

# Descriptive analysis of paddy farmers' information needs

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**Abstract:** The paddy farmers are struggling to obtain accurate and reliable information on time. The study was designed to describe and evaluate the information needs of the paddy farmers. Data were collected from sample of 110 farmers in Ampara district of Sri Lanka. The farmers seek information on, seed paddy selection, water, weed, pest, disease and fertilizer management, harvesting and marketing. A single farmer is identified as none information seeker and a farmer needs information on at least six mentioned practices. Demographic characteristics highly influence the paddy farmers' information needs.

**Keywords:** Paddy farmer, Information needs, Information seeking

## Introduction

The current information environment is over loaded with several information from variety of information sources, providers and researchers from all over the world. The information can be described as the fifth need of human ranking after air, water, food and shelter. The economic enhancement of any society basically depends to the large extent, on accurate, relevant, precise and timely information related to their economic sector/ sectors. Information is also the principle component to human knowledge and progress. Particularly when the information relevant and good, people are able to make better decisions to be more effective, to be more happier and to increase their well being.

A felt need exists today in the agriculture and farming industry. Since the development of technology in each and every framing practice, more than ever, farmers are faced and need to change the farming practices with advancing technologies. There is a

greater need to assimilate the vast amount of technical, farming and cultivation information necessary to make sound economically viable decisions, manage agricultural resources, and keep abreast of modern techniques.

Sri Lanka is an agriculture based developing country. Ampara district is located in the south east of Sri Lanka in the eastern province. According to the paddy statistics 2012 yala season, in Ampara district the paddy farming extent is 108,258 acres and it is the second largest district in the country. In addition Ampara district has been reported that highest amount of total paddy production in 2012 yala season in the country which is 284,794 metric ton

Boz and Ozcatalbas (2010) reported that agriculture and rural development depends on modern technologies and innovation which are developed by research institutes and universities. Once the new innovations disseminated, it should be reached to farmers. It mainly depends on farmers' information seeking behavior and their socio economic characteristics. The study was designed to study the paddy farmers information lacking areas of cultivation practices in Ampara district and their socio economic characteristics which influence the information needs of the farmers with the objectives to determine the paddy farmers information lacking area relevant to their farming practices in decision making and to find the impact of demographic characteristics influence the information needs of the paddy farmers.

## Methods

The population of the study was the paddy farmers of the coastal belt of the Ampara district from the 11 divisional secretariat divisions. Paddy cultivation

extent was 108,258 acres and owned by 34144 farmers. In order to represent all categories of the population proportionally from the selected divisional secretariat division, totally 110 paddy farmers were selected for this study by using stratified random sampling techniques. Here the stratification made across the paddy farming extent. However minimum of four samples were obtained from each divisional secretariat division.

The empirical data on paddy farmers' demographic characteristics such as age, educational level ownership of the cultivating land and farming experience, cultivation practices and information needs were collected by using semi structured and pre tested questionnaire and interviews as the tool of survey from 2011 and 2012 maha and yala seasons. Data were processed and analyzed using Minitab software with description statistics and well known statistical formula like chi square test and ANOVA as the way to highlight the objectives of the study.

## Results and Discussion

As the average paddy land extent per farmer is 3.17 acres, is a very good indication that these farmers produce rice not only for their own consumption but also for commercial purposes. However, acreage varies from 1-25 acres per a farmer.

The response rate of the survey was 81.5% where 135 questionnaires were distributed among the farmers out of which 110 were responded. The responses of all divisions but Addalachanai Divisional secretariat were higher than 75% and some divisions show even more than 85%. Overall response rate was 81.5%. This is quite a good enough response to carry out the research. Since the researcher himself was involved and informal communication channel was used for distribution, filling the answer and collection of questionnaires might have increased the farmers' response in all divisions.

### Demographic characteristics of farmers

All farmers in the studied region were male and not a single female farmer was found in paddy cultivation. Interestingly, it is found that many paddy farmers are employees of government, semi

government or private sectors and doing paddy farming as a secondary job. Such farmers have permanent labourers to look after and maintain the farming practices with their guidance. A few numbers of farmers involve in paddy farming as a main job and such farmers also rent paddy lands from others for cultivation and do the cultivation on their own.

The demographic characteristics such as age, educational level, ownership of the land were observed directly from questionnaire and the experience was noted from the age of the farmers. The respondents' age and the percentage are displayed in the Table 1.

**Table 1: Paddy farmers' age and the percentage**

No.	Age group	Frequency	Percentage
01	40 years and bellow	25	22.73
02	41 – 50 years	35	31.82
03	51 – 60 years	34	33.64
04	Above 60 years	13	11.82

Age is one of the important demographic characters in paddy farmers' information need behavior. The age of the majority of farmers was 51–60 (33%) followed by 41–50 (32%), below 40 (23%) and above 60 (12%). Not a single farmer was identified less than 20 years of age. This implies that two thirds of the paddy farmers' population was between the ages of 41–60 years. Age variation is almost similar in the studied all divisional secretariat divisions. This indicates that only one third of young and old people are involved in paddy cultivation. This is because paddy cultivation requires adequate attention and a lot of sense of responsibility. Most of the young people are seeking some other jobs like foreign employments and self employment such as brick production. These days paddy cultivation is not an income generating activity because of sudden crop losses due to natural disaster like floods, drought, wild elephants invasion in to the field, crop losses due to uncontrollable pest attack, losses at the time of harvesting due to unexpected rain and low price for paddy during the harvesting season. Thus the youngsters do not like to take any risk in paddy farming. People above the age of 60 were few in paddy cultivation because they lack adequate stamina required in the management of cultivation.

**Table 2: Paddy farmers' educational level with the frequency and the percentage**

No.	Educational level	Frequency	Percentage
01	Primary education	17	15.45
02	Secondary education	33	30.00
03	GCE O/L or A/L	48	43.64
04	Above	12	10.91

**Table 3: One way ANOVA yield per acre versus educational level of the farmers**

Source	DF	SS	MS	F	P
Edu	3	1048634	349545	15.76	0.000
Error	106	2351003	22179		
Total	109	3399636			

S = 148.9 R-Sq = 30.85% R-Sq(adj) = 28.89%

Level	N	Mean	StDev
1	17	2505.9	147.8
2	33	2484.8	130.2
3	48	2437.5	167.1
4	12	2766.7	115.5

Pooled StDev = 148.9

Farmers were found in all categories of educational level. A few of the respondents (11%) had above GCE A/L which includes diploma, professional, degree, postgraduate degree, etc. There were 15% of respondents had primary education that includes grade 1–5. Even though some farmers had responded to primary education, they really had no formal education. Many of the respondents (44%) had GCE O/L or GCE A/L qualification while 30 % of farmers responded to secondary education that consists of grade 6–10 in Sri Lankan education system.

The paddy cultivation is dominated by middle level educational group; almost three fourths and mostly armed with O/L or A/L and secondary education (Table 2). This is so because the farmers feel that paddy cultivation is not highly technical but somewhat technical with not much needed higher scientific knowledge to be successfully undertaken. The ANOVA results in table 3 between yield and the education level of the farmers expressed that the yield is highly correlated with the level of education (P=0.000). That is educated farmers are in a position to obtain higher yield.

The owners of the paddy land always do not involve in cultivating paddy. Most of the time such farmers rent out their paddy land to some other

farmers which is usually done for a season of cultivation. The rent rate varies from land to land and specifically depends on the productivity of the land. Majority (71%) of the respondent had own land for their cultivation at the same time 29 % of the respondent had rented land for the purpose. This indicates that a considerable numbers of farmers have showed their preferences in paddy cultivation. Farmers generally do not like to lose money by farming activities. Based on this assumption, the farmers who cultivated the rented land could show higher performances in cultivation and getting high yield. This is because they should be the good information seekers as well as the information users. But statistically, it was not significant that land ownership did not show any effect on the yield (P = 0.135). However, the mean yield of the farmers cultivated the rented land (2537.5) is higher than the farmer who cultivated his own land (2482.1).

Through farming experience, a person can learn many more things with regard to all activities in his farming practices. It is very obvious that age is positively correlated with the experience of their work. Thus, aged farmers have more farming experience than the younger farmers. The analytical results revealed that there is no significant effect on yield with experience (P=0.649). We expect that there must be a significant effect. This is simply because the real farming experience does not always link with age of the person; he may get on farming activities at later age and also a younger one may join farming activities at early age.

### Information needs

In paddy cultivation, nine areas of cultivation practices have been identified as the information required farming activities: land preparation, seed paddy selection, water management, weed management, pest management, disease management, fertilizer management, harvesting and marketing. Farmers are not a homogenous group, their information needs activities and the depth of information in each area will vary. Information needs of paddy farmers in this region highly vary by farmer to farmer. It is mainly because of their experience in cultivation, age, educational level and ownership of the farming land. According to the response of paddy

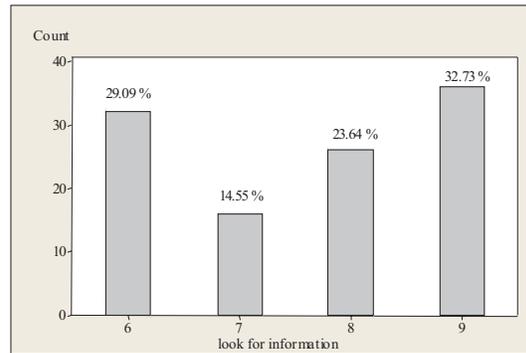
farmers, the information required activities of farmers are shown in the table 4.

**Table 4: Information needed areas of Paddy farmers**

No	Information needed area	Frequency	Percentage
01	Land preparation	59	53.64
02	Seed paddy selection	100	90.91
03	Water management	62	56.36
04	Weed management	101	91.82
05	Pest management	100	90.91
06	Disease management	109	99.09
07	Fertilizer application and management	78	70.91
08	Harvesting	76	69.09
09	Marketing	100	90.91

When pool these practices, a famer at least seek information on six practices on paddy cultivation and none of the farmers require to gather information on five or less than five among the above mentioned practices. The Figure 1 shows the number of cultivation practices for which famers seek for information. All the paddy farmers have the thirst for acquiring information on paddy cultivation since they all require at least information on six practices. 29 % of farmers require six cultivation practices, 14.5 % of farmers seven, 23.5 % of farmers eight and 33 % of farmers nine. This indicates that the paddy farmers like to involve in paddy cultivation more interestingly and like to have better yields with optimum inputs and management. In addition, they like to use the evolved advanced technologies on farming practices. Also, it is signaling that currently farmers are facing with lots of problems in paddy cultivation.

Paddy farmers' agricultural information needs are centered on the production of rice. These needs seem to be as varied as the heterogeneity of famers and the cultivation practices. No one has claimed to have known that none of the information on agriculture, rather paddy cultivation is an information dependent sector where there are new and complex problems faced by farmers every day.



**Figure 1: Farmers' information needs activities with the percentage**

As the answer is multiple choices in the questionnaire, a farmer might select more than one answer in information need questions. The results of paddy farmers information needs revealed that almost all the farmers (99%) required information on disease management. It is explained that diseases in paddy were not a common problem in early days in the research region, but emergency of new diseases has been observed epidemically in recent years and those caused to crop losses significantly. Also, farmers have confusion about the diseases, their identification and control measures.

Weed management has been identified by 92 % of the farmers as another information required area. Majority of the farmers said even though they had spent a lot of money and effort to control weeds, they could not control the weeds totally. Almost 91% of farmers request information on seed paddy selection, pest management and marketing. This is also the expected area where majority of farmers seek information. Land preparation is a basic practice of any crop cultivation and most of the farmers know lots of information about it. However, more than the half (54%) of the population needed information on it. This is simply because the soil should be prepared differently for paddy cultivation and failure in better preparation of soil may cause lots of problems in other practices and ultimately reduce the yield.

Water management was shown by 56% of the population because water requirement of paddy is differs from other crops and the water management practices need to be altered based on the soil condition. Information needs on fertilizer application

and management was expressed by 71% of farmers. This is, as water management is different from other crops and requirement depends on soil and soil condition. Harvesting is another information requirement area (69 %) of farmers because farmers face many problems during harvesting time, harvesting method and yield losses.

The analysis further exhibits that there is clear evidence of association between the farmers' age and the number of information looking area in paddy cultivation. The correlation is negative. That is when the farmers' age increase number of areas seeking for information could be reduced (Table 5). The chi square analysis of educational level and number of information looking areas shows that there is clear evidence of association between these two (Table 6).

**Table 5: Chi square statistics: age and number of areas looking for information**

Age	Look for information				
	6	7	8	9	All
< 40	4 16.00	3 12.00	5 20.00	13 52.00	25 100.00
41 - 50	7 20.00	4 11.43	9 25.71	15 42.86	35 100.00
51 - 60	11 29.73	9 24.32	10 27.03	7 18.92	37 100.00
> 60	10 76.92	0 0.00	2 15.38	1 7.69	13 100.00
All	32 29.09	16 14.55	26 23.64	36 32.73	110 100.00

Cell Contents: Count % of Row

Pearson Chi-Square = 26.703, DF = 9, P-Value = 0.002  
Likelihood Ratio Chi-Square = 26.439, DF = 9, P-Value = 0.002  
Pearson's r = -0.381276  
Spearman's rho = -0.381340

The two chi square analysis between the age group and the number of looking information on cultivation practices and the educational level indicated that both are significantly associated. That is farmers' age and educational levels significantly show association with number of looking information on cultivation practices (P value 0.002 and 0.001 respectively). There was a very clear correlation observed between ages and looking information and it was negative. The elder farmers have more experience and know most of the cultivation practices thereby they seek only a few information.

Another analysis on yield of the paddy and the number of looking information by paddy farmers is performed and the results revealed that there is significant correlation between the yield and the number of cultivation practices looking for

information (Table 7). As the correlation is negative, the farmers who look less number of information get higher yield than the farmers who seeks more information.

The ANOVA results between the number of looking information and the yield indicated that the number of looking information has effect on the yield. In other words, farmers who obtain low yield are looking information on cultivation practices more and more. It is very obvious that if any farmer wants to increase the yield, they must look for new information for upgrading their cultivation practices.

The information needs on cultivation practices tested with age, educational level and land ownership of the farmers by chi square test and with yield by ANOVA separately in order to find out the association, correlation and influence between them. The results are summarized in table 8 and table 9.

**Table 6: Chi square statistics: educational level and number of looking information**

Edu	look fo infor				
	6	7	8	9	All
Primary	9 52.94	3 17.65	2 11.76	3 17.65	17 100.00
Secondary	7 21.21	7 21.21	9 27.27	10 30.30	33 100.00
O/L or A/L	7 14.58	5 10.42	14 29.17	22 45.83	48 100.00
Above	9 75.00	1 8.33	1 8.33	1 8.33	12 100.00
All	32 29.09	16 14.55	26 23.64	36 32.73	110 100.00

Cell Contents: Count % of Row

Pearson Chi-Square = 27.147, DF = 9, P-Value = 0.001  
Likelihood Ratio Chi-Square = 26.149, DF = 9, P-Value = 0.002  
Pearson's r = 0.0594049  
Spearman's rho = 0.0630965

**Table 7: One-way ANOVA: yield per acre versus look for information**

Source	DF	SS	MS	F	P
look information	3	318771	106257	3.66	0.015
Error	106	3080865	29065		
Total	109	3399636			

S = 170.5 R-Sq = 9.38% R-Sq(adj) = 6.81%

look	inform	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
6	32	2568.8	194.2	(-----+-----+-----+-----+-----+)	
7	16	2537.5	131.0	(-----+-----+-----+-----+-----+)	
8	26	2453.8	186.0	(-----+-----+-----+-----+-----+)	
9	36	2450.0	150.2	(-----+-----+-----+-----+-----+)	

Pooled StDev = 170.5

**Table 8: Chi square results of information needs on cultivation practices with age, educational level, land ownership, yield.**

Information needs	Chi square test			Correlation		
	Age	Education	Ownership	Age	Education	Ownership
Land preparation	Associate	Associate	Not associate	Negative	Negative	-
Seed paddy selection	Not associate	Associate	Not associate	-	-	-
Water management	Associate	Associate	Not associate	Negative	Negative	-
Weed management	Associate	Not associate	Not associate	Negative	-	-
Pest management	Associate	Associate	Not associate	Negative	Negative	-
Disease management	Not associate	Not associate	Not associate	-	-	-
Fertilizer management	Associate	Associate	Not associate	Negative	Negative	-
Harvesting	Not associate	Associate	Not associate	-	Negative	-
Marketing	Not associate	Not associate	Not associate	-	-	-

**Table 9: ANOVA results of information needs on cultivation practices with acreage yield**

Information needs	ANOVA test		Mean yield (kg)	
	P value	Influence status	Information need farmers	Information not seeking farmers
Land preparation	0.132	Not influence	2475	2526
Seed paddy selection	0.125	Not influence	2490	2580
Water management	0.017	Influence	2463	2544
Weed management	0.000	Influence	2478	2722
Pest management	0.000	Influence	2480	2680
Disease management	0.565	Not influence	2497	26000
Fertilizer management	0.002	Influence	2465	2578
Harvesting	0.021	Influence	2472	2556
Marketing	0.684	Not influence	2496	2520

The results revealed that information needs on cultivation practices exhibits association with age and educational level of the farmers but not ownership status of the land. All the associations correlate with negatively: that is with increasing of age of the farmers or the experience and the educational level of the farmers' state reduction in information needs on the cultivation practices. Information on seed paddy selection, disease management, harvesting and marketing does not associate with age of the farmers as the information is requested by all age farmers group. At the same time weed management, disease management and marketing do not show any association with educational level of the farmers. Information needs on these practices does not influence by the educational level of the farmers.

According to ANOVA test, the yield has no effect on information needs on land preparation, seed paddy selection, disease management and marketing.

Information needs on other all activities has influence the yield. However, the mean yield very clearly exhibits that the farmers who require information on cultivation practices in paddy cultivation, has obtained lower yield than the farmers who did not search or knew a lot of information in cultivation practices.

## Conclusion

This research represents the first exploratory study of the information needs and seeking of paddy farmers in agricultural sector in Sri Lanka. Demographic characters such as age, educational level, ownership of the paddy land and experience are considered the most important characteristics. Farmers population exhibits variation in the characteristics same as the normal population. These characteristics affect the information needs and seeking behavior of the paddy farmers in different degrees in the Ampara

district. Age and educational level are the most important characteristic identified as shown affect on the farmers information needs on cultivation practices. Ownership of land not much affect on farmers information seeking behavior. It does not exhibit impact on any paddy cultivation practices. Farming experience is another characteristic obtains from the age of the farmer and which shows impact on information needs and seeking behavior considerably.

The frequency of information needs on the cultivation practices of paddy varies within farmers. Disease management, weed management, seed paddy selection, pest management and marketing are found very high information needed area of the farmers. In other word, these are highly information lacking areas. Fertilizer application and harvesting are the information lacking areas next to the above and majority of farmers look information on those. Water management and land preparation are comparatively low information lacking area but more than half of the farmers' population seeking information on the above.

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