	11
4. Poor accessibility	10
5. Poor funding	9
6. Poor communication; institute-institute-extension linkage	7
7. Lack of Agricultural research information database	6
8. Lack of centralization of research reports	5
9. All other (e.g. Poor incentives/motivation, absence of local journals; poor retrievability).	20
Total	97

Table 4: Relationship between source of funding and avenues of documentation of agricultural research results

Source of funding	Actual counts on articles in different avenues of documentation			% of results documented as journal articles
	Journals	CP	Reports	
Foreign	39	98	10	81
Local	7	9	290	15
Collaborative	2	11	41	4
Total	48	118	341	100

CP = Conference proceedings

of the 12% of the results published as journal articles emanated from the university (SUA).

It was also revealed that the annual and terminal reports were in many cases late and sometimes incomplete and distributed in limited

Table 5: Breakdown of projects terminated before completion with respect to source of funds

Source of funding	Projects terminated before completion	
	Actual count	Percentage
Foreign	0	0
Local	18	78
Collaborative	5	22
Total	23	100

circulation. Further, mailing lists of these reports at the research institutes appeared to focus on external/foreign funding agencies, the sister research institutes and ministry headquarters. Nonetheless, there were incidences where even this limited mailing could not be accomplished due to lack of funds. It was also noted that there is no clearly set procedure for inter-library exchange of documents. Consequently, for one to access even few copies has to travel to the libraries/institutes holding them, which in most cases, are at the MAC and zonal headquarters. The finding on the problems of availability of reports is similar to the previously reported findings by van den Ban, 1990; Keregero, 1991; MALDC, 1991; ISNAR, 1991 and 1995).

This study has established that the most commonly used avenues for documentation and dissemination of research results in most of the institutions are various reports such as progress, annual and occasionally terminal project reports. However, at Sokoine University of Agriculture (SUA), such reports were in most cases an addition to articles published in journals and conference proceedings. It is noted that this mode of documentation is less amenable for dissemination to end users for a number of financial and logistical reasons. Not only that, but reports are difficult to retrieve particularly in non-computerised systems. In such a situation, agricultural research just like any other scientific research not only does it lose its validity, justification and effectiveness but also culminates in a waste of resources and opportunities (Bourne, 1974; Lynam, 1981; Ibrahim, 1992; Hobbs *et al.*, 1998).

It must be conceded that these reports being the major record of the bulk of research undertakings in the country are bound to continue to be relied upon. Consequently, a need emerges for a system that will ensure a much wider circulation of the reports as well as standardisation

of the format of their presentation. Fortunately in this age of information technology, such a wider circulation of reports can be facilitated by electronic communications, a technology that is rapidly being adopted by many institutions in the country.

Nonetheless, report system should not be encouraged as an end in itself or as a substitute to publication in journals because the report system by its nature does not provide for peer evaluation of the documented material. In this respect reports can not be regarded as authoritative as are journal articles on the subject matter of concern.

Conferences, workshops and seminars have been used for 29% of the research titles. This is second to the institutionalised reports. According to interviewed researchers, it appears that participation in such conferences could be improved with availability of sponsorship funds.

The observation that only 12% of the research titles were published in primary journals is a matter of concern. Some have attributed this to absence of local journals as an outlet for their work. Consequently the existence of journals at the various faculties at universities and by professional associations is an effort that deserves support for this purpose. A further observation that as much as 81% of the results published in journals were a product of projects funded by external donors, in a situation where almost all locally funded projects had their results documented mostly as institutional reports, is also a matter of great concern.

One may argue that inconclusive research findings or research results that are not of general interest could be responsible for under utilisation of journals as an avenue of documentation and dissemination. However, it is probably pertinent to consider the effect of presence or absence of an appropriate motivation as a central feature in encouraging effective dissemination

tion of research results. Poor motivational or incentive structure for instance, although mentioned by only a few researchers as a factor affecting dissemination of research results (Table 3), it would seem that the "publish or perish" syndrome which has a motivational role in academic institutions, has had the desired effect on researchers at the university.

The value of pamphlets, newsletters, and leaflets in research results dissemination is well acknowledged (van den Ban, 1990). However, this study shows that this avenue is among the least used. Nonetheless, the effectiveness of this avenue would be similarly undermined by bottlenecks in circulation and retrievability.

This study has only focused on formal documentation and dissemination avenues; however, during the course of this study the role of informal channels such as professional group discussions has been felt. Therefore a sociometric analysis of researchers' contacts with their peers would also be useful in assessing its position in complementing the formal avenues of documentation and dissemination.

Conclusion

The choice of the avenue of documentation between the report system and publication in refereed journal is probably motivation driven. It is essential therefore that motivational factors that would encourage researchers to publish their findings in avenues with widest dissemination are built within the policies of the research institutions and the funding agencies.

The reports system (grey literature) is still the major means of documenting research results in Tanzania. This poses serious limitations in dissemination and retrieval of research information. It is therefore recommended that efforts be made to encourage adoption of Information and Communication Technology (ICT) in all major agricultural institutions in order to facilitate networking of the libraries in Tanzania for enhanced dissemination and retrieval of agricultural research results. In this endeavor, in-house databases for agricultural research information should be compiled, updated and maintained. Further, a system of Inter-Library Loan (ILL) and exchange of materials both hard copies and electronic copies should be revived and

strengthened to facilitate collaboration between institutions.

In this respect, institutional reports, which remain to be a major avenue of documentation, should be earmarked for mandatory availability to all agricultural research and academic libraries in the country.

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