

DISSEMINATING AGRICULTURAL INFORMATION SERVICES TO FARMERS FOR ATTAINING FOOD SECURITY IN ZOMBWE EXTENSION PLANNING AREAS (EPA) MZUZU AGRICULTURAL DEVELOPMENT DIVISION (MZADD) MZIMBA, MALAWI

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Abstract

This study investigated the dissemination of agricultural information services to farmers for attaining food security. The study applied a survey research methodology. To have an in-depth understanding of the study area two methods were used in order to gather primary data and information. These included semi-structured questionnaires and personal interviews. Questionnaires were administered face to face to eighty five (85) farmers in the study area. The findings showed that farmers had information needs related to growing a variety of crops and rearing of livestock, fertilizer application methods, pesticides use, planting method and storage method among others. Findings also showed that the main sources of information were radios, posters and agricultural extension officers. The study revealed that farmers experienced challenges in accessing agricultural information due to the fact that, agricultural information on radio and television is always aired at odd hours when farmers who desire such information have gone to their farms; illiteracy level; lack of awareness of information sources and lack of extension workers. The study recommends that adequate funding should be made to libraries so that they can improve the quality of agricultural information resources; qualified librarians should be recruited within agriculture sector; librarians should identify relevant information sources suitable to farmers; libraries should provide unique attention to targeted group of information beneficiaries with a focus on their identified information needs; more extension officers should be recruited, trained and deployed in the rural areas in order to effectively cover the larger area; public and private media houses should broadcast agricultural programmes at appropriate and convenient times for farmers; the Malawi Communication Regulatory Authority (MACRA) in collaboration with the National Library Service should establish Information Centres or Telecentres in rural areas. These should be stocked with relevant and current agricultural information resources in vernacular languages to meet the needs of farmers; librarians in the country should make useful agricultural

information available, via researchers, agricultural extension officers, among others.

Keywords: *Farmers, Food security, Agricultural information, Zombwe EPA, Malawi.*

Introduction and Background to the Study

The importance of food at the household level is obvious since it is a basic means of sustenance. Adequate intake of quality food is a key requirement for healthy and productive life. Food security means access by all people at all times to adequate food for an active healthy life (World Bank, 2001). It entails both the availability of food and the ability of all members to have access to adequate amount of food. A country can be said to be enjoying food security when people's fear of not having enough to eat is removed and the most vulnerable group, namely women and children, in the marginal areas have access to adequate quality of food they want. Household food security can therefore be defined as a household having assured sets of entitlement from food production, cash, income, reserves of food assets and/or government assistance programmes such as in times of need they will be able to maintain sufficient nutritional intake for physical well-being (Idrisa, Gwary and Shehu, 2008). Information is an indispensable factor for promoting the development of any society. It is the raw material for making decisions, for creating knowledge and fuelling the modern organization. Information dissemination has been described as a need comparable with other basic human needs. Free flow of information is a right of people which enable them to participate effectively in the process of economic, social and political activities in the society and enhance education, knowledge and learning (Echezona, 2007).

Information and knowledge are key components of an improved agricultural sector (Lwoga et al., 2011). Farmers require proper information in order to plan for their activities, make choice of the inputs and eventually on when and where to sell their products. Thus, there is a direct relationship between availability of information and agricultural development (Babu et al., 2011). To improve the economy, information needs of farmers have to be met conveniently and at an affordable cost while ensuring its timely availability. Farmers need to have access to quality information for their productivity potentials to be realized and if food security and self-sufficiency are to be achieved. Williams and Trywell quoting Adomi *et al*, (2010) recognized that, farmers need to have access to quality agricultural information in order to improve their production. Therefore, information is very important resource for all agricultural activities. Agricultural information provision and dissemination is a must for every responsible government because it is only when farmers were informed, that they will be able to take a rational decision and produce enough to feed Malawi.

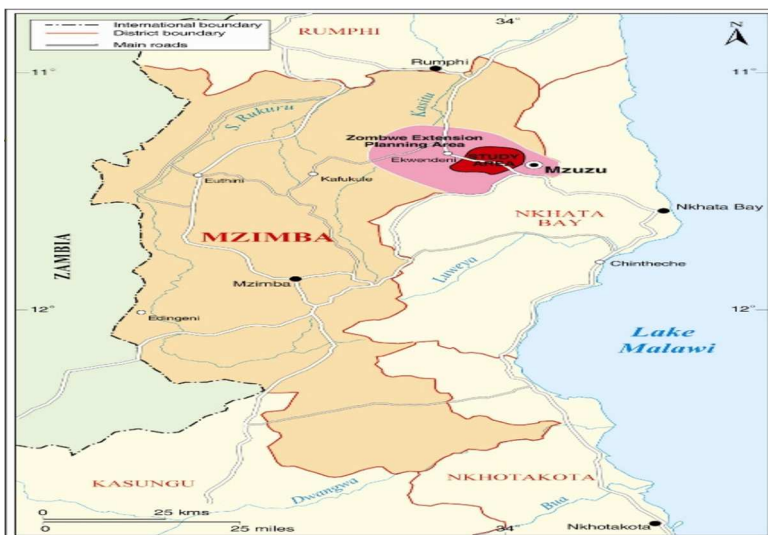
Background of Zombwe Extension Planning Areas (EPA)

The landlocked country, Malawi in south central Africa ranks among the world's least developed countries. The economy of Malawi is predominantly agricultural, with about 90% of the population living in rural areas. In 2013, agriculture accounted for 27% of GDP (World Bank 2015) and about 80% of export revenue. Furthermore, the majority of the agriculture sector is made up of smallholder farmers who live of less than 2 hectares of land. The government of Malawi put agriculture at the heart of its economic development; however, the sector faces major challenges in enhancing production.

Mzimba is the largest district found in the Northern Region of Malawi. The District borders with Zambia to the West, Kasungu to the South, Nkhatabay to the East, Nkhatakota to the South East and Rumphu to the North. The total land area of the District is estimated to be 10,430 square Kilometres. According to the NSO (2008) Census, the total population of the district was estimated at 724,873 representing 5.5% of the country's total population of 13.1 million as of 2008. Agriculture is the major economic activity, with much of the land being under subsistence farming.

The study area is located at a distance of about 8 km from the northern town of Mzuzu. This area has an all-weather road that connects it to Mzuzu city and beyond in addition to several feeder roads that are accessible throughout most of the year except on those days when it rains heavily. The area is predominantly cultivated by farmers holding land under customary land tenure that recognises private land ownership rights, inherited mainly through the patrilineal system (Ngwira, 2003). The majority of people in this area experience food shortage. The development of agriculture is important in ensuring food security.

Figure 1: A map showing the location of the study area



Malawians continue to be unacceptably vulnerable to food insecurity, and much of it attributed to the high levels of poverty in the country (Food Security Monitoring Report 2005). Despite the large body of agricultural information that exist in research institutions, universities and public offices, people in this area still experience food shortage. Therefore, this is the gap that this study seeks to investigate.

Aim of study

This study investigated the dissemination of agricultural information services to farmers for attaining food security.

Objectives of the study

The study objectives were specifically to:

- Find out the farming activities of farmers;
- To ascertain farmers' agricultural information needs in Zombwe EPA;
- To determine the sources of agricultural information;
- Identify the challenges farmers experience while seeking agricultural information.

Review of Related Studies

Information is regarded as a crucial resource and an important commodity for development. It is a basic necessity and brings success in everyday life endeavours including farming activities. Mchombu (2006) asserts that every person needs information for decision making. Information can be shared among farming stakeholders, enhances productivity and brings about agricultural development. Odini (2005) asserts that identifying information needs is the first step towards satisfying information needs and that information seeking processes involve a number of steps before identifying information sources and needed information. Lwoge and Stilwell (2011) observe that most information services in Africa including Kenya are focused on urban areas, neglecting the rural areas where the majority live. Access to information is fundamental to all aspects of agricultural development (Mchombu, (2006). The World Bank (2006) studies indicate that women are involved in various agricultural activities such as homestead, agriculture, and other horticultural activities including livestock and poultry, crop production, and processing hence the need of relevant information for them to succeed in these activities.

Information source is an institution or individual that creates or brings about a message (Statrasts, 2004). The characteristics of a good information source are timelessness, accuracy, relevance, cost effectiveness, trustworthiness, usability, exhaustiveness and aggregation level (Statrasts, 2004). The selection of an information source depends on a number of factors; including level of income, farm size, age, geographical location, level of education (Riesenberg, and Gor 1999). Using the Indian NSSO 2003 survey, Adhiguru *et al* (2009) found that small and marginal farmers accessed less information and from fewer sources than medium and large Scale farmers. Ogboma (2010), Buba (2003), Meitei and Devi (2009), and Mtega and Benard (2013), mention some information sources used by farmers in accessing their agricultural information including: newspapers, journals, bulletins, community leaders, and famer groups. Another study by Daudu *et al.* (2009) reported that farmers used agricultural extensions, posters, televisions, and radios as their source of information. Ogboma (2010) noted the sources of information used by rice farmers were personal experience, workshops and Seminars, training, friends and neighbours, Ministry of agriculture, magazines of agriculture, extension officers, local Government officers, non-Government organization, libraries of agriculture and posters. The study by Daudu *et al* 2013 in Nigeria further showed that the main sources of information used by farmers in accessing agricultural information were Extension agents, Friends, Radio and Libraries. Similary, Bozi and Ozcatalbas (2010) revealed that family members, neighbour farmers, extension services, input providers and mass media were key sources of information for Turkish farmers. Therefore, in view of the fact that each farmer prefers certain information sources or channels over others, it is important to do a thorough study before opting for an information source or channel to address their information needs.

Several challenges facing farmers in accessing agricultural information have been identified. For instance, Tologbonse *et al.* (2008) found that challenges facing farmers in accessing agricultural information were outdated information, language barrier, lack of awareness on existence of different information sources, lack of funds to acquire information and poor format of information carrier. Furthermore, the study by Daudu (2009) pointed out some of the problems encountered by farmers in Nigeria in accessing agricultural information. These include financial problems, inadequacy of facilities/professionals, incomplete or irrelevant information. Also, Byamugisha *et al.* (2008), pointed out the challenges encountered by farmers in Uganda when searching for agricultural information as lack of cooperation from fellow farmers in sharing agricultural information and language barriers. Aina, (2004) revealed that the factors affecting the flow of agricultural information to farmers in Africa include, the limited number of radios and television sets, the low literacy level of farmers, and the inadequate number of personnel trained in agricultural information. Similarly, Babu *et al.* (2011) conducted a study on

farmers' information needs and search behaviours in Tamil Nadu. The findings from this study showed that the major constraints facing farmers in accessing information were poor availability, poor reliability, lack of awareness of information sources available among farmers and untimely provision of information. Furthermore, Mtega and Benard (2013) carried out the study on the state of rural information and communication services in Tanzania. The findings from the referred study show that, poor/unreliable information infrastructure, high illiteracy levels, low income, lack of electricity and high cost of ICTs have limited the accessibility of information services in rural areas.

Research Methodology

The study applied a survey research methodology. An extensive literature review was undertaken which helped in framing questions for the primary data collection. The study was conducted in three areas of Zombwe EPA, Lupaso, Luwinga and Nkholongo. Conducting research that involves human participants requires ethical approval. Permission was sought from the Head of Mzuzu Agricultural Development Division (ADD) and District Agricultural Development Officer (DADO) to conduct research in the Zombwe Extension Planning Area (EPA) who granted permission that enabled the researchers to carry out the study in this area. To have an in-depth understanding of the study area two methods were used in order to gather primary data and information. These included semi-structured questionnaires and personal interviews. Questionnaires were administered face to face to eighty five (85) farmers in the study area. A purposive sampling technique was used in order to select farmers. The returned copies of the questionnaire were analysed and interpreted, using frequency count and percentages. Given the small sample size of 85 farmers, the study cannot be generalized to the whole district.

Findings and Discussion

Gender of respondents

Eighty five (85) farmers participated in the survey questionnaire, of whom 56 (65.9%) were male and 29 (34.1%) were female. The finding is attributed to the fact that majority of men are always associated with farming in this area. Similarly, findings of Odini's (2014) revealed that women also play an important role in rural areas, despite most of them lacking resources such as information, technology, and knowledge to assist them to increase productivity in farming.

Age Ranges of Respondents

The age distribution of respondents is contained in Table 1 below, 8 (9.4%) of the respondents were in the age bracket of 18 to 25 years; 8 (9.4%) were between 26 to 35 years; 35 (41.1%) were 36 to 45 years; 20 (23.5%) were 46-55 years; 10 (17.2%) fell between 56 to 65 years and 4 (4.7%) 66 and above. Majority of the respondents 55 (64.6%) were found in the age brackets of 36 to 45 and 46 to 55 years, that is between 36 and 55 years. The result implies that most of the respondents fell within the economically active age. Age factor is significant in agricultural information accessibility and utilization. Young people (farmers) are more responsive to new ideas and practices while older ones are conservative and less responsive to adoption of new ideas and practices. Adeogun *et al.*, (2010) had opined that, the younger farmers would most likely be willing to spend more time to obtain information on improved technologies compared to the old farmers.

Table 1: Age ranges of respondents (N=85)

Age range in years	Frequency (f)	Percentage (%)
18-25	8	9.4
26-35	8	9.4
36-45	35	41.1
46-55	20	23.5
56-65	10	17.2
66 and above	4	4.7
Total	85	100

Education Level

With regard to their educational status as depicted in Table 2 below, 61 (71.8%) of the respondents claim to have studied up to primary school level. While 22 (25.9%) of the respondents reported to have reached secondary school level education and 2 (2.4%) of respondents indicated to have attained tertiary level education. This implies that majority of the farmers had attained primary level education. Their level of education affects information accessibility, comprehension and adoption of new agricultural innovations and practices. This concurs with the findings of Benard (2014) which indicated that good educated farmers can easily access information from various sources, and can be able to create knowledge out of those sources.

Table 2: Level of education of respondents (N=85)

Level of education	Frequency (f)	Percentage (%)
Never been to school	0	0
Primary education	61	71.8
Secondary education	22	25.9

Tertiary education	2	2.4
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Types of farming activities

The findings in Table 3 below indicated that majority famers 68 (80%) grow maize, 56 (67%) grow beans, 32 (38 %) grow maize and beans, 31 (36%) grow sweet potatoes, 24 (28%) ground nuts. It is also apparent that 20 (20%) grow bananas, 16 (18%) soya beans, 10 (18%) sugar canes, 8 (%) cassava while 4 (5%) Irish potatoes. This reflects the findings of Minot (2010) who reported that maize is by far the most important food staple in Malawi. “Maize is life” a famous Malawian saying shows the importance of maize in Malawi (Derlagen, 2012). In addition cassava and sweet potatoes are also important staple food crops in Malawi.

The findings in Table 4 below indicated that majority famers 62 (73%) rear local chickens, 56 (66%) rear goats, 27 (32%) rear doves, 18 (21%) rear cattle, 14 (16%) rear broilers while 8 (9%) rear pigs. This finding substantiates that of Gondwe et al (1999), who reported that more than 80 percent of the national poultry population is kept in rural areas. Chickens constitute the majority (83 percent), followed by pigeons (14 percent) and ducks (2 percent).

Table 3: Types of Crops Grown (N=85)

Crops	Frequency (f)	Percentage (%)
Maize	68	80
Beans	56	67
Mixed maize and beans	32	38
Sweet potatoes	31	36
Ground nuts	24	28
Bananas	20	23
Soya beans	16	18
Sugar canes	10	18
Cassava	8	9
Irish potatoes	4	5

Table 4: Types of Livestock reared (N=85)

Livestock	Frequency (f)	Percentage (%)
Local Chickens	62	73
Goats	56	66
Doves	27	32

Cattle	18	21
Broilers	14	16
Layers	11	13
Pigs	8	9
Guinea fowl	5	5
Ducks	3	4
Rabbits	2	2

The Farmers' Information Needs

Data in Table 5 below reveal that out of the 85 respondents regardless of the level of education, 77 (90.5%) use information related to fertilizer application methods, pesticides use 55 (64.7%), planting method 62 (72.9%) and storage method 51 (60%). This concurs with the key findings of Elly (2013), which indicated that “farmers need information related to disease outbreak, animal husbandry, new breeds, input availability and training on new varieties, breed and farming techniques. Furthermore, they require information on pest management, soil fertility and suitability, crop husbandry and weather”.

When probed further to indicate other types of information they need apart from those provided from the checklist, farmers indicated that “*we want information on markets for our farm produces, seed and fertilizer subsidies and credit facilities*”. The findings are in agreement with findings from Benard (2014) which show that majority of the farmers need information on marketing, weather condition, and agricultural credit/loans among others. These findings are slightly similar to the observation made by Elly (2013), where farmers are increasingly looking for information on where to get financial assistance and credit facilities and subsidies.

Based on the observations in all the three areas under study, it can be concluded that their main information needs were directly related to issues that affect their well-being. Similar observations were made by other studies on information needs in developing countries (Lwoga, Ngulube and Stilwell 2010; Matovelo, Msuya and de Smet 2006; Lesaoana-Tshabalala 2003; Meitei and Devi 2009; Garforth 2001). Lesaoana-Tshabalala (2003) and Meitei and Devi (2009) found that farmers' information needs were specific, and they varied from farmer to farmer, and from location to location. It is thus imperative for information providers to consider each target community as a unique group; hence the importance of assessing information needs before disseminating information. Thus assessment of the information needs of rural farmers is crucial to effectively satisfy the felt information needs and developing demand-led information dissemination systems (Rees et al. 2000; Garforth 2001).

Table 5: The farmers' information needs**(N=85)**

Information needed by farmers	Frequency (f)	Percentage (%)
Fertilizer application	77	90.5
Pesticides use	55	64.7
Crop rotation practices	12	14.1
Land preparation	24	28.2
Seed selection	28	32.9
Crop disease treatment and control	14	16.4
Livestock disease treatment control	13	15.2
Storage methods	51	60
Information on irrigation	18	21.1
Planting methods	62	72.9

Sources of agricultural information

In order to meet their information needs, farmers use various information sources. Table 6 below presents the research findings that the main sources were radios 78 (91.7%), posters 67 (78.8%), agricultural extension officers 52 (61.1%). This finding is almost in agreement with that of Obesie (2016), who found that radio was the major source of agricultural information. The findings from an evaluation of 15 participatory radio campaigns under AFRI-I (including three from Malawi), showed that a PRC model is an effective way of informing and engaging smallholder farmers with the potential to quadruple the adoption rates of agricultural improvements (FRI, 2011).

The least used sources of information were television 21 (24.7%), mobile phones 33 (38.8%), fellow farmers 28 (32.9%), SMS 16 (18.8%), village leaders 8 (9.4%). It is evident that twitter, blogs, e-mail, newsletters, farmers clubs, demonstration plots, telecentres and community libraries were not used. Despite the fact that telecentres and community libraries were not used, libraries can play a vital role in enhancing agricultural productivity in Malawi. This concurs with Forsyth (2005) who observed that librarians can use libraries as an instrument to help eradicate extreme poverty and hunger by raising awareness and creating an enabling environment where information on sustainable agricultural practices in all its form and format can be found and use. Similarly, in their study in Bangladesh, Islam and Hasan (2009) observe that information

centres and telecentres have been established in rural areas in order to provide information to farmers in order to improve food production. Studies by Dulle et al. (2001) and Rhoe, Oboh and Shelton (2010) revealed that libraries are not meeting agricultural information needs of farmers in rural area because of poor funding which affects their capacities to expand. Mangstl, in Rhoe, Oboh and Shelton (2010), posits that lack of qualified librarians to staff libraries within agricultural sector compromises the quality of service delivery.

Similarly, Indrani et al (2015) reported that Indian farmers use social network in agricultural knowledge management. Unlike India, not much work has been done in China about using ICTs to capture and share agricultural knowledge at a large scale. Presumably this is at least partially due to Chinese farmers' perceived lack of value in the use of ICTs for agricultural knowledge (Elisa 2013). The findings of Semeon et al. (2013) concluded that agricultural knowledge is transferred by using different technologies including Websites, CD ROM, E-mail, Cell Phone, farmer groups and producer associations through face to face contact, community radio, handouts, TV etc.

It is evident from the findings that farmers also relied on interpersonal and informal sources of information such as fellow farmers and village leaders. One farmer had this to say:

“My role is to help and encourage my fellow farmers how we can improve our families, our community and Malawi as a nation. I share knowledge with them. I grow maize, cotton and pigeon pea, as well as horticulture products. This is important because we share knowledge so that we all have enough food in our household.”

The findings are supported by Aina (200) who asserts that “when the need for information is for problem solving, the user approaches informal sources such as colleagues, friends, neighbours, family, chiefs, a religious body, the neighbourhood or a professional association”. The farmers' dependence on interpersonal sources of information could be attributed to their availability, accessibility, reliability and trustworthiness (Savolainen 2008). The heavy reliance on family, friends and neighbours for information is worrying, since these information providers themselves are dependent on the same sources. A similar trend was observed in related studies (Achugbue and Anie 2011; Okwu and Daudu 2011). The situation may be attributed to easy accessibility of the colleagues, relatives and neighbours, coupled with inadequate numbers of extension officers in the rural areas. This calls for the government to deploy more extension officers in the rural areas to improve farmers' access to reliable sources of information.

The findings of Sokoya, Onifade and Alabi (2012), observed that interpersonal connectivity between farmers and agricultural extension agents will enhance

farmers' knowledge and awareness of current trend in farming that will boost stages of farming and abundance food supply.

Table 6: Sources of Agricultural Information (N=85)

Sources of Information used by farmers	Frequency (f)	Percentage (%)
Radio	78	91.7
Poster	67	78.8
Agriculture extension officers	52	61.1
Mobile phones	33	38.8
Television	21	24.7
Fellow farmers	28	32.9
Village leaders	8	9.4
SMS	16	18.8
twitter	0	0
Blogs	0	0
e-mails	0	0
Newsletters	0	0
Farmers clubs	0	0
Demonstration plots	0	0
Telecentres	0	0
Community libraries	0	0

Challenges Farmers Experience while Seeking Information

Table 7 below presents the research findings of challenges farmers experience while accessing agricultural information. These include: agricultural information on radio and television is always aired at odd hours when farmers who desire such information have gone to their farms, illiteracy level, lack of awareness of information sources, lack of access roads for easy community visit of extension workers, lack of extension workers, and lack of telecentres among others. Similar findings were made by other studies on information needs in developing countries (Odini 2014; Lwoga 2010; Mtega 2012; Sife, Kiondo & Lyimo-Macha 2010; Babu 2011; Shetto 2008; Chapota 2009; Aina 2007) found that existing information sources and systems that provided rural women with information were constrained by a number of factors. These include: illiteracy, ignorance of information sources, language barrier, widespread poverty, lack of time to access information, and unreliable information, inadequate financial power of farmers, illiteracy; majority of them cannot read or write in any language, farmers in Africa live in areas where there is lack of basic infrastructure, such as telephone, electricity, good road network, pipe borne water etc., few number of extension workers (the ratio of agricultural extension

workers to farmers is low) and poor radio and television reception signals in most village communities in Africa.

Table 7: Challenges farmers experience while seeking information (N=85)

Challenges	<i>f</i>	<i>%</i>
Illiteracy level	58	68.2
Poor radio and television signals	15	17.6
Agricultural information on radio and television is always aired at odd hours when farmers who desire such information have gone to their farms.	74	87
Lack of awareness of information sources	54	63.5
Lack of access roads for easy community visit of extension workers	24	28.2
Agricultural information is not broadcast on radio and television	18	21.1
Inadequate number of extension officers	66	77.6
Lack of demonstration plots	50	58.8
Lack of Telecentres	47	55.2
Limited ICT infrastructure	15	17.6

Conclusion and Recommendations

The findings showed that farmers had information needs related to growing a variety of crops and rearing of livestock, fertilizer application methods, pesticides use, planting method and storage method among others. It also showed that the main sources of information were radio, posters and agricultural extension officers. Other equally important sources of information like television, mobile phones, fellow farmers, SMS, village leaders were not adequately utilized. Farmers in this area are still backward when it comes to use of social media such as twitter, blogs, e-mail, newsletters. The study revealed that farmers experienced challenges in accessing agricultural information due to the fact that radio and television programs are always aired at odd hours when farmers who desire such information have gone to their farms, illiteracy level, lack of awareness of information sources, lack of access roads for easy community visit of extension workers, lack of extension workers, and lack of telecentres and community libraries among others. The study recommends the following:

- Adequate funding should be made to libraries so that they can improve the quality of agricultural information resources.
- Qualified librarians should be recruited within agriculture sector.
- Librarians should identify relevant information sources suitable to farmers.
- Libraries should provide unique attention to targeted group of information beneficiaries with a focus on their identified information needs.
- More extension officers should be recruited, trained and deployed in the rural areas in order to effectively cover the larger area.
- Public and private media houses should broadcast agricultural programmes at appropriate and convenient times for farmers.
- The Malawi Communication Regulatory Authority (MACRA) in collaboration with the National Library Service should establish Information Centres or Telecentres in rural areas. These should be stocked with relevant and current agricultural information resources in vernacular languages to meet the needs of farmers.
- Librarians in the country should make useful agricultural information available, via researchers, agricultural extension officers.

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