

Farmer's perceptions on rice production management practices in Bayog, Zamboanga Del Sur, Mindanao, Philippines

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Abstract: To cope with changing climate and other environmental problems, rice production practices in the Philippines are continually changing but while there are already existing programs for farmers on proper farm management, productivity is still low. This study was therefore conducted to know the issues and concerns of farmers by looking into their management practices that include seeds and seedling transplanting, fertilizer application and pesticides application. This study was conducted in selected villages where rice farming is dominant. Personal interview (PI), focus group discussion (FGD) and key informant system (KIS) were carried out to enable information sharing, analysis and action among the rice farmers. Results of the study show farming practices are continually relied on their existing knowledge acquired from families, seminars, trainings and co-farmers. A majority still believed on their own instinct, beliefs and perceptions. Because of poverty and other economic issues including most farmers are entangled with middlemen because of debts, adapting to more appropriate farm practices were not followed. Inasmuch they want to apply received knowledge from trainings, seminars it only has small influence on their farming practices.

Key words: Key informant system; Focus group discussions; Beliefs; Perceptions

1. Introduction

Rice locally known as "palay" in Filipino or "humay" in Cebuano in the Philippines is considered a staple food for 90% of Filipinos. Around 11.5 million farmers and family members depended on the rice industry as their means of livelihood. Thirty-three percent of the country's agricultural lands are devoted to rice (SRFACCP, 2009). Rice farming, however is being threatened by several environmental factors (IPCC, 2001; Fand et al., 2012; Hope, 2009; IRRI, 2006; Karuppiah and Sujayanad, 2012; Mubaya et al., 2010; Mitin, 2009 and Wassmann and Dobermann, 2007), due to changing intensity and length of the rainy season and rainfall in the Philippines and pest outbreaks (Yasin, 2011; Dengiz, 2013).

To cope with changing climate and other environmental problems, rice production practices in the Philippines are continually changing (McCarl, 2006; Ceesay, 2004). This includes changes in technologies and programs to respond to the dynamic challenges and needs of the Filipino farmers and the whole population (Mitin, 2009). This is considered most pressing due to continuous population growth and clamour for cost-effective rice farming. The use of modern high-yielding varieties and the management of nutrients, pest and disease management, and water are technologies that directly contribute to higher yield (Bautista and

Javier 2008). Farm mechanization and direct seeding do not directly affect production but significant contributes to costs coming from labor. While rice productivity was increasing over the years, full self-sufficiency is not yet attained even with the existence of technological breakthroughs in rice science and the promotion of improved technologies and practices to the Filipino farmers (Bautista and Javier 2008). This can be attributed ways farmers poor management practices which are based largely on their perceived beliefs and attitudes of damage and control and not on the use of the modern management practices suited to a certain variety and environmental climatic conditions (Minh et al., 2014; Mitin 2009; Heong and escalada, 1999; Heong et al., 2001). In a rice-producing area in the Province of Zamboanga Sibugay in the Philippines, there are areas that have become more progressive in rice production while there are also those that are not. It is therefore ant to determine those perceptions of farmers that affect their rice production management practices which lead them to improper practices.

2. Materials and methods

Description of the Study Area: Bayog is a Municipality with a total land area of 37,473 hectares distributed among 28 villages. The choice of this municipality is based on the fact that this is one

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of the major rice sources in the province. Furthermore, the villages for the survey would be purposefully selected in order to represent the real ecological and farming systems that exist in the area but limited only in irrigated farm.



Fig. 1: Shows the Location of the Municipality of Bayog, Zamboanga del Sur. In set is the map of the Philippines emphasizing the location of Zamboanga del Sur (Source: Googlemap.com)

Scope: This study focused on farmers management practices that include seeds and seedling transplanting, fertilizer application and pesticides application. This study was specifically conducted on the seven hinter villages where rice farming is dominant.

3. Data collection methods

A courtesy call to the mayor and to the village captains of the selected seven (7) villages was done for the legality of the study. A pre survey test of 25 farmers was carried out in order to assess the quality and effectiveness of the questionnaire. The questionnaire was modified and validated through Focus Group Discussion (FGD) with the farmers (Heong et al., 2002). The final version of the questionnaire used to gather information was translated into vernacular (Cebuano) to facilitate better understanding to the farmers. Personal interview (PI), focus group discussion (FGD) and key informant system (KII) were carried out to enable information sharing, analysis and action among the rice farmers following the method employed by Heong et al. (2001), and Huan et al. (2008). Data mining was also done for gathering secondary data using internet, journals, reports and other publications.

Selection of the respondents: Considering the large amount of farmers' population in the municipality, random simple sampling of 175 farmers in which divided evenly into seven (7) villages (Depore, Dipili, Damit, Lamare, Salawagan, Kahayagan and Poblacion) was done. The choice of the respondents was based on the reference of the village officials, purok presidents and municipal agriculturist who is well oriented in the place.

4. Data Analysis

Descriptive statistical tools such as sum, average, etc. were used to analyses and describe farmers' response to the perceptions and farming practices. Analysis was carried out using statistical package called R version 1.1 available at <http://www.r-project.org/> and following the module used by Martinez (2009) the R for Biologist version 1.1.

5. Results and discussion

The results of the survey show a majority of the farmers were male, married and belong to four major Christian groups (Table 1).

Table 1: General profile of the respondents

	Frequency	Percentage (%)
Sex		
Male	143	82
Female	32	18
Civil Status		
Single	18	10
Married	148	85
Widow/widower	9	5
Religion		
Roman Catholic	136	78
Born again Christian	39	22
Ethnicity		
Bisaya/Cebuano	102	58
Ilocano	13	7
Ilongo	45	26
Subanen	15	9

It can be seen also that a majority of the farmers were middle aged but also include younger and old aged (Fig. 2). Most of these farmers were either the parents or children of the middle aged groups who remained farming because of poverty and cannot be sent to school. Only very few have gone to school and some were illiterates (Fig. 3). Some farmers did not finish college because during their time, finishing high school is considered enough and were immediately encouraged to work by their parents in the farm to help support the family. Results also showed a majority of the interviewed farmers were engaged in rice farming for more than five years (Fig. 4) and this made them believed the experience they have in farming made them more than capable in rice crop management.

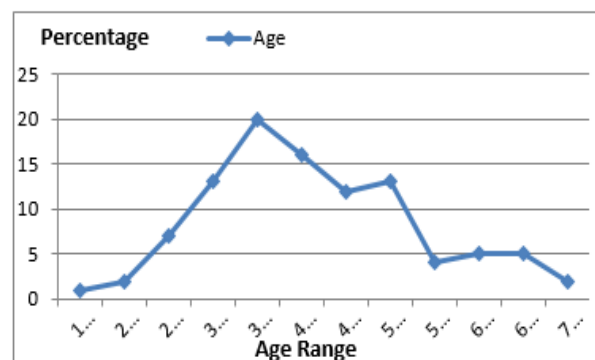


Fig. 2: Age profile of the respondents

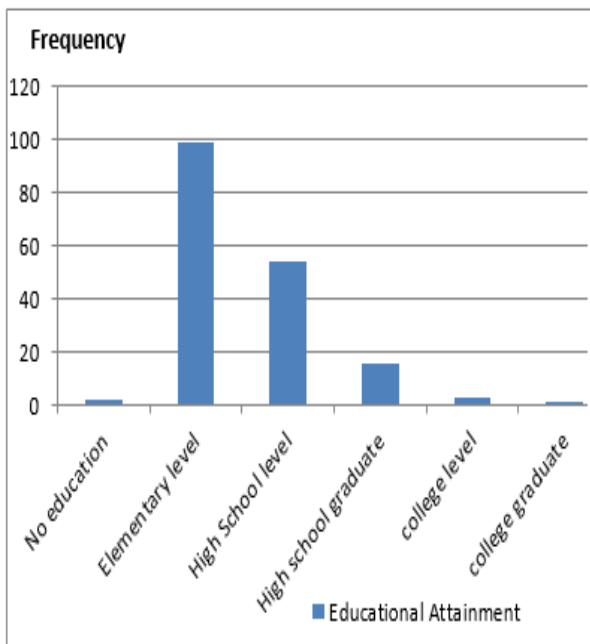


Fig. 3: Educational status of the respondents

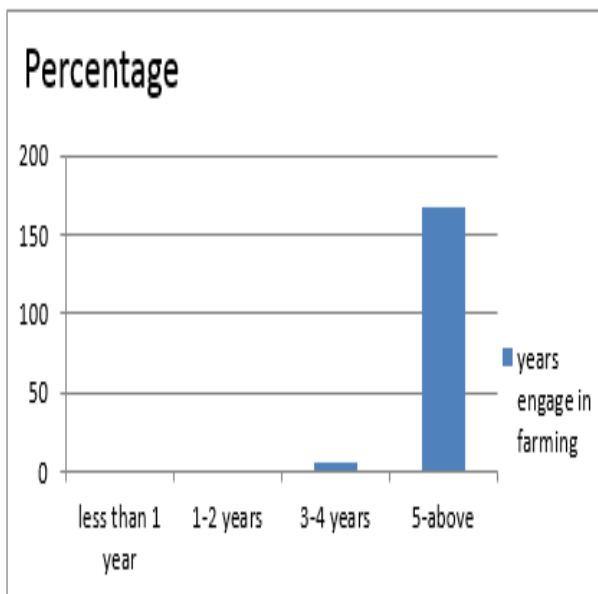


Fig. 4: Number of year's farmers engaged in farming

There were six (6) types of rice-farmers which include tenant-farmers, owner-cultivator, owner at the same time tenant farmers, owner-at the same time hired workers, tenant-farmers at the same time hired workers and farm-laborers or hired workers.

The "tenant farmers", which constitute 40 or 23% of the respondents, are locally known as "samuhante or tig maintain". The "samuhante" or literally known as "entrusted" were responsible for farm maintenance that include orderly field preparation and ensuring the planting area is ready while the owner supports the financial needs. They were also in charge in the harvesting and given a profit according to their agreed shares. In most cases, tenant farmers only given 10% of the harvested yield measured by sack. In every 10 sacks of rice is given to the tenant farmers. There were also respondents who were the sole owners of the lots they cultivated

and receiving and enjoying all of the benefits in the farm. They were called as "owner-cultivators".

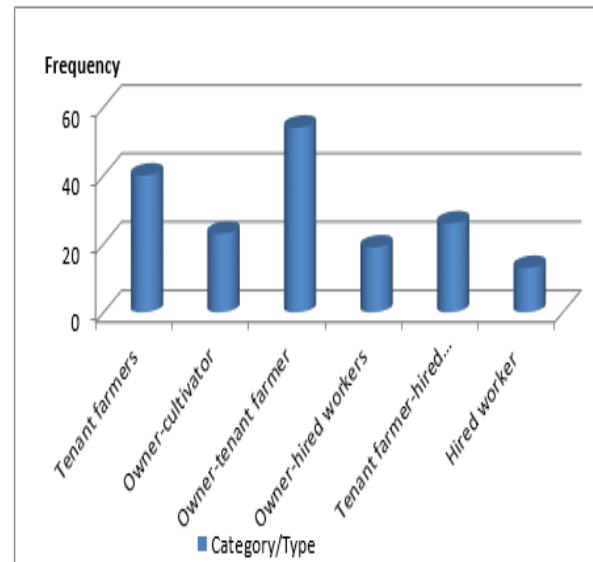


Fig. 4: Rice farmers by type

Tenant -farmers share have a different sharing-scheme with farm owners from the yield in the rice land that was entrusted to them. The number of owners who were at the same time "tenant famers" are those owners who pawned their land to the loan sharks or businessmen but are still the one who till the land thus will serve as "tenant-farmer". This constitutes a large number because of unpaid debts and those needs to finance their farm expenses. These group of farmers argue that no "rice farmers cannot live without debt". Some of the farmers were still working as "hired laborers" because of the lack of finances to support their families.

There were also those who do not own a farm lot but as farm help as a source of income. They are known as "farm laborers or hired workers". They are hired to do some farm jobs in exchange of cash or in kind as compensation. Farm jobs include preparation of the farm until harvesting. The jobs include "magdaro or ploughing the field using a carabao animal", "magtractor or harrowing the soil using hand tractor", "manghampil or fixing the embankments", "magsapil or land levelling", "magtanum or transplanting", "magsabwag or seeding", "mangispre or spraying", "mangabuno or fertilizer spreading", "manggabot or pulling seedlings", "mangamlot or manual weeding", "mamuna or filling spaces between rice plant", "manglampas or weeding", and "mangani or harvesting".

The farmers surveyed were found to be dependent only on the income derived from the income derived from farm activates and yield. The data revealed that majority of farmers were belonged to the "poorest of the poor" whose income is way below the minimum threshold which is P5, 548.00 for a family of five (5) per month to meet their basic food needs (Table 2). Most farmers earned an estimate of less than 5,000 per month (105 or 60%) and more of them have a household

size ranging from 4-7 thus the income is below poverty line in Philippine standards. It was reflected in Table 2 below.

Table 2: Economic status of respondents

	Frequency	Percentage
Main source of income		
Farming	174	99
Others	1	1
Estimated monthly Income		
less than 5,000	105	60
5,001-10,000	43	25
10,001-15,000	23	13
15,001-20,000	4	2
Household Size		
less than 4	39	22
4-7	83	47
8-11	52	30
more than 12	1	1

Farmers were shown to have beliefs that affect their decision on rice farming management practices. A majority believed (65%) “High seed rates give high yield” or “if you plant more you will harvest more”, popular quotes to those interviewed. The actual seed quantities used by farmers in all study sites were 10-20% higher than recommended rates of the Department of Agriculture of 86 kg/ha for transplanting and 129 kg/ha for direct seeding (Bautista and Javier,2008; Minh et al., 2014). While a

majority were already aware that high seed rates in direct seeding system will be prone infestations of insect pests like insects, many also did not believe on this argument. It is their common belief that man is not in control of the situation and if the farm is a failure then it is unfortunate and has to be accepted. They believe patience is a virtue and that failures in farming do happen. Many farmers always believed in luck. Even the farmers already been educated through information drive by the effort of municipal agriculture office, still relied on luck for their farm. Many farmers also believed that transplanting seedlings in a closer distance will increase the yield but when you will ask them why, their answer was based on instinct and not on reasons. There are also those who follow strictly the standard protocol in rice farming but on a case-to-case basis depending on the quality of soil and economics as only a few can afford the high cost of seeds. To ensure all plants are growing well, within five days, dead or weak seedlings are removed and replanted with better and taller seedlings believed will grow faster than those smaller ones. Taller seedlings can grow faster when transplanted because it is already tall than those younger seedlings and is strong enough to survive from the attack of golden apple snail. Tip of the leaves are also cut during planting for fast recovery when transplanted. There are also those who prefer to plant smaller seedlings aging less than 25 days because it is easy to transplant (Table 3).

Table 3: Perception statement on seeds and transplanting

Perception statement	Agree	%	Dis-agree	%	Not sure	%
High seed rates give high yield.	114	65	33	19	28	16
High seed rates will result in more insect problems.	91	52	30	17	54	31
Transplanting seedlings in closer distance will increase yield	71	41	69	39	35	20
Transplanting taller seedlings will grow faster.	84	48	30	17	61	35
New rice varieties have the same production rate with the traditional variety.	33	19	40	23	102	58
New rice variety is prone to damage and needs more fertilizers.	94	54	56	32	25	14

Regarding yield, results indicated that a majority (58%) of farmers interviewed had a little knowledge on the yield difference of new and old varieties. They have no knowledge on what variety either old or new higher yields have because they have observed that both varieties were attacked and damaged by pests and by unpredictable weather. They also perceive that the use of new rice variety is also prone to damage and require more fertilizer inputs thus adding to their management cost. Since most of the farmers rely on money lending to finance their farm, additional cost would mean income losses (Table 3).

This study also showed that half of the farmers are aware that too much input of fertilizers was not a guarantee to have more filled grains. One farmer said that the use of too much fertilizer will result to more empty grains and prone to pest attack. But, a majority still believed otherwise. High fertilizer inputs will produce more filled grains and that will result to a higher yield. Furthermore they believed

that having more than enough fertilizer input will make the crops healthier and produce more grains. Despite of opposing beliefs on fertilizer application, still many prefer high inputs. Some farmer argue that in the current situation, it is impossible to plant rice and expect high yield without using fertilizer and it is better to use more There are constraints to this however since the farmers in Bayog usually rely on their experience and budget to choose the rates of fertilizer to be applied on their fields (Table 4). The choice of types of fertilizer depends on farmers’ experience. Large number of respondents chose kinds of fertilizer based on the knowledge of fertilizer usage left to them from their parents or combined with what they learned from the media. But, a considerable percentage of farmers chose types of inorganic fertilizer through lessons learned from training classes organized by local agricultural extension. According to Doberman (2012), farmers know very well that they need to apply fertilizer, but they also want to keep things simple. Their decisions

are much influenced by fertilizer availability and price, own experience, and convenience in applying

the nutrients needed". The use of inorganic fertilizer (96 or 55%) is cheaper.

Table 4: Perception statements on fertilizer rate application

Perception statement on high rate fertilizer application	Agree	%	Dis-agree	%	Not sure	%
High input rate of fertilizer will:						
Produce more filled grains and healthier crops.	32	18	88	50	55	31
Increase diseases/insects problem	103	59	44	25	28	16
Result in higher yield	98	56	46	26	31	18
High fertilizer rate is necessary nowadays	105	60	31	18	39	22
Inorganic is better and cheaper than organic fertilizer	96	55	46	26	31	18

Perceptions on Pesticides Application

Table 5: Perception statements on pesticides application

Perception statement on pesticides	Agree	%	Dis-agree	%	Not sure	%
Insecticide spray will:						
1. Harm health	135	77	28	16	12	7
2. Kill natural enemies of pest.	100	57	30	17	45	26
3. Eliminate the pest in the area	99	57	37	21	39	22
4. Modern farmers use pesticides	102	58	39	22	34	19
5. Pesticides are cheaper and easy to apply.	101	58	45	26	29	17

Rice farmers usually apply various kinds of pesticide to control pests/diseases (Pingali and Rola 1993, Parveen, 2010), a practice that is no longer unusual to farmers. While a majority were already aware that spraying insecticides may harm their health still, there were those who still did not use proper spraying gear since they find wearing proper gears very hustle, they can't freely move and very hot to the body. They find it more comfortable to spray insecticides without any spraying gears. The farmers believed that spraying insecticides will eliminate the pests in the area even if the pesticides will kill the natural enemies of the pest (Heong et al., 2001; Norton et al., 2010). It was their common argument that they have no choice, since they believe the populations of natural enemies can't hold pest infestation and control diseases". Focus group discussions revealed that some farmers believed that all insects are harmful and were not aware that there are also friendly insects in the rice field areas and considering in the present situation pests was already very rampant, it is impossible to plant rice without using pesticides for the protection of the plant". There are some farmers who do not apply pesticides not because they knew its harmful effects but because of lack of financial capabilities. The preferred use of pesticides by the farmers is based on the idea that it is cheaper and easy to apply than using natural means of control.

6. Conclusion

While there are already existing programs for farmers on proper farm management, farming practices of rice farmers is continually relied on their existing knowledge acquired from families, seminars, trainings and co-farmers. A majority still believed on their own instinct, beliefs and perceptions. Because of poverty and other economic issues adopting to more appropriate farm practices were not followed. Inasmuch they want to apply received knowledge

from trainings, seminars it only has small influence on their farming practices.

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