Bangladesh Journal of Extension Education *ISSN 1011-3916*
Volume 24, No. 1&2, 2012:25-35 *Research Article*

Utilization of Information Sources by Vegetable Farmers for Decision Making- A Case Study

W. M. N. D. Wijekoon[1] and L. N. A. C. Jayawardena[2]

Abstract

Improving the vegetable production is vital in achieving the food security of a country. Appropriate, adequate, and updated information is a necessity to facilitate rational farming decisions. The general objective of this study was to analyze the usage of information sources for decision making by vegetable farmers. This study was conducted in Ambewela (No.50A) Grama Niladhari division, situated in Welimada Divisional Secretariat belonging to Badulla District in Sri Lanka. Purposive sampling was used to form a sample of 60 vegetable farmers for the study.

Personal localite sources were the mostly used information source, and mass media sources were the least used. Among the personal localite sources, fellow farmers were the mostly used information source, with a superior accessibility over other sources. Agriculture input sellers/ dealers, buyers were the other information sources that were mostly used. Internet and CD ROMs inclusive of agricultural information had never been used by farmers. There were positive significant relationships between the use of information sources and personal factors, viz. age, social participation, degree of exposure to mass media, innovativeness, and risk orientation. Accessibility was identified as the most influential quality in selecting an information source. Accessibility to accurate information by farmers could be increased by introducing village level information centers activated through farmer organizations.

Key words: *Information sources, decision making, vegetable farmers*

Introduction

The agriculture sector has been a key factor in Sri Lankan economy. Contribution of agricultural sector to the Gross Domestic Production (GDP) of the country was 12.1% in 2008. In 2008 32.7% of labour force was employed in agriculture and most of them lived in rural areas. Four sub sectors have been identified in the Sri Lankan agricultural sector. These sub sectors are the cultivations of paddy, vegetable & other field crops, plantation crops, and livestock farming (Agstat: DOA, 2009).

Sri Lanka is bestowed with a climate that varies from tropical to sub-tropical. This allows for successful cultivation of both temperate and tropical vegetables. Vegetable production in Sri Lanka is dominated by about 40 species, which include root and tubers. Annual vegetable production in 2008 was 7,58,393 metric tons. From this amount, 3,08,414 metric tons were up country vegetables, which were cultivated in 28,425ha lands. Low country vegetable production was 449,979 metric tons that were cultivated in 53,312ha of lands. (Department of Census & Statistics, 2008).

High nutritional vegetables have been recommended as an essential component in daily diet. Average Sri Lankan consumes about 94g of vegetables per day. The Medical Research Institute (MRI) of Sri Lanka has recommended a daily intake of vegetables of at least 200g. Based on the

[1&2]Department of Agricultural Extension, Faculty of Agriculture, University of Peradeniya, Peradeniya. Sri Lanka.

MRI recommendation, per capita availability of vegetables has to be increased to 80kg per year by 2010 to fulfill the recommended daily intake. Thus, developing the vegetable sector of Sri Lanka has become a critical need (http://www.agridept.gov.lk/28th June 2010). Large gap between research and farmer yields, improper use of pesticides, imbalance usage of fertilizer, inadequate availability of new high yielding varieties, inadequate availability of post- harvest techniques, inadequate extension staff and mobility, lack of market information, lack of an organized marketing system and storage facilities, lack of farmer group activities, seasonality of production are some of constrains that have been identified in the vegetable sector development. (http://www.agridept.gov.lk/11th July 2010)

There are various information sources supplying information to farmers on vegetable cultivation. Incomplete information may result in a delayed decision or a decision made with little confidence (Larry and Luther, 2006). As individuals, farmers have their favored information sources and depending on the specific information being sought, farmers change their information sources (Vergot *et al.*, 2005). Based on the quality of information supplied by information sources, the perception of the farmers towards the information sources may buildup. Research has found accuracy, accessibility, affordability, usefulness, timeliness, credibility, and understandability as the main qualities of an information source. The information sources preferred by the farmers were dependent on the availability of the aforementioned qualities in them. They also considered the existing value system of the society (Ahmed *et al*., 1994).

The general objective of the study was to analyze the usage of information sources for decision making by vegetable farmers. The specific objectives were, to identify the sources of information used by vegetable farmers, to assess the perception of the farmers regarding the sources of information, to assess the usage of information sources by the farmers, and to analyze the usage of information sources for decision making by farmers.

Methodology

The study was conducted in Ambewela Grama Niladhari division (No 50A), which was situated in the Welimada Divisional Secretariat belonging to Badulla District in Sri Lanka. This village belonged to the Kepppetipola Agrarian Service Centre (ASC). There were eighteen AI divisions controlled under the Keppetipola ASC. The selected study area belonged to Hewanakumbura AI division. Hewanakumbura AI division composed of three Grama Niladhari (GN) divisions. Among the three GN divisions, 50A-Ambewela GN division was selected for the study.

The selection of study area was based on the following factors. Ambewela GN division (No 50A) was situated in a higher elevation, inclusive of sufficient water sources during the Yala (dry) season as well. Other places experienced scarcity of water supply for highlands during Yala season. This study area had a higher vegetable production throughout the year. According to the ASC records highest bean production in Sri Lanka is recorded in this area, and superior quality beans are found

here in Sri Lanka, and about 50% of the populations' main occupation was agriculture. Purposive sampling was used to form a sample of 60 vegetable farmers. Primary data collection was conducted through a questionnaire survey. The questionnaire was developed based on previous research findings, and through a number of discussions with vegetable farmers of the selected area. The questionnaire was modified and finalized through pre-testing. Likert scale was used to assess the perception of respondents. Informal discussions were held with the farmers, and agricultural department officers to obtain, and verify data. Descriptive data were presented using tabular analysis and relationships were tested through correlation tests.

Findings and Discussion

Background Information

Age, sex and education level of respondents

There was higher number of farmers (58.3%) in the 25-45 years age category, while there was less number of farmers below 24 years (3.3%), and above 66 years (5.1%). There was 33.3% of farmers between the age of 46-65 years. Great majority (86.7%) of respondents in the sample were males. Majority of farmers in the sample had better education level. There was 73.3% of farmers who had passed GCE O/L, and 25% of farmers had passed GCE A/L. There were very few farmers (1.7%) who had a low level of education.

Experience in vegetable farming

Most of the farmers in the sample (58.3%) had belonged to10-25 years of experience category in vegetable farming. There were less number of farmers (3.3%) having over 41 years of experience in vegetable farming. Also, 16.7 % of farmers had an experience of less than 10 years, while 21.7 % of farmers fell under 26 - 41 years of experience category.

Socio-economic status of the respondents

Socio-economic status of the farmers in the sample was determined by considering a number of factors which were, land ownership; gross family income, farm size, and education level. Vast majority of the farmers (83.3%) in the sample had moderate socio-economic status.

Social participation of respondents

Social participation of the respondents was determined by considering a number of factors, which included, the number of organizations in which he was having the membership, whether the respondent was an office bearer in any organization, and numbers of organizations that the respondent was in office. Main reason for the selection of these factors to measure the social participation was that, mere membership in organizations did not help to differentiate farmers with respect to their level of involvement in social activities. Holding office in organizations could indicate active participation. Social participation was at a low level, where 78.3% of the farmers had low social participation and, only 3.3% of farmers reported high social participation.

Decision making behavior of farmers

Majority (72.9%) of the farmers took decisions by themselves. About 27% of the

farmers took decisions by discussing with someone. When selecting seed varieties, 51.7% of the farmers had discussed with someone before taking the decision, and 53.1% of them had discussed with fellow farmers about seed varieties. Nearly 62% of the farmers took decisions about fertilizers by them self. When selecting pest and decease control methods 61.7% took decisions by themselves. Majority (73.3%) selected the irrigation method by themselves without discussing with someone. Most of the farmers (85%) made decisions on harvesting by themselves. Nearly 95% of farmers had selected the packaging methods for vegetables by themselves. All the respondents preferred to select the crops to be cultivated, and place of marketing produce by themselves.

Usage of Information Sources

The sources of information included in the study were (Lingamneni, 1981);

- Personal localite sources: fellow farmers, friends (non farmers), agriculture input sellers, farmer organizations (FO), buyers (wholesalers / middlemen)
- Personal cosmopolite sources: agriculture department officers, commercial agents, toll free service (toll free agricultural advisory service)
- Mass media: television, radio, newspapers, leaflets/books/magazines, exhibitions, internet, agricultural CD ROMs

From the above three information source categories, many farmers used personal localite sources than other two categories. The main reason for this could be that personal localite sources belonged to the farmers' social system. They are intra-systemic sources. Personal cosmopolite sources are extra-systemic sources. They did not belong to the farmers' social system. It was more feasible and comfortable to use information sources which were situated within farmer's social system. Also farmers preferred to have face to face communication. Due to this reason they were using personal localite and cosmopolite sources other than the mass media. In mass media they could not get sufficient feedback and was somewhat impersonal in nature.

Perception of Quality of Information Sources

Seven qualities of information viz; accuracy, accessibility, sufficiency, usefulness, timely, credibility and understandability were used to analyze how framers perceived the information source. The perception about an information source was developed by only considering the farmers who used the particular information source at least once in his life time. Perception about each information source with regard to each quality was measured by using a scale varying from highly unsatisfactory to highly satisfactory, assigning scores of 1 to 6 respectively. After computing the scores for each information source the mean values were computed. These mean values were used to rank the information sources according to the farmer's perception of quality.

Accessibility: Fellow farmer was ranked as the information source that had highest accessibility. Agriculture input sellers got the second place, and buyers (middlemen/ wholesalers) got the third place for the accessibility among information sources. Majority of the farmers meet buyers (middlemen/ wholesalers) when they sell their vegetables, and they keep these contacts continuously. Due to these reasons buyers were more accessible to them than

other information sources. Information through CD ROMs, and internet were not accessible to farmers yet. There was no place (Nenasala, internet café etc) that was supplying internet service or agriculture related CD's in this village. Farmers were unable to use internet or agricultural related CD's as they were not available to them. Inconvenient time periods of telecasting agriculture related programmes in television and radio was the major limitation in accessibility. There was no way to access agriculture related magazines, books or leaflets published by Department of Agriculture.

Accuracy: Respondents, who used the toll free service, gave highest marks for the accuracy of information. Agriculture department officer got the second place, and the third rank was assigned by respondents to the field demonstrations/exhibitions. Respondents had a poor perception about the accuracy of information that was supplied by the buyers (middlemen/ wholesalers).

Sufficiency: Toll free service was identified as the best source with regard to the sufficiency of information. Second and third ranks were assigned to agriculture input sellers and agriculture department officers. Farm organization got the lowest place. Most of the farmers had a perception that farmer organization was not supplying enough information related to vegetable cultivation. They mentioned that farmer organizations involvement to disseminate information was inactive.

Usefulness: Respondents perceived, information disseminated by toll free service got the highest usefulness, and second place was the agriculture department officer. Exhibitions got the third place. Farm organization got the last place for usefulness. This may be due to the fact that, involvement of the farmer organizations to disseminate agricultural information was less.

Timeliness: Fellow farmer was identified as the best information source with regard to supplying information on time. Toll free service got the second place and third was the agricultural input sellers. From the thirteen information sources printed material got the last place. This may be due to less supply of leaflets, magazines and books, which carried information on innovations. Field demonstrations/visits also got poor perception with regard to dissemination of new information.

Credibility: Toll free service got the first rank regard to the credibility. Secondly and thirdly respondents ranked agriculture department officers, and non- farming friends. They had high credibility about the information sources that were related to the DOA. They had a low perception of the credibility of the information supplied by the buyers. They perceived that agriculture input sellers and commercial agents had supplied information to influence the selling of their products. Buyers, as an information source scored low credibility among the other information sources.

Understandability: 'Fellow farmer' got the highest mean score for understandability. Farmers understood agriculture details well, when they were explained by their peers. Newspapers got lowest mean score as there were some technical jargons, difficult to understand in news papers.

Respondents Perception and Usage of Information Sources

The perception of each information source was derived by summing respondents' perception in relation to seven qualities of information. Those values were categorized as, ≥42 = high perception, ≤28= low perception and 29-41= moderate perception. The total score for usage were obtained by summing the scores obtained for different practices. Total score was categorized into 'not used', 'low', 'somewhat', and 'high'. The categorization was changed according to the amount of vegetable production, and marketing practices that were used by information sources.

Agriculture department officers, newspapers, radio, television, fellow farmers, friends (non-farmers), and farm organization/s were the sources that were used for information in vegetable production and marketing practices which are listed below.

i. Selection of seed varieties
ii. Selection of fertilizers
iii. Selection of pest and disease control methods
iv. Selection of irrigation method
v. Selection of packaging method
vi. Selection of place to marketing products

The usage values of above mentioned information sources were categorized into ≤6 = 'not used', 7-10 = 'low', 11-14 = 'somewhat' and ≥15 = 'high'.

Information sources viz: leaflets/books/ magazines, toll free service (TFS), field demonstrations/ exhibitions, agriculture input sellers, and commercial agents were used only for vegetable production and packaging practices (i to v above). Usage of information sources for these five practices were categorized into, ≤5 = 'not used', 6-8 = 'low', 9-12 = 'somewhat', ≥13= 'high'. Buyers were the only information source that was used for vegetable marketing practices. Total score varying from 2 to5 were categorized into, not used, low, somewhat, and high respectively.

Agriculture department officers: Nearly 71% of the farmers who had poor perception about ADO's had not used them. Also, 78.4% of farmers who had moderate perception on ADO's had recorded a low score for usage. There were no farmers indicating a high usage of ADO's. Only 55% of respondents used the ADO's as an information source. Farmers had a perception that ADO's have low practical knowledge and they have only a theoretical knowledge with regard to the agricultural matters. They mentioned that ADO's were not sufficiently available, and they visit the field only rarely.

Agriculture Leaflets/ books/ magazines: Nearly 62% of farmers who had a poor perception on agricultural printed materials had never used them and, 38% of farmers had a low usage. About 53% of farmers who had a moderate perception of agricultural printed materials had never used them, and 47.1% had a low usage. Only 31.7% of the respondents used the agricultural printed materials for information. Lack of availability of the agricultural related printed materials to the farmers could have resulted in their low usage.

Newspapers: Vast majority (96.7%) of the farmers had not used newspapers as a source of information. This may be due to less availability of agricultural information in newspapers. Most of the respondents did not buy any daily or weekend news papers, as they did not have enough time to read newspapers.

Radio: Only 15% of the farmers used radio to get agricultural information. It was interesting to note that farmers who had high perception with regard to radio reported a high usage of it.

Television: The results depicted in Table 1 indicate that farmers, who had high perception regard to television, had high usage. All the farmers who had a poor perception had less usage of television as an information source. There were some farmers who had moderate perception and, most of them (89.5%) had low usage of television to get agricultural information. This may be due to fact that farmers were not available at home at the time of telecasting of agricultural programmes, despite having access to a television.

Table 1 Perception of television and usage of television

Perception on television	Usage of television				Total
	Not used	Low	Moderate	High	
Low	18	7	-	-	21 (46.7)
Moderate	14	3	1	1	19 (42.2)
High	-	-	-	1	1 (2.2)
Total	32	10	1	2	45 (100)

*The figures given in parenthesis depict the total as a %

Toll Free Service: It appears in the Table 2, that a higher level of perception had resulted in a higher level of usage of TFS. Farmers who had moderate level of perception had moderate level of usage. Farmers who had a low level of perception had not used the TFS during the last year.

Table 2 Perception on TFS and their usage

Perception on TFS	Usage TFS				Total
	Not used	Low	Moderate	High	
Low	1	-	-	-	1(12.5)
Moderate	-	-	4	-	4(50)
High	-	-	-	3	3(37.5)
Total	1	-	4	3	8(100)

*The figures given in parenthesis depict the total as a %

Fellow farmers: The most notable feature of the Table 3 was that farmers, who had high perception on fellow farmer, had used the fellow farmers highly to get information related to their cultivation.

Table 3 Perception on fellow farmers and their usage

Perception on fellow farmer	Contact of fellow farmer			Total
	Low	Moderate	High	
Low	1	-	-	1(1.7)
Moderate	15	19	16	50(83.3)
High	-	-	9	9(15)
Total	16	19	25	60(100)

*The figures given in parenthesis depict the total as a %

Friends (non farmers): Farmers, who had a poor perception of friends (non-farmers), had not used them to get agriculture information. They had preferred information from a person engaged in farming. Only 6.6% of the farmers used non-farming friends to get agricultural information. Others had no social contacts with those not engaged in farming but having a good knowledge on farming.

Field demonstrations/ Exhibitions: Respondents who had a moderate perception of field demonstrations/ exhibitions had not used it much. This could be due to the low opportunities available to participate in field demonstrations, and exhibitions. Limited numbers of farmers were taken to these types of exposures. Sadly, most of such opportunities had been limited/ offered to the office bearers of the farm organization.

Agriculture input sellers: Nearly 80% of the farmers, who had a high perception of agricultural input sellers, had high usage of them as an information source. Among 66.7% of the farmers having a poor perception, had a low usage. There was a general belief among some farmers that input sellers tend to give wrong information for their own benefits, to get high profit for their business.

Farm Organization: Surprisingly only 8.3% of farmers used FO to get information. But all the respondents were members of FO. Nearly 81% of the respondents had poor perception regard to the farm organization. Respondents were of the view that FOs were not focused in disseminating agricultural information. It was note-worthy that many farmers did not attend the FO meetings.

Commercial agents: Almost 62% of the respondents had a poor perception of commercial agents. They mentioned that some hybrid seed varieties they had received from the commercial agents were inferior. Respondents perceived that commercial agents give wrong information in order to sell their products. Due to these experiences most of them had a poor perception of commercial agents.

Buyers (Wholesalers/ Middlemen): Nearly 75% of the farmers had a poor perception of buyers. They had a feel that they do not get a reasonable price for their products. However, majority of the respondents (88.3%) used to contact the buyer to get the information about marketing prices.

Association between Personal Factors and Use of Information Sources

Association between the personal factors, and use of information sources were compared by using the overall usage of information sources. By summing the scores of usage received for each information source, the overall score was computed for usage of information sources. The obtained scores were categorized into, ≤49 = low, 50-69 = somewhat, and ≥70= high. Age, gender, socio-economic status, level of education, experience in vegetable cultivation, level of social participation, innovativeness, exposure to mass media, and risk orientation were the personal factors that were used to find the association with usage of information sources.

Age: According to the Spearman's correlation test there was a significant relationship between age and the usage of information sources (r =0.336, p= 0.009, Significant at 0.1 level). One third of farmers belonging to the ≥66 years of age category had a high usage of information sources than other age categories. All the respondents below 24 years had low usage of information sources.

Gender: Nearly 54% of the males had a low usage of information sources, and this was 37.5% among the females. But, males also reported a higher usage (5.76%) of information sources than females.

Socio-economic status: According to the Spearman's correlation test there was no significant relationship between socio-economic status and usage of information sources. High usage of information sources was recorded by respondents (6%) who belonged to moderate level of socio-economic status. Other levels of socio-economic status did not show a high usage of information/sources.

Education level: Farmers receiving only the primary education had a low usage of information sources, and those with a higher education level were more likely to have a higher usage of information sources. Only 4.5% of farmers, having secondary education reported high usage of information sources, whilst no farmers having primary education reported a high usage of information sources.

Experience: As per Spearman's correlation test there was a positive significant relationship between the experience in farming and the use of information sources (r =0.260, p= 0.045, Significant at 0.1 level). All the farmers having over 42 years of experience in vegetable cultivation had high usage of information sources. Majority of the farmers (83.3%) who had less than nine years of experience in vegetable farming had low usage of information sources.

Social participation: There was a positive significant relationship between social participation and use of information sources (r =0.231, p= 0.076, Significant at 0.1 level). Farmers, who had a higher level of social participation, had greater usage of information sources. Nearly 67% of farmers who had high usage of information sources had high social participation. About 74 % of the farmers who had low usage of information sources had low social participation.

Innovativeness: According to the Spearman's correlation test there was a

positive significant relationship between innovativeness and use of information sources (r =0.285, p= 0.027, Significant at 0.1 level). Farmers having a high score for innovativeness had a high usage of information sources. Innovative farmers preferred to use new ideas, practices or objects. They may tend to use more information sources to get information about innovations. Most of the farmers (64%) that reported a low score for innovativeness had a low usage of information sources.

Exposure to mass media: There was a positive significant relationship between exposure to mass media and usage of information sources (r =0.392, p= 0.002, Significant at 0.1 level). All the farmers who had a high usage of information sources had a high exposure to mass media. Farmers, highly exposed to mass media made greater use of information sources than others. Nearly 94% of those having a low exposure to mass media reported a low usage of information sources, as well.

Risk orientation: There was a positive significant relationship between exposure to mass media and usage of information sources (r =0.240, p= 0.064, Significant at 0.1 level). Those who had a low risk orientation had low usage of information sources. Practicing new things was perceived to create a risk, and low risk oriented farmers were hesitant to use new practices. They would not have been keen to use information sources, rather preferring to use their own experience, instead.

Conclusion

Farmers, who were having a higher level of social participation, degree of exposure to mass media, innovativeness, and risk orientation make greater use of the available information sources than other farmers. Perception of farmers about information sources had an impact on the usage of them. Data accessibility was the most influential quality in selecting an information source.

Farmers use information sources which are easily accessible to them. They do not give priority to the accuracy of the information. Some of the information sources, which are part of the farmers' social system, were not supplying accurate, credible information. However, farmers use these information sources due to easy accessibility. Establishment of an appropriate agricultural information supply system within the farmers' social system is vital. This can be done by establishing agriculture information centers within the village. These information centers should be activated through the FOs. Since majority of the farmers are members of the FO, by activating these information centers through FOs will facilitate active involvement of the farmers. This will help to empower the farmer organizations in the village. These information centers could be established by developing a better coordination between DOA and FO, through a system that transfers agriculture information from DOA to FO. Thus farmers can easily accesses accurate and credible information. It is also recommended to develop more awareness programmes about information sources informing farmers of credible information sources that are available to them.

References

Agstat. 2009. Department of Agriculture, Peradeniya, Sri Lanka.

Ahmed, M. B., A. Ahmed and M. A. M. Miah. 1994. Effectiveness of Radio and television in disseminating agricultural information among the farmers. *Bangladesh Journal of Training and Development*, 11: 1-2.

Annual Report. 2008. Department of Census & Statistics, Colombo, Sri Lanka.

Larry, W. V. and H. Luther. 2006. Farmers' decision-making: Perceptions of the importance, uncertainty, and controllability of selected factors. *Agribusiness*.

Lingamneni, J. R. 1981. Communication Channels/Sources in the Innovation-decision Process: A Comparative Review of US and Indian Diffusion Research. *Extension Education and Rural Development*. Chichester: Jhon Wiley & Sons.

Vergot, III P., G. Israel and D. E. Mayo. 2005. Sources and channels of information used by beef cattle producers in 12 counties of the Northwest Florida extension district. *Journal of Extension*.

http://www.agridept.gov.lk/content/admin/pdf/Chapter3Vegetables&TuberCrops/28th June 2010

http://www.agridept.gov.lk/content/admin/pdf/Chapter3Vegetables&TuberCrops/ 11th July 2010