

AGRICULTURAL RESEARCHERS AND EXTENSION WORKERS' INFORMATION NEEDS AND CHALLENGES IN ZIMBABWE: PRELIMINARY RESULTS OF A PILOT STUDY

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ABSTRACT

Agriculture plays an important role in the economies of many developing countries, contributing considerably to the Gross Domestic Product (GDP), labour and exports. In Zimbabwe, agriculture provides an income to 75 per cent of the country's population. The role of researchers and extension workers is thus important in this process. This article reports on a pilot study that examined the information needs and challenges of veterinary researchers in Zimbabwe. Purposive sampling was used to identify and select respondents around Harare. Although Mashonaland Central and Mashonaland East were initially selected, the study was able to capture respondents from across other provinces and districts from part-time students attending Mazowe Veterinary School. A questionnaire was used to collect data, most of which was analysed using the Statistical Package for Social Sciences (SPSS). The study revealed that there were varying information needs among the respondents, with the need for information on animal health and production being the lowest, despite the majority of respondents being veterinary extension workers. Lack of resources – especially transport and information sources – was cited as a factor affecting research and extension services. The study also showed that there was poor dissemination of agricultural information between researchers and extension workers and the farmers, and this was done through various channels, traditional and modern information and communications technologies (ICTs).

KEYWORDS

agriculture, extension, information communications technologies in agriculture, information services, research, veterinary services

1 INTRODUCTION

Agriculture can be broadly defined as the industry engaged in the production of plants and animals for sustenance; the provision of agricultural supplies and services; and the processing, marketing, and distribution of agricultural products (Burton 2010:6; Herren & Donahue 1991:10). Specific disciplines within the study of agriculture include crop science, soil science, agricultural economics, agricultural extension, agricultural education, agro-forestry and agricultural engineering and related areas. Agriculture plays an important role in the economies of many developing countries, contributing significantly to their Gross Domestic Product (GDP), labour force, and exports (Stamoulis 2001). In 2007, agriculture accounted for more than 30 per cent of the GDP and 60 per cent of the total employment in sub-Saharan Africa, excluding South Africa (World Bank 2007).

Advancements in agricultural technologies through research have had a significant impact on agricultural systems and food production. Scientific advances and technological innovations, including the development of new plant varieties through gene modifications, have seen new crop varieties which can be grown all year round (Gliessman 2007:3). Livestock research has also witnessed similar developments. These developments have also had an impact on agro-processing and agribusiness practice through trade liberalisation.

According to Ojiambo (in Kiplang'at 2004:2), agricultural technology transfer depends on a holistic agricultural information system that consists of a research subsystem, an extension subsystem, a farmers' subsystem, and an information subsystem. Agricultural research can be broadly defined as an activity aimed at improving the production and quality of crops and animals through their genetic improvement, better plant protection, irrigation, efficient marketing, and the improved management of resources (Loebenstein & Thottappilly 2007:3). Public and private research institutes play a complementary role in this respect, although poor funding tends to affect their performance, especially in developing economies.

Until 2000, agriculture was the dominant sector in Zimbabwe's economy, contributing 15–20 per cent of the GDP and providing an income to over 75 per cent of the population (Muir-Leresche 2006:99). However, the GDP contribution dropped from 23.7 per cent in 1999 to 14.6 per cent in 2003, a decline attributed to the reduction of the total area planted, and in relation to the type of crop (Moyo 2004). Through various local and external initiatives, the government of Zimbabwe is currently implementing an agrarian reform programme which has had a significant impact on both food production and

poverty alleviation. According to Mudhara (2004:61), the ability of Zimbabwe to improve the contribution of agriculture to the country's GDP lies in the ability of A1¹ and A2² farmers to bring the productivity of land to levels achieved before the land reform or even improve upon the levels previously attained by large-scale commercial farmers (LSCF).

The land question in Zimbabwe can be observed from a historical vantage point, beginning with the colonial period (pre-1980) when it was used as a strategy to empower white settlers at the expense of indigenous black communities. During this period, commercial agriculture dominated the country's economy, generating 75 per cent of the total agricultural output, 96 per cent of total agricultural sales, and a quarter of a million agricultural jobs (Masiwa & Chipungu 2004; Marongwe 2004). The post-independence era, from 1980 onwards, was divided into two phases. The first phase of the land reform and resettlement programme began during independence in 1980 which saw people being moved to former white-owned commercial farms. The second phase of the land reform and resettlement programme was launched in 1999, but was subsequently overtaken by the farm invasions which followed the rejection of the constitutional referendum. This period saw the displacement of more than 4 000 commercial farmers. According to Masiwa and Chipungu (2004:21), a total of 134 452 new farmers had been resettled by 2004. These numbers have a lot of implications for agricultural research and consequently agricultural extension in the country.

Agricultural research is undertaken in both public and private institutions and across the five natural regions of Zimbabwe. Agricultural libraries and information centres can be found in universities, colleges, the Ministry of Agriculture, Mechanization and Irrigation Development, and its related research institutes and colleges. This article is based on the results of a pilot study on the information needs and challenges of agricultural researchers and extension workers in Zimbabwe. The study looked at the researchers and extension workers falling under the Department of Veterinary and Livestock Services and colleges of the Ministry of Agriculture. The pilot study examined the role played by extension workers as intermediaries between researchers and farmers in the provision of agricultural information. This also involved examining their information needs and information seeking behaviour; the nature and types of information sought; the linkage or interaction with farmers; and collaboration with other stakeholders, both nationally and internationally.

2 PURPOSE OF THE STUDY

The purpose of the study was to investigate the information needs and challenges of agricultural researchers and extension workers in Zimbabwe. The pilot study sought to test the validity and reliability of the survey instruments by focusing on the Department of Veterinary and Livestock Services. The main study focused on researchers and

extension workers nationally, including all the research institutes under the Ministry of Agriculture. The pilot study addressed the following:

- information needs and information seeking;
- interaction between researchers and extension workers;
- impact of the land reform programme on agricultural research and extension;
- communicating agricultural information to farmers;
- library collections and services;
- access to and utilisation of information and communications technologies (ICTs);
- indigenous knowledge systems in agricultural research and extension;
- research and extension collaboration;
- knowledge gaps, constraints and recommendations.

3 PROBLEM STATEMENT

Agricultural extension plays an important role in this technology transfer process. The agricultural extension system in Zimbabwe is experiencing challenges largely to do with staffing and inadequate access to information by extension staff in dealing with farmers' information needs. Other challenges include lack of preparedness by extension workers to deal with challenges on the ground and poor access to information. Faced with these challenges, the current study sought to analyse agricultural information dissemination through research and extension and to suggest solutions for better access and utilisation.

4 LITERATURE REVIEW

Ojiambo (in Kiplang'at 2004:2) observes that agricultural technology transfer depends on a holistic agricultural information system that comprises a research subsystem, the extension subsystem, farmers' subsystem and information subsystem. Agricultural research can be broadly defined as 'an activity aimed at improving productivity and quality of crops and animals through their genetic improvement, better plant protection, irrigation, efficient marketing and better management of resources' (Loebenstein & Thottappilly 2007:3). Agricultural extension, 'involves the transfer of agricultural information and technology to the farmers and similarly transferring information from farmers to researchers' (Pazvakavambwa & Hakutangwi 2006:217). Umali-Deininger and Schwartz (1994:1) argue that the backbone of all agricultural extension endeavours is the transfer of agricultural information to enhance the productive capacity of farmers. Public and private research institutes play a complementary role in this respect, although poor funding tends to affect their performance, especially in developing economies.

Various studies have been carried out on agricultural knowledge and information systems in Africa, for example: Mwala (1997), Dulle (2001) and Ekpenyong (2001) focused on the role of libraries; Aina (1990), Kaniki (1992), Van den Ban (1999), Majid and Eisenschitz (2000), Meyer and Boon (2003), and Stefano (2005) focused on the information needs of farmers and researchers; Rees (2000), Rivera (2000) and Mchombu (2001) looked at agricultural information sources; and Kiplang'at (2004) and Enakrire (2007) focused on the role of ICTs. Other studies have focused on agricultural knowledge and information systems at geographical level, for example: Rees (2000) looked at agricultural knowledge and information systems in Kenya; Obaa (2005) looked at agricultural knowledge and information systems in Uganda; and Ozcatalbas, Brumfield and Ozkan (2004) looked at agricultural knowledge and information systems in Turkey. Wesseller and Brinkman (2003) looked at bridging information gaps between farmers, policy makers, researchers and development agents, and identified the information needs of each group. Studies on mobile telephone usage have recently been demonstrated in Mittal, Gandhi and Tripathi (2010), and Dey, Newman and Prendergast (2011), among others.

5 THEORETICAL FRAMEWORK OF THE STUDY

Fatima and Ahmad (2008:141) conceptualise information seeking behaviour as a broad term that encapsulates a set of actions that an individual takes to express his/her information needs; seek information; evaluate and select information; and finally use this information to satisfy his/her information needs. Individuals seek information either because of a given task at hand or simply to quench their curiosity and this has been aptly reviewed in studies by Belkin (1980:135), Derr (1983:273), Vickery and Vickery (1992:17), Choo, Detlor and Turnbull (2000), Rosenfeld and Morville (2002:28), Chowdhury (2004:194), and Ikoja-Odongo and Mostert (2006:147), among others. These information needs can vary widely, and each type of information need causes users to exhibit specific information seeking behaviour (Case 2007:5; Hjørland 1997:159; Kaniki 2003; Kuhlthau 1991:361; Rosenfeld & Morville 2002:28; Wilson 2006).

The study utilised Wilson's Model of Information Behaviour (hereafter 1996 model) as a framework for the study. According to Wilson (1997:552), an analysis of literature on information seeking behaviour must be based on some general model of what might be called 'information behaviour'. Wilson's 1996 model is a variation of his 1981 model that aims to show the various stages that occur in information seeking behaviour. Wilson (1999:251) posits that information seeking behaviour begins with a need as perceived by the user, who in order to satisfy that need, makes demands on either formal and/or informal information sources or services which ultimately result in either success or failure to find relevant information.

6 METHODOLOGY

Leedy and Ormrod (2010:6) explain that the basic framework underlying and unifying any research project is its methodology. The current study used a questionnaire-based survey to collect quantitative and qualitative data. Leedy and Ormrod (2010:95) and Devlin (2006) expound that qualitative research involves looking at characteristics or qualities that cannot be easily reduced to numerical values. Quantitative research is concerned with things that can be counted, and one of its principal characteristics is the use of statistics to process and explain data and to summarise findings (Fox and Bayat 2007:7). According to Neuman (2011:220), Leedy and Ormrod (2010:211–213), Panneerselvam (2004:200), and Taylor, Sinha and Ghoshal (2006:48), purposive or judgemental sampling is a non-probability sampling technique in which the researcher uses a wide range of methods to locate all possible cases of a highly specific and difficult to reach population. Purposive sampling was used to identify and select respondents (researchers and extension workers) around Harare in order to minimise costs without compromising the sample. Simple random sampling was then applied for each category of respondents. The target population consisted of agricultural researchers and extension workers within the public sector falling under the Department of Veterinary and Livestock Services of the Ministry of Agriculture, Mechanisation and Irrigation Development (MoAMID). Mashonaland Central and Mashonaland East were initially selected, but the study was able to capture respondents from across other provinces and districts who were attending an advanced veterinary course at Mazowe Veterinary College. The questionnaires were distributed to veterinary extension workers through provincial and district offices and training colleges where some extension officers were attending extended courses. A total of 30 questionnaires were distributed and 23 were returned – a response rate of 76.6 per cent. The data was analysed using the Statistical Package of Social Sciences (SPSS) and content analysis was used for the open-ended questions. Permission was sought from the Director of the Veterinary Services Division before the questionnaires were distributed.

The researchers utilised Wilson's 1996 model as a framework for the study.

7 RESULTS

7.1 BACKGROUND INFORMATION

The respondents were drawn from the Veterinary Services Division, including those studying at the Mazowe Veterinary College and Kushinga-Phikelela Agricultural College. They represented five provinces, namely: Mashonaland Central (35%); Mashonaland East (39%); Mashonaland West (18%); Masvingo (4%); and Matebeleland North (4%). A total of nine districts were represented in the study, covering agro-ecological regions II to V. The total number of respondents came to 23. When asked to indicate their work experience, 61 per cent of the respondents indicated 1–5 years' work experience,

followed by 30 per cent with 6–10 years' work experience. In terms of the number of years in their current positions, the majority (78%) had between 1–5 years' experience. In terms of qualifications, 44 per cent were certificate holders, 30 per cent had college diplomas, and 22 per cent had a university degree. With regard to age and gender, 78 per cent of the respondents were between 20–39 years, and only 22 per cent were female.

7.2 INFORMATION NEEDS AND INFORMATION SEEKING

This section sought to assess the respondents' information needs and seeking patterns by addressing the following: (1) Information requirements and type; (2) Interaction between researchers and extension workers; (3) Impact of the land reform programme on agricultural research and extension; (4) Communicating agricultural information to farmers; and (5) Library collections and services.

7.2.1 Information requirements and type

The respondents indicated that the least sought information for agricultural research and extension services was information on animal health (9%), animal breeding (32%), and dairy farming (32%). These results were ironic given that the sample population was mostly from the Veterinary Services Division. The most sought information fell in the categories of crop protection (86%), horticulture (86%), and tobacco (82%). The other categories were cited by 50 per cent to 77 per cent of the respondents, an indication that information in those areas was considered important for work and other related purposes. When asked to indicate the reasons for seeking information, 100 per cent of the extension workers indicated that they sought information when assisting farmers, while 100 per cent of the researchers (at Kushinga-Phikelela Agricultural College) indicated doing so when conducting research.

When the respondents were asked to indicate which sources they consulted first when in need of information, in the extension workers category, 22 per cent indicated that they consulted the departmental collection first, followed by the Internet (17%) and then the library, colleagues, and personal collection with 11 per cent each. Among researchers, personal collection and departmental collection were consulted first. In terms of preference of sources, 67 per cent of the respondents opted for print sources, while 33 per cent indicated electronic sources — 28 per cent of the latter were extension workers. When asked to indicate the frequency of use of different information sources, the respondents indicated that they sometimes consulted the following: newsletters (50%), journal articles (11%), research reports (44%), and library catalogues, pamphlets and leaflets (39%). Other sources, like books, workshops and meetings, technical reports and discussions with colleagues, were cited by 28 per cent each. Citations at the end of journal articles, browsing through older volumes, and requesting assistance from library staff were considered as sources of awareness of less recent books by 71 per cent of

the respondents. However, the respondents could only provide three titles of journals they frequently used, including *The New Farmer*, which is a local publication, and *The Veterinary Record*.

The issue of gender and agriculture was also raised in the study, with 52 per cent of the respondents indicating that the information needs of women were being adequately addressed in the current research-extension setup. In order to reduce the disparities, 48 per cent of the respondents suggested that women should be treated as equal partners to men in agriculture by offering them land and ownership. They also suggested that women should be represented through associations and that there was a need to recruit more female extension workers. As indicated in 7.1 above, only 22 per cent of the respondents were female.

7.2.2 Interaction between researchers and extension workers

Communication between researchers and extension workers was one of the key factors of the current study as it provided an insight into the research-extension interaction system. Among the researchers, 40 per cent indicated interacting with extension workers weekly and monthly each, while 20 per cent indicated interaction on a quarterly basis. The nature of communication was on issues of animal health, disease and production, stock census, farm production, and social and agricultural issues. This question attracted 61 per cent responses from the extension workers. Of those who indicated communicating with agricultural researchers, 46 per cent did so monthly, 18 per cent quarterly, while 36 per cent never communicated with researchers. This can be attributed to the level of education of the extension workers included in the study – as shown in 7.1 above, 44 per cent were certificate holders. The nature of problems communicated were animal disease control and treatment, and progress in research and training. In terms of satisfaction with the level of communication between researchers and extension workers, 30 per cent were satisfied, while another 30 per cent felt that the situation could be improved. Among the reasons for poor interaction were: limited resources, lack of expertise in breeding processes, little research into animal breeding, and language barriers. One bold reason cited was that the two departments (research and extension) ‘are not in good books’. In order to improve this situation, the following proposals were made: the need for more interaction between researchers and extension workers; the provision of transport for extension workers; the need for more literature and expertise; and the need to pick up research topics from problems encountered in the field.

7.2.3 Impact of the land reform programme on agricultural research and extension

This question attracted a total of 17 responses of which 59 per cent of the respondents felt that the land reform programme had changed the way they conducted their work, and of this group, 53 per cent were extension workers. Reasons given were the destruction of game parks, uncontrollable movement of animals by farmers, and ignorance of farm

practices on the part of newly resettled farmers. Responses also showed that 41 per cent had not had their work affected, and of this group, 24 per cent were researchers. The challenges faced by the respondents were lack of information on natural resources for the farmers, wild animals mixing with tame animals and increasing the spread of diseases, and language barriers as some publications had no vernacular translations.

When the respondents were asked to indicate what information they felt farmers required in order to adequately address their challenges, a variety of observations were made. This question attracted a total of 16 responses, as shown in Table 1.

Table 1 reveals that information on poultry and herbicides was the information that farmers searched for most frequently.

The respondents were asked to indicate when they felt that information was most sought after by farmers. This question attracted 16 responses. The majority of the respondents in both categories (92% of the extension workers and 75% of the researchers) indicated that the information needs of farmers followed the pattern of the farming seasons. Some 50 per cent of the researchers felt that farmers needed information during the land preparation period, while 33 per cent and 58 per cent of the extension workers felt that farmers needed information during the planting and post-harvest periods, respectively.

7.2.4 Communicating agricultural information to farmers

This question sought to establish the communication channels used by researchers and extension workers in reaching out to the farmers. The question addressed three categories, namely: media, organisational based channels, and public gatherings. There were 13 responses for media; video units were indicated by 39 per cent, radio by 31 per cent, and television and newspapers by 8 per cent each. For organisational-based sources, there were 17 responses of which 71 per cent indicated publications, while 12 per cent cited the Internet. The public gatherings category attracted 22 responses of which 46 per cent indicated agricultural shows, 27 per cent field days, 18 per cent community meetings, and 9 per cent cited farmer organisations' meetings. Vernacular television and radio programmes like 'Murimi wanhasi' (Today's farmer), 'Izifuyo zethu' and 'Pamhepo naDr Chavhunduka' (live radio broadcast with Dr Chavhunduka) were listed as sources of information by 75 per cent of the respondents. The bias towards veterinary information was possibly because the sample was drawn from mostly veterinary extension workers.

The respondents were also requested to indicate whether they undertook any visits to farmers. This question attracted 15 responses of which 67 per cent of the extension workers indicated that they visited farmers very often, 25 per cent often, and 8 per cent sometimes. The researchers' responses showed that 67 per cent often/very often visited farmers while 33 per cent indicated that they never visited farmers. Respondents indicated that among the factors affecting their visits to farmers were: transport (84%), poor road networks (11%) and the nature of duties (5%). The challenge of the language.

Table 1: Information needs of farmers

	Agricultural extension worker (N = 12)	Agricultural researcher (N = 4)	
Information farmers need to adequately address challenges on:	%	%	Total
Soil fertility	56.2%	18.8%	75.0%
Horticulture	68.8%	18.8%	87.5%
Soil classification	50.0%	18.8%	68.8%
Agriculture economic	56.2%	12.5%	68.8%
Irrigation and drainage	56.2%	18.8%	75.0%
Aquaculture	50.0%	12.5%	62.5%
Plant breeding	37.5%	12.5%	50.0%
Poultry	68.8%	25.0%	93.8%
Plant pathology	62.5%	18.8%	81.2%
Dairy farming	31.2%	6.2%	37.5%
Plant diseases & pests	43.8%	18.8%	62.5%
Post-harvest technology	62.5%	18.8%	81.2%
Animal health	6.2%	6.2%	12.5%
Tobacco culture	68.8%	18.8%	87.5%
Animal breeding	31.2%	6.2%	37.5%
Agroforestry	50.0%	18.8%	68.8%
Agronomy	37.5%	12.5%	50.0%
Range management	56.2%	18.8%	75.0%
Crop protection	56.2%	18.8%	75.0%
Agricultural engineering	56.2%	18.8%	75.0%
Farm mechanism	56.2%	18.8%	75.0%
Herbicides application	75.0%	18.8%	93.8%
Climate and weather conditions	31.2%	6.2%	37.5%
Early warning reports	62.5%	18.8%	81.2%
Market information	37.5%	25.0%	62.5%
New seed varieties	68.8%	12.5%	81.2%
Advisory information	31.2%	6.2%	37.5%
Policy developments	56.2%	12.5%	68.8%
Total	12	4	16

of publication was evident from the responses, with 68 per cent and 32 per cent indicating English and the vernacular, respectively. As a way of alleviating the challenges of vernacular materials, the respondents indicated that they translated information into other minority languages

7.2.5 Library collections and services

This section sought to address the state of library collections and services as perceived by the respondents. In total, 35 per cent of the respondents had access to a library or resource centre, and 72 per cent of those who did not have access to a library were extension workers. Of those respondents who had access, 33 per cent visited the library daily and another 33 per cent monthly. Circulars from the head office (27%) and departmental/personal collections (27%) were cited as sources of information by those who did not have access to institutional libraries. Other libraries in town (18%) and radio programmes or newspapers (9%) were also cited as sources of information by the respondents. When the respondents were asked to indicate which material they sought from libraries, there were six responses. Of these, 66 per cent indicated books, 17 per cent government publications, and 17 per cent journals. Sixty per cent of the extension workers indicated that they always found the information they were looking for in the library, including material sought from other libraries (ILL). The libraries that the respondents used were university libraries, the Ministry of Agriculture's central library, and the City Library. Despite the challenges faced in accessing library services as shown above, 33 per cent of the respondents felt that the services offered were poor.

7.3 ACCESS AND UTILISATION OF ICTS

This section focused on the respondents' access to ICTs and the use of ICTs in information management. The question attracted 17 responses of which 76.5 per cent were extension workers and 23.5 per cent researchers. The results revealed that 62 per cent of the extension workers had access to ICTs, as did 50 per cent of the researchers. In total, 59 per cent of the respondents had access to ICTs in the office. The ICTs were mostly used for spreadsheet purposes (56%), word processing (44%), document storage (44%), and the Internet (22%). In terms of ICTs, none of the respondents indicated that they had poor ICT skills, as shown by 60 per cent who considered their skills 'fair' and 40 per cent 'good/very good'. The study also sought to establish what other ICTs were available in the organisations or departments. These were identified as television sets (82%), radios (76.5%), mobile/cell phones (41%), computers, printers and telephones (53% each), video recorders (76.5%), and the Internet (59%). These results showed that research and extension offices experienced low levels of ICT access and utilisation, which negatively affects access to current electronic journals. The participants' responses to what they used ICT resources and services for are shown in Table 2.

Table 2: Purpose of using ICT resources and services

Purpose	%
To communicate with agricultural researchers	65
To communicate with farmers	29
Professional communication with colleagues	29
Personal communication with friends, etc.	24
To disseminate agricultural information	59
For purposes of research	23
For educational purposes	35

* Table indicates multiple responses

The table shows that despite the lack of resources, there was communication of agricultural information between researchers and extension workers, although communication was poor between the two groups and farmers.

The respondents were asked to indicate which ICT resources and services they considered efficient in communicating agricultural information. This question attracted nine responses. Electronic resources like databases (48%), email and the Internet (44%) were considered less effective in communicating agricultural information. Mobile phones (87%), telephones (74%) and radios (57%) were considered effective methods. When the respondents were asked to indicate how often they used mobile phones to communicate agricultural information, 65 per cent indicated they used them very often for communication, and 29 per cent said often. Mobile phones were used mostly to communicate with agribusiness companies (87%), researchers (53%) and extension workers (27%). However, in terms of the quality of ICT infrastructure, 53 per cent felt that it was poor, with improvements required, to printers (73%), laptops (53%), e-mail (60%), the Internet (47%), and access to databases (53%).

The study also sought to investigate the use of ICTs in information management by the different divisions or departments. This question attracted 17 responses (76.5% being extension workers and 23.5% researchers). Asked how departments managed information generated from research and extension services, 77 per cent felt that copies were retained by individuals (researchers or extension workers); 59 per cent indicated that copies were kept in the library; 65 per cent indicated that records were kept in a central database (although they did not elaborate); while 47 per cent believed that copies were kept in departmental collections. Responses also indicated that 74 per cent of the respondents felt that information generated by DR&SS and AGRITEX was captured in records, although 53 per cent acknowledged that this information was not readily accessible to users. This question allowed for multiple responses. Suggestions on improving information management included developing websites; providing stakeholders with access to information; and improving computer networks.

7.4 IKS IN AGRICULTURAL RESEARCH AND EXTENSION

Indigenous knowledge (IK) practice in agriculture is not a new phenomenon and has been incorporated in modern agricultural research to improve agricultural production. This section sought to establish the extent of indigenous knowledge system (IKS) utilisation by researchers and extension workers and attracted 17 responses. All the respondents acknowledged utilising IKS. In terms of frequency, 23.5 per cent indicated often, while 76.5 per cent said sometimes. Respondents were requested to indicate their sources of IKS. Demonstration and observation were indicated as the main sources of IKS by 82.4 per cent of the respondents; followed by colleagues (70.6%); personal experience and farmer groups (64.7% each); social gatherings (58.8%); and books (29.4%). In terms of the type of IKS obtained, this question received 16 responses – animal health (2; 13%) was the type of IKS least obtained, while knowledge on tobacco culture (100%) was rated highest. Soil classification, crop harvesting and storage, horticulture, crop protection and crop varieties were considerably popular (94%) each. The responses also indicated that information on weather patterns (10; 63%) was also gained and utilised.

7.5 RESEARCH AND EXTENSION COLLABORATION

This section sought to establish the extent and nature of research and extension collaboration in the provision of agricultural information. This question received 17 responses; 59 per cent indicated that they did not collaborate with private research and extension organisations, representing 61.5 per cent extension workers and 50 per cent researchers. The possible reason for this could be the positions of the respondents involved in the study as collaboration may be an issue for senior management. For those who indicated that they did collaborate, it was in the areas of: training (86%); zonal distribution of projects, research and extension publications (71% each); and research facilities (43%). In terms of international collaboration, 71 per cent of the respondents answered in the negative. For those who did (29%), it was in the areas of technical advice, staff exchange, joint research projects, extension projects and publications, funding, and training.

Collaboration with farmer organisations was high among the respondents, with 76.5 per cent answering in the affirmative. When asked about the perceived role of farmer organisations in research and extension, this question received 12 responses; 50 per cent indicated for providing farmers with information on inputs; 25 per cent to provide farmers with information on markets; 17 per cent for participatory research and on-farm trials; and 8 per cent for providing legal aid to farmers.

7.6 KNOWLEDGE GAPS, CONSTRAINTS AND RECOMMENDATIONS

This section was more open-ended, providing the respondents with the opportunity to make comments which may not have been captured in the preceding questions. Firstly, respondents were asked to articulate factors that inhibit access to information and literature in their respective areas. This question received 12 responses. The following were identified:

- problems of accessibility and mobility (67%);
- poor information channels and poor transport linkages (8%);
- no sharing of information by individual departments within the Ministry of Agriculture (8%);
- people were not ready to embrace change (17%).

As to what the respondents felt were the major constraints facing agricultural research and extension in Zimbabwe, 13 responses were received. The following issues were raised:

- lack of resources (54%);
- poor remuneration for extension personnel (23%);
- no linkage between research topics or researched material and extension practices on the ground (23%).

Charging farmers for extension and research services is one of the trends or practices that have arisen from the privatisation of both extension and research. The respondents felt that:

- charging farmers would help to keep extension structures functional (46%);
- charging farmers was not a good idea as most farmers were poor and struggling to make ends meet (54%).

The respondents were asked to propose recommendations that would help to improve the communication of agricultural research and extension information in Zimbabwe. The following issues were raised:

- providing extension workers with transport so that they can respond to challenges in a timely manner (46%);
- disseminating information to all farmers regardless of gender (23%);
- ensuring that researchers provide feedback to extension workers in order to enable planning (15.4%);
- providing computers and libraries and improving community structures (15.4%).

8 RECOMMENDATIONS

The results of the study indicated that the different provinces and districts were fairly represented in the study. There were varying information needs among the respondents, with the need for information on animal health and production being the lowest despite the majority of respondents being veterinary extension workers.

The impact of the land reform programme was felt in terms of the increased number of farmers, hence the need for more extension workers to reach out to the farmers. The availability of material in local languages presented significant challenges, hence the need to translate material into local languages thereby complementing those already provided through vernacular radio and television programmes. The challenges of information were further exacerbated by poor library collections and services, and this problem should be addressed.

In order to improve the work of researchers and extension workers, major challenges with respect to resources, including transport and remuneration, need to be addressed. Research also has to be relevant to the needs of the farmers as expressed by the extension workers.

9 CONCLUSION

The results also revealed that although there is a link between the two groups, respondents felt that more could be done by addressing the following: resources, especially transport; increased research and information sources and services; and demand driven research – extension workers indicated that at times research topics/projects (by researchers) did not always reflect the needs on the ground. The major obstacles to this were cited as lack of transport and information to enable farmers to learn best practices.

Reflecting on the farmers' information needs as portrayed by the researchers and extension workers, and although the needs varied, the needs were spread across different agricultural fields and sub-fields. These ranged from crop science to soil science, animal health and production, and range management. The results also highlighted the complementary role of the media in disseminating agricultural information. Communication of agricultural information between researchers and extension workers and the farmers was however poor and this was done through various channels, from traditional radio and television programmes to personal visits, and newer methods like mobile phones and the Internet. Traditional methods, like agricultural shows and farmer organisation's meetings, still play a role in the dissemination process. The results also revealed that ICTs were being utilised for communication and information management and were considered useful for disseminating agricultural information.

NOTES

1. A1 represents newly resettled farmers in villages and self-contained plots of about 5 hectares (2000–).
2. A2 represents commercial farming meant to empower black indigenous farmers (2000–).

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