

AGRICULTURE INFORMATION NETWORK OF SMALL AND MEDIUM SIZE VEGETABLE FARMERS IN SRI LANKA.

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Abstract: *Article mainly pay attention; which types of information need, which types of information receive to them and weakness of pertaining vegetable information network. Sample of Kandy district vegetable famers selected to examine vegetable market network. According to findings there are many weakness are pertain present market information network. The survey indicates that there is a very high demand for information among vegetable farmers though information they receive doesn't meet their information needs. Since, article has given suggestions to develop vegetable market information system in Sri Lanka.*

Keywords: *Market Information, Small and Medium Size Farmers, Agriculture Information, Information Channels, Information Needs*

1. Introduction

Agriculture has a crucial role to play in the early stage of economic development by producing food to meet the increasing need for raw materials for industries (Oluwasami 1976; cited by Iriwieri 2007). According to Adomie et al. (2003) a country dependent upon traditional agriculture is inevitably poor. But when a country develops its agriculture sector food becomes more abundant, income rises and less of the income of the country is spent on food (Iriwieri 2007). Majority of people in developing countries still live in rural areas or depend on rural activities for large parts of their livelihoods (Kizilaslan, 2006). Agriculture is their main source of economic support, especially in the case of the majority poor (Muyepa, 2002). Hence developing agriculture is essential for the rural economy of these developing countries to elevate income and social status of farmers and the employed.

Sri Lanka was an agricultural economy at the time of its political independence and since independence, governments attempted to develop the domestic agricultural sector through various development programs. Governments were also involved in collecting and stocking produce of farmers and setting prices. Currently agriculture in Sri Lanka consists of plantation sector, livestock, fisheries, paddy and vegetable. In 2007, 31.3% from total employed were employed in agriculture sector and 39.2% of them were females. Furthermore 83.6% of employment in the agriculture sector was in the informal sector. Average monthly earnings and average daily earnings in the agriculture sector were relatively low compared to industry and services sector in Sri Lanka (Department of Census & Statistics, 2007). Low earnings, increased cost of production, weak market mechanism, shift to industry and services sector for employment, ad hog policies and measures have reduce the attractiveness in the agricultural sector in Sri Lanka.

Beginning with Adam Smith, economists have recognized that information availability is a crucial component of efficient markets (Just et al. 2002). Information is an important factor in agricultural and rural development, though this sector has not received sufficient attention (Youdeowei et al., 1996). Most developing countries are faced with a crisis of efficient information resource management (Omekwu, 2003). Hann (1991) has observed that developing countries face problems in acquiring, retrieving, processing, and disseminating various types of information (Omekwu, 2003). Agricultural information is considered as an essential input to agricultural education, research and development and extension activities. Different kinds of information are required by different kinds of users for different purposes. The potential users of agricultural information include government decision-makers, policy-makers, planners, researchers, teachers and students, program managers, field workers and farmers (Zaman, 2002). Hence development of agriculture requires a mechanism to collect, process, and disseminate agricultural information to stakeholders.

1.1 Agricultural Information

Rural communities, where agriculture is commonly the main activity, require information on inter alia, the supply of agricultural inputs (seed, fertilizer), new technologies and innovations, early warning mechanisms (for pests, drought, and disease) and credit facilities, markets, and such-like (Munyua, 2000; cited by Kizilaslan, 2006). According to Kizilaslan, (2006) basic agricultural data must be available for public and private decision makers in the agricultural sector for decision-making, problem-solving or to increase their knowledge. Zaman (2002) also observed that agricultural information is an essential input to agricultural education, research and development and extension activities. Aina (1990) defines agricultural information as all published or unpublished knowledge on all aspects of agriculture is interdisciplinary in nature, and generally it has universal applicability. Moreover, Aina (1986) classifies agriculture information into four categories. They are given in table 1 below.

Table 1: Agriculture Information Classification

Category of Information	Type of Information	Information Users
Technical/ Scientific	§ Research & development in Agriculture	§ Researches § Extension officers § Agro business & Services Staff § Farmers
Commercial	§ information on credit and cooperatives § ways of obtaining loan from government § prices of export commodities	§ Farmers § Extension Officers § Agro business & Services Staff § Policy makers & Planners
Social/ Cultural	§ Agricultural practices § Background on farming communities § Modern systems of farming § Innovations in storage facilities § Labour availability	§ Policy makers & planners § Extension staff § Farmers
Legal	§ Legislation on agriculture (land tenure, production, distribution & sales of produce)	§ Farmers § Extension staff § Policy makers & planners

The key to increased agricultural production ultimately lies with nation's ability to adoption of new production techniques, application of agricultural inputs, decision making on markets, prices, and methods of conserving water, soil and vegetable resources (Kiplang et al, 1999).

1.2 Channels of Agricultural Information.

Irivwieri (2007) classifies channels to disseminate agricultural information as modern mass media and traditional mass media. Modern mass media includes print and electronic media and other audio-visual devices. Information content in mass media is non personal and is always made public. Traditional media involve a face to face exchange of ideas between two or more people. Traditional media plays an important role in persuading and considered as an authentic source of information among rural occupants.

1.3 Agricultural Information System

Roling (1988) defines an agricultural information system as a “system in which agricultural information is generated, transformed, transferred, consolidated, received and feedback in such a manner that these processes function synergistically to underpin knowledge utilization by agricultural producers (Kizilaslan, 2006).

Public and private decision makers in the agricultural sector to use agricultural information for decision making, problem solving, or to increase their knowledge, the

necessary basic agricultural data must be available (Kizilaslan 2006). Irfan et al. (2006) reveal that medium, technology or channels were appropriate to disseminate agricultural information to farmers. Such medium could include: radio, television, computer, cell phone, public campaign and the library service. According to the study conducted by Iriwieri (2007) on information needs of illiterate farmers in Delta State, the researcher suggests that information for illiterate female farmers should be channeled through community leaders/opinion leaders and the farmers' own children. The researcher also suggests that more extension staff to be recruited, credit to be provided to farmers irrespective of their literacy, loan directly be given to framers, and increase government provisions for libraries and recruit librarians.

1.4 Agricultural information in Sri Lanka.

A study conducted by Rupasena et al. (2007) on Agricultural Marketing Information Systems using the case study method in Matale district in Sri Lanka, identified that price information as the most needed information by farmers and these farmers view prices telecasted on televisions. These farmers had requested the researches to be time specific and quality specific in telecasting prices. The study identified that technical knowhow on pre and post harvest activities as the second most needed information by farmers. Information on input and information on getting new buyers were identified as third and fourth most needed information respectively. The demand for production information was the least needed information for farmers (Rupasena et al. 2007).

The study also identified that information needs of traders were dependent on types of goods the traders sold. The vegetable traders and collectors required information on production in different areas. According to the study the traders were obtaining price information through telephone and they didn't demand for price information. Furthermore the study also reveals that traders have a negative attitude towards price information since it reduces the margins and profits for traders. This finding was also confirmed by farmers according to the study (Rupasena et al. 2007). Dayananda (1993) has done a research on market information flow of the vegetable sector in Sri Lanka and his research findings can be summarized as follows. Currently, the market information system in the vegetable sector operates in a very limited capacity with private sector commission agents / wholesalers continue to provide price data to the regions in very rudimentary manner, while the public sector continues to serve only administrative needs.

Amarathunge and Yoshiharu (1999) have conducted a research under the heading "An Economical Analysis of the Marketing System of agricultural production in the Mahawali "H" Zone in Sri Lanka". It reveals that there is enough evidence to conclude that the private trader plays a vital role compared to the government institution within the Zone.

2. Problem Statement

It is well known that low awareness is among the primary reason for under-utilization of information services (Majid et al.2001).Moreover, Adomi et al. (2003)

has observed that though agricultural information is available, there is the problem of lack of access to such information. Literacy levels of farmers, inadequate number of extension officers, and general lack of infrastructure in rural communities have contributed to this problem. Further, Youdeowi et al. (1996) revealed that one of the serious barrier confining agricultural development in west Africa is limited access to agricultural information. As a example, Mokone (1999) for instance, shows that many farmers in Lesotho rely on their indigenous knowledge, in that, most families discuss and advise each other on agricultural issues because of lack of mass media in their localities. Further he argues that although 85% of farmers in Lesotho can read and write, there are no agricultural publications available in their villages and that most farmers are not aware of agricultural programs broadcast over the radio. The main users of agricultural information are farmers. Due to high level of illiteracy among farmers, it is often difficult to teach them any scientific ideas and even more difficult to get them to adopt innovations. Attitude of extension officers, who are carried away by scientific jargon, makes it impossible for farmers to comprehend what the extension officers want to put across (Irivwieri 2007). Due to the inability of extension officers to come to the level of farmers, very essential information is often misunderstood and results in waste of manpower and other resources. Farmers in rural areas do not have radio and television because of high cost. Farmers are not aware of agricultural programs aired in these mass media. The timing of programs is not known or convenient for farmers (Irivwieri 2007). Tshabalala B.V. (2003) has also observed that there is poor transfer of knowledge about modern crop and animal production, and that most farmers were not even aware of the existing subsidies.

Agricultural sector is essential for the Sri Lankan economy and development activities are necessary to uplift the agriculture sector and the rural economy. Hence collecting and disseminating agricultural market information is essential for the development of agriculture in Sri Lanka. Since main research problems is Identify whether farmers are satisfied with the agricultural information provided by various agencies/personnel?

2.1 Methodology

This section of the study explains the methodology applied for the selection of farmers and tools used to collect information.

Kandy district in central province of Sri Lanka was selected for the purpose of this study. Central province is the largest cultivator of the vegetables in Sri Lanka. Furthermore, the Dambulla Dedicated Economic Centre in Matale district is also situated in the central province. Since a previous study has been conducted in Matale district, Kandy district was the most appropriate district to collect data required for this study. In order to obtain a representative sample of farmers from the Kandy district three secretariat divisions namely; Pathahewaheta; Ududumbara ; and Pathadumbara were selected.

A questionnaire was developed and distributed randomly in the selected three secretariat divisions. The researches were assisted by personnel involved in agriculture in these areas to collect information. The study focused on collecting information from 100 vegetable farmers in the selected areas at grass root level. Due to reasons such as

insufficient information given by respondents, delay in receiving responses and large terrain required to be covered to meet 100 farmers which was physically difficult, the researchers had to abandon several questionnaires which provided few information. In addition to collecting information from farmers, interviews with personnel involved in collecting agricultural information in various organizations in Sri Lanka is to be utilized to gain insight into the process of collection and dissemination of information.

3. Data Analysis

This section discusses the findings of the survey. Hundred (100) questionnaires were collected with responses. Table 2 illustrates number of farmers who responded to the questionnaire from 3 secretariat divisions in Kandy district.

Table 2: Secretariat Divisions of Farmers

Area	No of Respondents	Percentage
Pathahewaheta S.D.	40	40%
Ududumbara S.D.	26	26%
Pathadumbara S.D.	34	34%

Source: Survey data 2008/2009

Among the 100 respondents 93 were male respondents and 07 were female respondents. Due to unavailability of males when collecting responses for questionnaires, information was obtained from females whom were at home. Some of these females were also involved in vegetable cultivation. See table 3.

Table 3: Gender of Respondents

Gender	No of Respondents	Percentage
Male	93	93%
Female	07	7%

Source: Survey data 2008/2009

The following table illustrates age categories of farmers responded to the questionnaire.

Table 4: Age of Farmers

Age	No of Respondents	Percentage
29 or Less	11	11%
30 – 39	46	46%
40 – 49	20	20%
Above 49	23	23%

Source: Survey data 2008/2009

According to the table 4, 11% of the farmers' age belongs to the category of 29 or less. 46% of the farmers' age category was 30 – 39. 20% of the farmers' age category was 40 – 49 and 23% of the farmers' age was above 49.

Table 5 shows the education level of farmers. 43% of the farmers had an education up to General Certificate of Education-Ordinary Level (G.C.E-O/L); where as 39% of the farmers had an education up to General Certificate of Education- Advance Level (G.C.E. -A/L). 14% of the farmers responded to the questionnaire didn't mention their level of education. Further 04 farmers had obtained degrees.

Table 5: Education Level of Farmers

Education Level	No of Respondents	Percentage
Not Mentioned	14	14%
G.C.E. (O/L)	43	43%
G.C.E. (A/L)	39	39%
Degree	04	04%

Source: Survey data 2008/2009

Table 6 shown below, indicates the number of years farmers have been in cultivating vegetables. None of the farmers responded to the questionnaire were involved cultivating vegetable for a period of 3 years or less than 3 years. All the farmers have been cultivating vegetables for 4 years or above. Among them 61% of the farmers have been cultivating vegetables for more than 9 years.

Table 6: No of Years in Vegetable Cultivation

No of Years in Cultivation	No of Respondents	Percentage
3 or Less	0	0%
4 – 9	39	39%
Above 9	61	61%

Source: Survey data 2008/2009

The following table, illustrates the size of families of farmers responded to the questionnaire.

Table 7: Family Size

No of Members in the Family	No of Respondents	Percentage
3 or less	38	38%
4 and 5	38	38%
Above 5	24	24%

Source: Survey data 2008/2009

38% of the farmers had 3 or less than 3 members in their families. Further 38% of the farmers had 4 or 5 members in their families and 24% of the farmers had more than 5 members in their families. The table given below shows how many members in the responding farmers' families was involved in fulltime cultivation of vegetables.

Table 8: No of Family Members involved in Fulltime Cultivation

No of Members in the Family in Full time Cultivation	No of Respondents	Percentage
1	40	40%
2	24	24%
3	36	36%

Source: Survey data 2008/2009

40% of the farmers had only one member in their families involved in fulltime vegetable cultivation. 24% of the famers had 2 members in their families involved in fulltime vegetable cultivation and 36% of the farmers had 3 members in their families involved in fulltime vegetable cultivation. The table 9 indicates the size of the land used to cultivate vegetables among the farmers responded to the questionnaire.

Table 9: Acreage of Vegetable Cultivation

Acreage	No of Respondents	Percentage
½ acre or less	63	63%
½ - 1 acre	21	21%
Above 1 acre	16	16%

Source: Survey data 2008/2009

63% of the farmer's vegetable cultivated land size was either half an acre or less. 21% of the farmers vegetable cultivated land size was between half an acre to one acre. 16% of the farmers had vegetable cultivated land sizes larger than one acre.

Table 10 given below indicates the type of information required by vegetable farmers. The geometric mean method was used to identify the importance of information. Information related to price was the most expected information, while information on fertilizer and pesticides were the second most expected information. Information on techniques/methods for cultivation and how to reduce threats from creatures and animals were ranked third and fourth respectively. Information on vegetable seeds was the fifth most important information and information on demand and supply in market and sales related information were identified as the next most important information.

Table 10: Type of Information Required by Farmers

Type of Information Required by Farmers	No of Respondents	Geometric Mean
Prices	75	23.20
Vegetable Seeds	15	6.00
Fertilizer & Pesticides (Type, prices & Sellers)	40	13.20
Techniques/Methods for Cultivation	51	12.4
Sales related information	12	4.8
Reduce threat from creatures & Animal	25	8.80
Demand & Supply in Market	23	5.8

Source: Survey data 2008/2009

The table 11 given below identifies the type information that has been received by farmers. Again the geometric mean method was used to establish a rank to identify the most likely information to be received by farmers. Information on techniques/methods for cultivation is the most likely information to be received by farmers since it has the highest geometric mean. Information on price was second most likely type of information to be received by farmers. 24% of the farmers have not received any kind of information.

Table 11: Type of Information Received by Farmers

Type of Information Received by Farmers	No of Respondents	Geometric Mean
Non	24	-
Prices	23	15.33
Prevention of Diseases (Govijana Seva Centres)	13	4.33
Techniques/Methods for Cultivation	27	18.00
Agriculture Technology	24	8.00
How to cultivate Cabbage (Dept. of Agriculture)	13	8.67

Source: Survey data 2008/2009

In the questionnaire in respond to the above question 12% farmers mentioned that they receive information from peer farmers and fertilizer and pesticide sellers and these farmers had mentioned that this source of information was reliable and information is readily available. The following table shows the common weaknesses identified by farmers in receiving information.

Table 12: Weaknesses in Information Received

Weaknesses in Information Received	No of Respondents
Out-of-date (Prices)	39
Wrong/Ambiguous Information	40
No channel to receive information directly on a daily basis	13
Don't Receive information	37

Source: Survey data 2008/2009

As shown in the table either the information received by farmers is very likely to be outdated or else if they are to receive any information, that information is either out of date or wrong/ambiguous. Furthermore farmers also identified that there is no proper channel that provides information and some farmers also mentioned that they don't receive any information. Table 13 shows the recommendations given by farmers for them receive information.

Table 132: Recommendations to Provide Information

Recommendations to Provide Information	No of Respondents
Information Services (Prices, Cultivation methods, Seeds)	11
A government organization should provide daily market information responsibly	12
Implementing Advisory Services	15
Distribute Information Papers	15
Provide Summary of Prices for past few years for farmers	13
Telecast Prices during News telecast on a daily basis	13
Provide right information at the right time	12
Agriculture Officers in villagers should be used to provide information	13
Use digital boards in trade/economic centre and in towns to show prices and market information	12

Source: Survey data 2008/2009

As shown above farmers have suggested many alternative methods to provide information. Based on interviews with personnel of organizations involved in agriculture and other related organizations it should be said that most of these organizations are involved in systematic collection of various information and some of these organizations have employed personnel at grass root level to collect data as well as to disseminate various information to farmers.

63% of the farmers indicated that they were willing to pay an amount in order to receive information. 37% of the farmers were not willing to pay to receive information. This is shown in table 14 below.

Table 14: Willingness to Pay for Information

Willingness to Pay Money for Information?	No of Respondents	Percentage
Yes	63	63%
No	37	37%

Source: Survey data 2008/2009

The following table indicates the preferred methods identified by farmers to receive information.

Table 15: Method/Channel to Receive Information

Method/Channel to Receive Information	No of Respondents	Geometric Mean
Radio	24	8.00
Television	49	20.67
Mobile/ Telephone	52	20.33
Peer Farmers/Farmer Groups	13	6.50
Newspaper/Print Media	35	7.33
Post	27	11.50
Training Programs	23	11.50

Source: Survey data 2008/2009

Based on the geometric mean values it could be said that farmers prefer if television and mobile or telephones are used to disseminate agricultural information. In the questionnaire certain farmers mentioned that they obtain information from trader (mudalali) through the telephone. Farmers have also identified that Radio is also an alternative source of providing such information. Table 16 indicates the period/time preferred by farmers to receive information.

Table 16: Period/Time Preferred to Receive Information

Preferred Time/Period to Receive Information	No of Respondents	Percentage
Beginning of the Cultivation Season	47	47%
During the cultivation season	13	13%
Throughout the year	40	40%

Source: Survey data 2008/2009

According to the table 47% of the farmers prefer to receive information prior to the cultivation season and 40% of the farmers prefer to receive information throughout the year.

4. Conclusion

In the point of view of the farmers, information on prices is the most expected information. This strengthens the findings of the study conducted by Rupasena et al. (2007), in which they identified that price information was the most important information for farmers. Information on fertilizer and pesticides, new cultivation methods and reducing the threat of creatures and animals were also considered significantly important by farmers. But the information that farmers most likely received are price and new cultivation methods. Significant number of farmers clearly states that they don't receive any kind of information. Further evidences in the survey

indicate that there is a very high demand for information among vegetable farmers though information they receive doesn't meet their information needs. Therefore, it will be fair to assume that farmers, if given access, will over time take advantage of available information in making decisions that will improve their productivity and profit margins.

Farmers identify the following weaknesses in the existing mechanism in receiving information. According to them information they receive is out of date and wrong or ambiguous. They also mention that there is no proper channel to provide information for vegetable farmers. Findings of the study indicate that vegetable farmers tend to obtain information from traders and fertilizer and Pesticide sellers. Farmers consider this source of information as reliable and reachable.

Various government institutes are involved in collecting agricultural information for different purposes. Department of Agriculture, Department of Census and Statistics, and Hector Kobbekaduwa Agrarian Research and Training Institute are some of them. These organizations and institutes have a systematic and a formal system to collect information and they are very experienced in collecting information. Further they also have officers at grass root level to collect information. Most of this information is collected to make informed decisions at higher level. In certain instance these organizations tend to interdependent on each other on type of information they collect. Lack of a collective purpose to collect information, lack of an integrated system or mechanism to collect information, lack of a formal mechanism to provide information for farmers has resulted in the weaknesses identified by farmers in receiving information.

Based on identified solutions to provide information in literature and the suggestions given by vegetable farmers, the following methods has the potential to increase the sources of information and frequency of information provided to vegetable farmers.

A system need to provide essential information such as price of vegetables, price, type and sellers of fertilizer and pesticides, threats from creatures and animals through television, mobile/telephone or radio. Strengthen, restructure or build capacity of extension service providers and peer farmer groups to provide information on cultivation methods and agriculture related technology. The above mentioned method is implementable in the short and medium term. In the long term, with the initiation and support of government agencies a system is required to be established to provide essential information for vegetable farmers. A public private partnership is a potential alternative to develop such a system.

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