

General Sir John Kotelawala Defence University

10th International research conference
“Changing Dynamics in the Global Environment: Challenges and Opportunities”

3rd and 4th August 2017

Proceedings

General Sir John Kotelawala Defence University
Ratmalana 10390
Sri Lanka
www.kdu.ac.lk/irc2017

Crop Farm baseline Survey in Eravur Pattu of Batticaloa District with Special Reference to Socioeconomic Factors, Cultivation Practices, Extension Services and Constraints

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Abstract- *The purpose of this study was to examine factors influencing the adoption of agricultural practices among small holder farmers in Eravur Pattu of the Batticaloa District. Agriculture is the principal source of food and livelihood in Sri Lanka. Demographically it is the broadest economic sector and plays a significant role in the overall socio-economy of developing countries like Sri Lanka. A predesigned questionnaire was used to find out the socioeconomic factors, cultivation practices, extension services and constraints in crop cultivation. Primary and Secondary data were collected from the Agrarian service centres and crop farmers by means of a questionnaire survey among randomly selected 120 farmers during the period of April to June 2016 in 3 AI ranges in Eravur Pattu. The information regarding those factors and issues were analyzed using SPSS (Version 22) and Microsoft Excel package. It showed that 84% of the respondents were male and the majority of respondents (48%) fall between the age range of 30-40years. 48% are at primary education level and the size of the farming of 44% is 5 members. The main occupation of 56% is farming. The study further revealed that 54% of the farmers use Gravity irrigation (tank). When considering the land ownership, all farmers (100%) have their own land in the Maha season. But 58% of farmers have their own land cultivation in the Yala season. 64% of the farmers have leased land for doing cultivation in Maha season and 56% in Yala season. 82 farmers (68%) cultivate paddy in large scale at both Maha and Yala seasons. At the time of survey, Brinja, Maize and Groundnut are the crops being cultivated widely in large scale as well as in their home garden.*

Keywords— Crop farm, socioeconomic factors, farming constraints, Eravur Pattu

I. INTRODUCTION

Agriculture still offers the leading source of livelihood, and contributes a great percentage to national income for most developing countries around the world. The majority of Eravur Pattu farmers are small-scale farmers who depend mainly on agriculture for their livelihoods. Agriculture provides food for their families and cash to meet their daily needs such as housing and school fees. To meet the family food and financial demands, small-scale farmers are obliged to adhere to good agricultural practices which are fundamental for high productivity. Ensuring food for all, today and in generations to come, is

one of the greatest challenges facing the world community. Food security is defined as the ability of people to meet their required level of food consumption at all times; it is considered by many to be a basic human right. (FAO, 1997). Therefore, boosting the rural economy, particularly through increased agricultural production, is one of the chief means of alleviating poverty and increasing food security (Pinstrup-Andersen and Pandya-Lorch, 1998). In explaining productivity growth, economists originally limited themselves to the role of conventional inputs such as land, labour, physical capital, water and chemical inputs. However, the failure to explain productivity growth adequately led them to examine the role of human capital and public goods, such as education, agricultural research and extension and publicly provided infrastructure (Mankiw, Romer and Weil, 1992). Public policies that have a strong link to agricultural productivity such as policy reforms were also examined (Auraujo, Chambas and Foirry, 1997). Socio-psychological trait of farmers is important. The age, education attainment, income, family size, tenure status, credit use, value system, and beliefs were positively related to adoption. The conditions of the farm include its location, availability of resources and other facilities such as roads, markets, transportation, pests, rainfall distribution, soil type, water, services, and electricity (Chi and Yamada, 2002). In these circumstances, current study was conducted to find out the socioeconomic factors, cultivation practices, extension services and constraints in crop cultivation in Eravur Pattu.

II. METHODOLOGY

A questionnaire survey was conducted in order to have a clear vision on the socioeconomic factors, cultivation practices, extension services and constraints in crop cultivation of the farmers who cultivating the crops in the Eravur Pattu of Batticaloa District. (Figure 1). This research was continued with the primary data were collected from three Agrarian service centres (Table 1) with the help of Agricultural Instructors and secondary data were collected from farmers who cultivating the crops in the Eravur Pattu of Batticaloa District by means of a questionnaire survey among randomly selected 120 farmers during the period of April to June 2016. According to the guidance of Agricultural Instructor, a visit was made to farmer's cultivated lands of each 3

Agrarian service centres in each AI range in order to collect essential details from farmers.

Therefore interview was made among randomly selected farmers at their doorstep and their field. Finally, the raw data was gathered and spreaded in a Microsoft Excel spreadsheet and fed to the SPSS software to find the frequencies and trend, for further analysis.

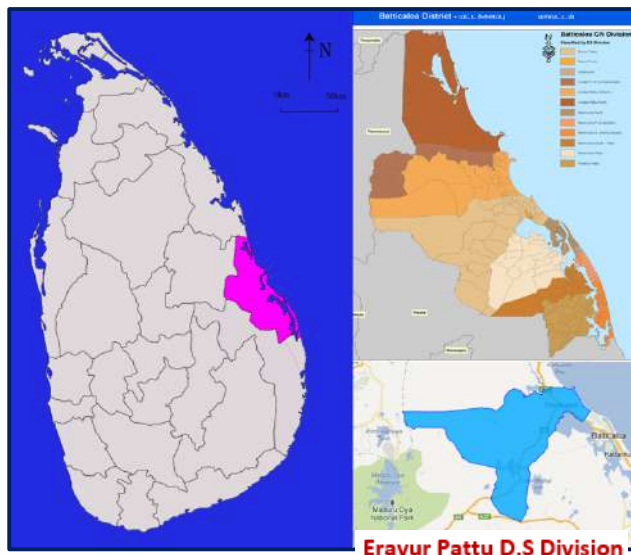


Figure 1. Study Area

Table 1: Study area

Eravur Pattu D.S Division			
AI Range	Eravur	Vantharumoolai	Karadiyanaaru
G.N Division	Eravur 04	Vantharumoolai	Karadiyanaaru
	Eravur 05	Kommathurai	Illuppadichenai
	Chenkalady	Maavadivempu	Pullumalai
	Mayilambavali	Sithandi	Koppaveli
	Koduwamadu	Palacholai	Pankudaveli

III. RESULTS AND DISCUSSION

A. Socioeconomic information

1) Age

The result shows that majority of the farmers (48%) fall between the range of 20-30 years and 24% of the farmers fall between the ranges of 40-50 years (Figure 2). Interesting characteristic of farmers that could have either positive or negative effect on adoption of agricultural practices as observed in some adoption literature is the age of the farmer. Adesina and Baidu-Forson (1995) shared a thought on the expected effect of farmers' age on adoption, that older farmers may have more experience in crop production and be more exposed to the potentials in modern technology than younger farmers. However they pointed out that they could as well be more risk averse than younger farmers and have a lesser likelihood of adopting improved technology.

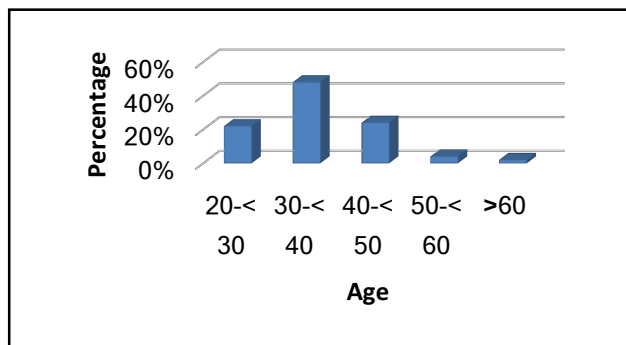
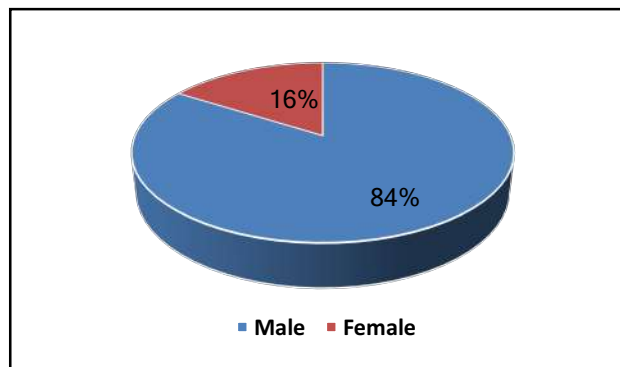


Figure 2. Age Distribution

2) Gender

It shows that 84% of the respondents were male while 16% of respondents were female (Figure 3). Gender equity among the respondents who participated in this study was not achieved. Results of studies in sub-Saharan Africa have shown that male headed households have more access to land, education, and information on new technologies (Bisanda & Mwangi, 1996). There is a strong association between the gender of the household head and adoption of technological recommendations (Bisanda



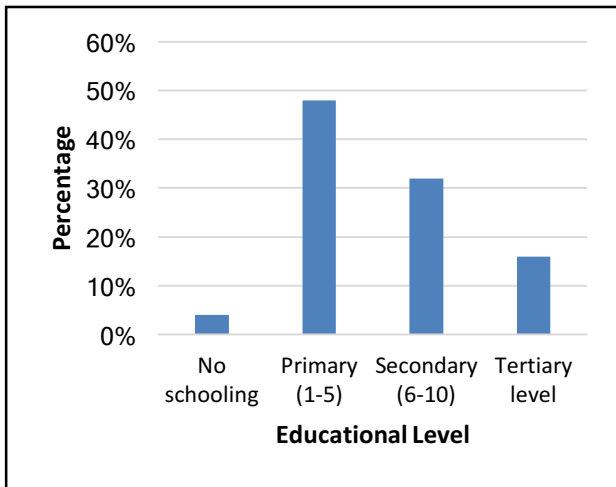
& Mwangi, 1996).

Figure 3. Gender Distribution

3) Educational level

Education is considered as a major determinant for generating awareness about modern agricultural practices and application of inputs while looking at the educational status of respondent, results revealed that majority (48%) of respondents have primary school educational level followed by secondary education (32%), uneducated (4%), whereas only 16% of respondents were tertiary level (Figure 4). Increased agricultural productivity depends primarily on the education of the rural farmers to understand and accept the complex scientific changes which are difficult for the illiterate rural farmer to understand. Hence we cannot increase the productivity of the rural farmer except through the provision of adult education (Onwubuya, 2005). In most of the studies, education was found to be related to

output positively and significantly. For example, in Kenya, Moock (1981) found that schooling of more than 4 years produced a higher yield than schooling below four years. In India, Chaudhri (1968) and Singh (1974) observed that level of education of farmers significantly influenced the productivity of agriculture and use of modern inputs. In



Odisha, Debi (1984) and Patnaik (1985) found that level of education of farm workers was positively and significantly related to agricultural productivity.

Figure 4: Educational level of farmers

4) Occupation

The results show that, as much as 56% of them doing farming as their major occupation and 22% of respondents were self-employed. However, having agriculture as the main occupation appears to be a disincentive to credit access. This is reflected in the low amount of credit obtained by sole farmers compared with those that have agriculture as a secondary occupation. This could be attributed to the risky nature of farming. (Awotide *et al.*, 2015).

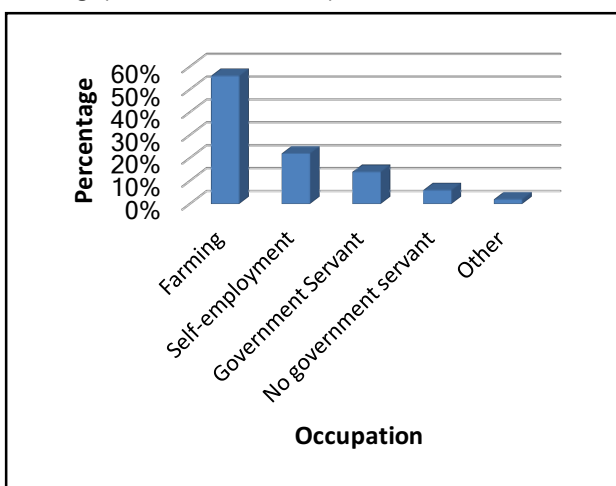
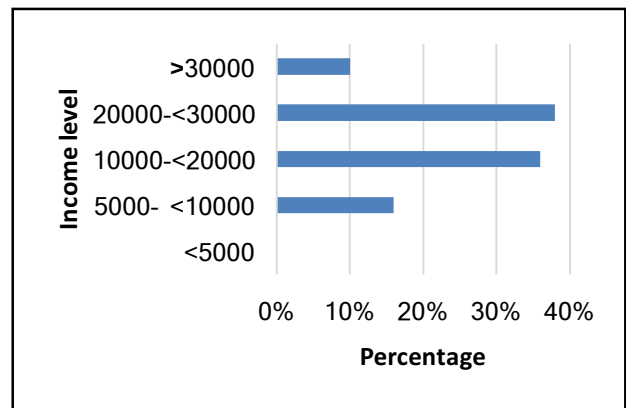


Figure 5: Occupation

5) Income level

The average total monthly income per head is above LKR 15,000. Most of them (38%) getting income between LKR 20,000-30,000. Farm income is a significant part of total

income and, hence, is important for purchasing power and food security. Income level of famers is very



important actor which determine the adoption of technology, education and availability of inputs.

Figure 6: Income level of farmers

6) Family size

The family size of 44% respondents was five, followed by 22% of them had family size more than five members. The use of family labours on off-farm, reduces the availability of labour on the family farm that can lead to productivity loss and stagnating or declining agricultural incomes (Reardon, 1997). While, Lewis (1954) argued that in the rural area agricultural production does not decrease as a result of household member transferred to other employment, because the marginal productivity of labour in agriculture almost zero. The labour demand for farming are meet by family labour, hired labour and labour sharing arrangements. The labour sharing arrangements is a social tie which is used as a farming business transaction and a form of family labour. This implies that sources of labour for farm are causal hired labour and family labour. Most farm labour comes from family labour (Nasir, 2014).

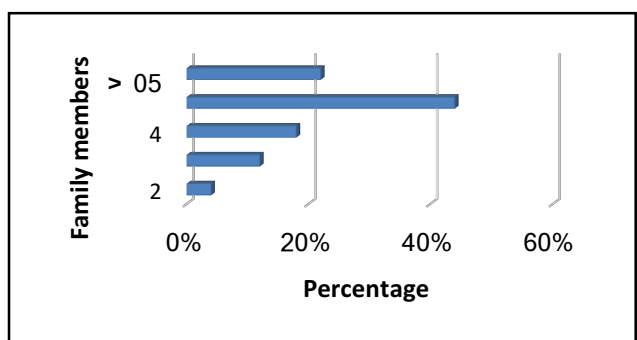
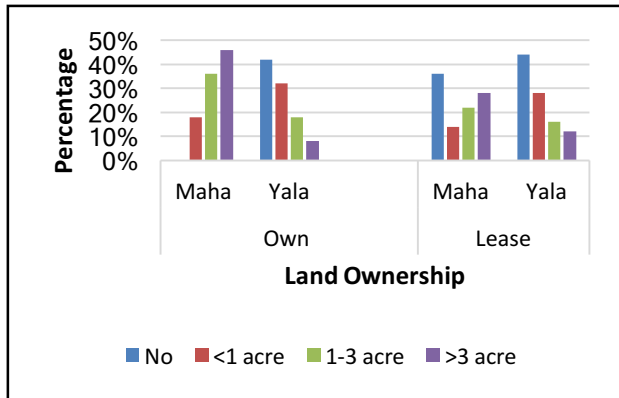


Figure 7: Family size

B. Land ownership

When considering the land ownership all farmers (100%) were having their own land in Maha season. But 58% of farmers were having their own land cultivation in Yala season. 64% of the farmers have leased land for doing cultivation in Maha season and 56% in Yala season. Land is a precious resource. According to FAO estimates,

almost 80 percent of the world's undernourished people live in rural areas and most depend on agriculture, including livestock, for their livelihoods. Land ownership has the potential to increase or decrease agricultural production thus improving farmers livelihoods. Given the importance of the agricultural sector in economic growth, employment and poverty alleviation in rural areas, it is



crucial that land ownership contributes to increased (or at least sustained) levels of agricultural production (FAO, 2010).

Figure 8: Land ownership

C. Nature of cultivation

82 farmers (68%) were cultivating paddy in large scale at both Maha and Yala season. Although global food (cereal) production has increased significantly as a result of adoption of agricultural innovations (improved crops varieties) and other associated technologies such as fertilizer, herbicides and pesticides (Tilman *et al.*, 2002). Maize cultivation is very popular among arable crops farmers in Nigeria (Bamire *et al.*, 2010) because of its high socio-economic value and importance in tackling food insecurity and poverty.

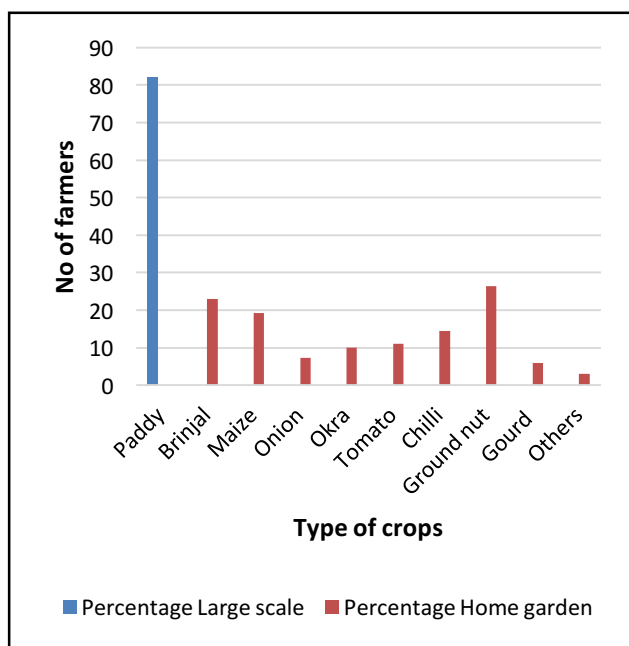
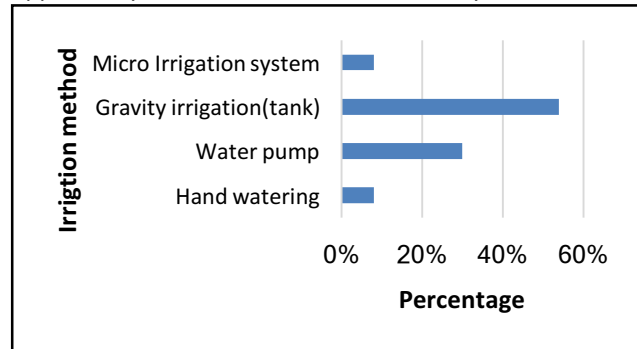


Figure 9: Nature of cultivation

D. Irrigation method

Irrigation has been described as a condition necessary for insufficient rainfall and/ or poor distribution of rainfall in agriculture producing area (Punial & Pande 1997). However, the study revealed that the method of irrigation adopted by the respondents as 54% used Gravity irrigation (tank), 30% used Water pump, and 8% used Hand watering while 8% used Micro Irrigation system. Modern irrigation technology has offered the opportunity to cultivate more land all the year round. So,



a model that can adequately propel maximum food productivity, remove hunger from our society, reduce poverty and translate the dream of attaining the high agricultural productivity is presented by MWI (2002).

Figure 10: Irrigation method

E. Availability of agricultural inputs

The results show that, the availability of irrigation water is not sufficient for 67% of farmers during dry seasons and seeds, fertilizer, and agro chemicals are sufficient for 76%, 32%, and 34% of farmers. In the case of equipment, only 20% of farmers were having equipment sufficiently. Agricultural marketing concerned with two aspects that is the marketing of the farm produces and marketing of farm inputs that are consumed by the farms to produce Agricultural produces. Agricultural marketing is a dominant topic in the Indian marketing literature. The main focus is on marketing of agricultural produce and that of agricultural inputs like fertilizers, pesticides, seeds and farm machineries (Jha, 1998). Sukhpal Singh (2008) stresses that agricultural inputs are at the heart of rural marketing and rural development. They support farm production which is the source of income for a very large part of rural population and create market for other consumable and durable products in rural areas.

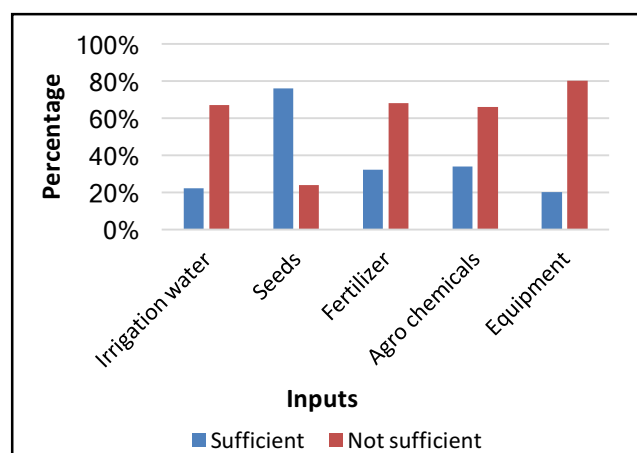


Figure 11: Availability of agricultural inputs

F. Availability of human capital

Human capital is not sufficient to all farmers due to high labour cost. However they were managing by their family members (Figure 12). In the literature of development economics, the interaction of human capital and economic growth has been a well investigated issue. Schultz (1961) emphasizes the role of education in improving farm efficiency and in modernizing agriculture. Technical change plays a major role in increasing productivity in agriculture, which leads to high demand for human capital (Mellor 2008: 104).

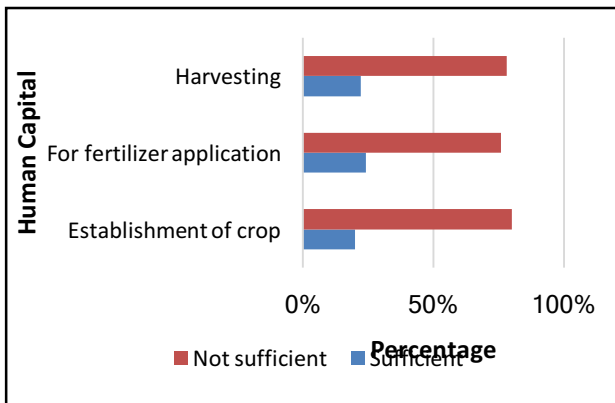


Figure 12: Availability of human capital

G. Membership in farmer organization

Among all farmers, 56% of farmers were having membership in any of farmer organization especially in the Agrarian Service Centre (ASC). Farmers' voice cannot be obtained without farmers' organizations. In the world, for instance, there are hundreds of millions of farmers. To engage in any sensible dialogue with the rest of society, farmers need their representative organizations, the farmers' organizations, structured from grassroots to the international level, as their legitimate voice (Bratton, 1983). This is why farmers' movement gives a lot of importance to farmers' organizations, organizations by farmers and for farmers, as an important pillar of today's society. Here is a positive causal effect from membership in a farmers' organization to overall agricultural profits. This group of income is always significant and positive. Available evidence indicates that farmer organizations can provide a mechanism to increase the total level of resources supporting agricultural development and the efficiency with which these resources are allocated at the farm level. (Bratton, 1983).

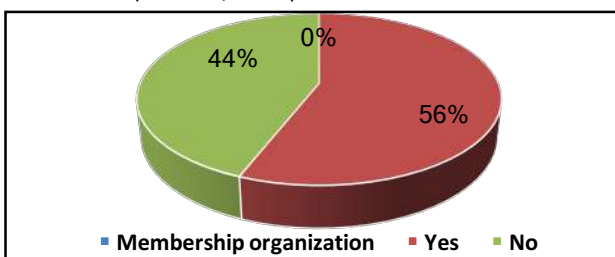


Figure 13: Membership organization

H. Extension services

On extension contact, 36% of participants had access, while 64% of participants have no extension contact. This implies that the participants had not greater chance of coming in contact with agricultural innovations which enhance productivity. Agricultural extension includes the provision of farmers with knowledge, information, experiences and technologies needed to increase and sustain productivity and for improved wellbeing and livelihoods (NRI, 2011). To ensure the performance of the agricultural sector, it is important that agricultural extension services in Tanzania are provided in the right frequency and time (Rutatora and Matee, 2001). Agricultural extension brings about changes in household food security, through education and communication in farmers attitude, knowledge and skills (Koyenikan, 2008). Agricultural extension services provide farmers with important information, such as patterns in crop prices, new seed varieties, crop management, and marketing. Exposure to such activities is intended to increase farmers' ability to optimize the use of their resources. At times even when technologies are available, smallholder farmers have no access to them (Fliegel, 1993).

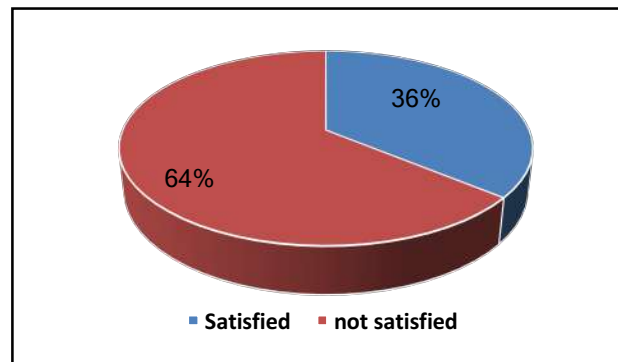


Figure 14: Extension services

I. Constraints related to farming

- Market price fluctuation for farm products.
- Limited cultivating area.
- There are no any loan facilities for vegetables cultivation
- Lack of labour during plant establishment. And lack of machineries' during harvesting.
- Poor financial condition of farmers
- There is no effective method to control the pest problem in vegetables especially in vegetable cultivation.
- Lack awareness programmed to farmers in the vegetable cultivation.
- Higher prices for inputs such as fertilizer and agro chemicals.
- Difficulty to get improved seed varieties.
- Non availability of modernized equipment.

IV. CONCLUSIONS AND RECOMMENDATIONS

Eravur Pattu area is one of the most important paddy and vegetable cultivating area in Batticaloa district. Through this study, farmers' family background, nature of cultivation, irrigation method, availability of agricultural inputs and human capital, membership in farmer organization, extension service and their constraints were studied. The age, gender, household size and total land area had a greater impact on the agricultural production in Eravur Pattu of Batticaloa District. The study shows that education level has a significant impact on the agricultural productivity of farmers in the study area. Irrigation has a tremendous positive effect on the agricultural production as remedy to drought. Provision of irrigation materials and other inputs at subsidized rate is important for the success of the different methods employed by the farmers. Extension services were poor in this study area and availability of inputs also poor in this area. Most of the farmers were not member in any farmer organization. Therefore productivity of this area is low. Therefore farming activities can be promoted by provision subsidy schemes of agrochemicals and seed paddy on time with adequate marketing facilities. Finally this study was conclude that, agricultural productivity was poor due to lack of farmer awareness, poor education level, poor irrigation facilities, lack of available inputs. This situation should be overcome by farmer awareness programmes, provide agricultural inputs at low price by government and non-government organization.

V. REFERENCES

- FAO. 1997. Sustainable food security: people, institutions, knowledge and environment. Rome, FAO, Sustainable Development Department
- Pinstrup-Andersen P and Pandya-Lorch R (1998). Food security and sustainable use of natural resources: a 2020 vision. *Ecological Economics*.
- Mankiw NG, Romer D and Weil DN (1992). A contribution to the empirics of economic growth. *Quarterly Journal of Economics*, 107, 407-437.
- Auraujo B, Chambas CG and Foirry JP (1997). Conséquences de l'ajustement des finances publiques sur l'agriculture marocaine et tunisienne. Unpublished FAO study, March.
- Chi and Yamada (2002). Factors affecting farmers' adoption of technologies in farming system: A case study in OMon district, Can Tho province, *Omonrice* 10: 94-100.
- Adesina AA, and Baidu-Forson J (1995). Farmers' perceptions and adoption of new agricultural technology: evidence from analysis in Burkina Faso and Guinea, West Africa. *Agricultural economics*, 13(1), 1-9.
- Bisanda S, and Mwangi W (1996). Farmers' Adoption of Improved Maize Varieties in Mbeya Region of the Southern Highlands of Tanzania.
- Onwubuya EA (2005). Social Educational Psychology in Extension, in Adedoyin, S. F (ed) *Agricultural Extension in Nigeria*. Agricultural Extension Society of Nigeria (AESON).
9. Moock, P.R. (1981) 'Education and technical efficiency of small farm production', *Economic Development and Cultural Change*, July, Vol. 29, No. 4, pp.723-739.
- Singh B (1974) 'Impact of education on farm production', *Economic and Political Weekly*, September, Vol. 9, No. 39, pp.A92-A96.
- Debi S (1984) 'Level of education of farm workers and agricultural productivity in Odisha', in Prasad and Patnaik (Eds.): *Rural Development Strategies for Weaker Sections*, pp.135-140, Department of Analytical and Applied Economics, Utkal University, Bhubaneswar.
- Awotide BA, Abdoulaye T, Alene A, *et al* (2015). Impact of Access to Credit on Agricultural Productivity: Evidence from Smallholder Cassava Farmers in Nigeria. *International Conference of Agricultural Economists (ICAE)* Milan, Italy August 9-14, 2015.
- Mezid Nasir. (2014). The Effect of off Farm Employment on Agricultural Production and Productivity: Evidence from Gurage Zone of Southern Ethiopia. *Journal of Economics and Sustainable Development* www.iiste.org ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online) Vol.5, No.23, 2014 85.
- André, Catherine and Platteau, Jean-Philippe, 'Land Relations under Unbearable Stress: Rwanda Caught in the Malthusian Trap,' *Journal of Economic Behavior and Organization*, Vol. 34, Nr... 1, 1998, pp. 1-47.
- FAO (Food and Agricultural Organisation) (2010). *The State of Food and Agriculture - An FAO Perspective*, Rome. London.
- Tilman D, Cassman KG, Matson PA, *et al* (2002). Agricultural sustainability and intensive production practices. *Nature*, 418(6898), 671-677.
- Bamire AS, Abdoulaye T, Sanogo D, *et al* (2010). Characterization of maize producing households in the Dry Savanna of Nigeria. *CIMMYT*.
- Punial P C, and Pande B B (1997). *Irrigation and water power engineering* 5th edition. Issues and Ideas Series, World Resource Institute, Washington D. C.

MWI, Ministry of Water and Irrigation, 2002. Water sector planning and associated investment program (2002-2011). Amman, Jordan.

Jha and Mithileshwar (1998). Rural marketing: some conceptual issues, *Economic and political weekly*, Vol. 13(9), 1998.

Singh, and Sukhpal (2008) *Rural Marketing: Focus on Agricultural inputs*, Vikas Publishing House, New Delhi.

Schultz, T. W. (1961) "Investment in Human Capital," *American Economic Review*, 51: 1-17.

Mellor JW (2008). Agriculture and Economic Development." In S. N. Durlauf, (Ed.) *The New Palgrave Dictionary of Economics*. Basingstoke: Palgrave Macmillan, vol. 1, 2nd ed., pp. 109. 12.

NRI (2011). "Natural Resources Institute: Agricultural Extension, Advisory Services and Innovation," University of Greenwich, England.

Rutatora D, and Matee A (2001). Major Agricultural Extension Providers in Tanzania. *African Study Monographs*, 4, 155-173.

Koyenikan MJ (2008). Issues for agricultural extension policy in Nigeria. *Journal of Agricultural Extension*. 12 (2): 52-62.

Fliegel F (1993). *Diffusion Research in Rural Sociology*, Westport, USA: Greenwood.

Bratton and Michael (1983) "Farmer Organizations in the Communal Ares of Zimbabwe: Preliminary Findings." An unpublished report.