ECONOMIC ANALYSIS OF *CHENA* CULTIVATION IN MONARAGALA DISTRICT, SRI LANKA

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Abstract

Chena cultivation is practiced extensively in the dry zone in Sri Lanka. Generally, "slash and burn" methods are used to clear the land of natural vegetation. Since the dry zones receive rains during the north east monsoon. The land preparation is completed before the monsoon starts. Short duration comparatively drought resistant crops such as grains, legumes, oil crops and vegetables are commonly grown in *chena*. *Chena* cultivation is more popular among the rural people in Monaragala district as their main livelihood. Therefore, this study attempted to analyze the economic performance and to identify the socio-economic and environmental constraints of *chena* cultivation. Study area was Thanamalvila DS division in Monaragala District. Purposively selected 92 farmers was the sample. Primary data were collected from farmers through personal interview method with the help of an interview schedule and field observation. The descriptive statistics and correlation test were employed to analyse data.

Average monthly income, cost of production and profit of the *chena* farming were Rs 49 356.00, 12 420.00 and 36 935.00 per ha per season, respectively. With regard to income per ha per season, majority (67%) were in the category of Rs 50 000.00 to 100 000.00. With respect to the profit per ha per season, 72% were in the category of Rs 25 000.00 to 100 000.00. Labour (63%), land preparation (16%) and agro chemical (13%) costs were the major cost components of the cultivation. Sesame, Kurakkan, Cowpea and Maize were recorded as major cultivated crops. Further, wild life attacks and cattle problems (83%), legal action taken by the forest department (67%) drought (65%) pest and diseases (54%) and marketing problems (43%) were indicated as major problems faced by the farmers. However, around 74% of respondents were willing to continue the *chena* cultivation because they have no other alternative livelihoods in this area. On the other hand, majority (54%) was neutral or dissatisfied about their situation because they did not have land ownership. Introducing registration procedure for land ownership, construction of electrical fence to avoid wild life attack and plan a proper irrigation method to secure the water supply throughout the year were the major suggestions to improve the farming at commercial level rather than *chena* cultivation.

Keywords: Cultivation, Income. Cost and Profit

1. INTRODUCTION

Sri Lankan economic, culture and social values have been constructed around agriculture for a long period. Indigenous agriculture can be divided into two sector as *chena* and paddy cultivation (Bulumulla,1998). In ancient period, people had given more prority for chena cultivation than paddy farming (Bandara, 2005). *Chena* cultivation is alternatively called as shifting agriculture. *Chena* cultivation is practiced extensively in the dry zone in Sri Lanka. Generally, "slash and burn" methods are used to clear the land of natural vegetation. Since the dry zones receive rains during the north east monsoon. The land preparation is completed before the monsoon starts. Short duration comparatively

drought resistant crops such as grains, legumes, oil crops and vegetables are commonly grown in *chena*. Family labour or neighbour farmers are the main labour source of the *chena* cultivation. According to Jayathissa (2005) c*hena* cultivation is economically important for unproductive dry land. Therefore, *chena* cultivation is more popular among the rural people in *Monaragala* district as their main livelihood. On this scenario, this study attempted to analyze the economic performance and to identify the socio-economic and environmental constraints of *chena* cultivation.

2. METHODOLOGY

Research design is the most important and key aspect of any kind of research. The respondents were scattered over the selected area. Therefore, the survey methodology was employed for the study. Data were collected from *Thanamalwila* Divisional Secretariat (DS) division in *Monaragala* District, Sri Lanka during the first quarter of 2010 because highest numbers of *chena* farmers were recorded in this DS division. Respondents were selected by using purposive sample methods with the help of officers of Forest Department working in the area. Sample size was 92.

Data collection was done by personal interviews with the help of interview schedule and field observation. A draft interview schedule was initially structured based upon objectives and information requirements for this study. Then, this draft interview schedule was pre-tested and the interview schedule was suitably modified.

To analyze the economic performance of *chena* cultivation income, cost and profit were taken as major variables. Yield, quantity for home consumption, selling quantity and selling price of products were considered to calculate the income.

Farmers' income directly depends on the marketable surplus and marketed surplus rather than the total production from *chena* cultivation (Acharya and Agarwal, 2005). Marketed surplus can be defined as the quantity actually marketed by the farmer. The marketable surplus (MS) and marketed surplus (MT) of *chena* cultivation was calculated by applying following formula,

MT=MS+PS-L ……..(1)

PS = past stock sold out, if any, and L = losses during storage and transport

Likewise, MS=P-C ……(2)

P = total production, C = total requirement (family consumption, farm seeds, payment to labour, landlord and payment for social and religious work).

The total costs (TC) were divided into two broad categories viz. cost for crop establishment (CE) and cost for field maintenance (CFM). Land preparation, machinery and labour, seed, agrochemicals, transport and miscellaneous costs were taken into account as cost components. Finally, TC was calculated by adopting following formula.

$TC = CE + CFM$…… (1)

Further, income and profit from *chena* cultivation were calculated by using the formulas

$I = \Sigma Q_n \times P_n$ ……. (2)

$P = I - TC$……. (3)

Whereas, I = income, Q_n= Selling quantity of n^{th} types of crops' yield, P_n = selling price of the relevant yield, P = profit

Types of cultivated crops, age, gender, education, family size, farming experience, land ownership, amount of home consumption, sources of information, constraints of *chena* cultivation and farmers attitudes toward the *chena* cultivation were selected as other variables. Empirical measurements of the relevant variables are shown in table 1. Further, each calculation was done per season. The descriptive statistics and Pearson's correlation test were employed to analysis the data.

Table 1: Variables and empirical measurements

Variable	**Measurement**
Cultivated crops	Types of crops
Age	Chronological age in complete years
Education	Grade
Gender	Male or Female
Family size	No. of family members
Farming experience	Farming experience in years
Land ownership	Hectare
Amount of home consumption	Kg
Sources of information	Type of different media
Attitudes toward the *chena* cultivation	Three point scale

3. RESULTS AND DISCUSSION

Age distribution of the farmers varied from 21 to 87 years. Mean age of the respondents was recorded as 47.9 year. Majority of the farmers (48.0%) belonged to old age category. Middle and young farmers were recorded as 31 percent and 21 percent, respectively. In respect of education of the respondents, it was found that the majority of the farmers (57%) have studied up to secondary level. Further, Table 2 illustrates that, around 43 percent have studied up to primary education (less than grade 5). It shows the strength of the farmers' educational level. On the other hand, majority of farmers were male. It was recorded as 98 percent. In case of farming experience, it varied from 4 o11( )-19nn 0 0-75(of)itmt 43 encnga

Average monthly income, cost of production and profit of the *chena* farming have recorded as Rs 49 356.00, 12 420.00 and 36 935.00 per ha per season, respectively. With regard to income per ha per season, majority (67%) were in the category of Rs 50 000.00 to 100 000.00. With respect to the profit per ha per season, 72% were in the category of Rs 25 000.00 to 100 000.00.

Table 2: Socioeconomic characters of farmers

Variables and Categories	Number of farmers	Percentage
1. Age (Year)		
Young	19	21
Middle	29	31
Old	44	48
2. Education (Grade)		
Primary (1-5)	40	43
Secondary (6- 10)	52	57
3. Sex		
Male	90	98
Female	02	02
4. Farming experience		
Less than 35 year	53	58
36 – 50 year	28	30
High than 50 year	11	12
5. Nature of farming		
Full time	64	70
Part time	28	30

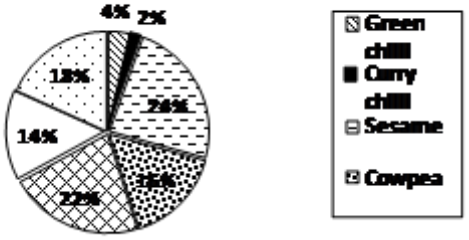

Figure 1: Cultivated varieties in the area

Average cost for cultivation was recorded as Rs 12 420.00 per ha per season. This amount is very low as compared to other cultivation because farmers are not much investing on this cultivation methods. Cost of majority of farmers (63%) less than 10 000.00 per ha per season. Around 20% were in the category of Rs 10 000.00 – 25 000.00 while 17% spend more than Rs 25 000.00. Labour (63%), land preparation (16%) and agro chemical (13%) costs were recorded as major cost components of the cultivation.

Average monthly income and profit of the *chena* farming were as Rs 49 356.00, and 36 935.00 per ha per season, respectively. With regard to income per ha per season, majority (67%) were in the category of Rs 50 000.00 to 100 000.00. Around 24 % and 9% of respondents have earned less than Rs 50 000.00 and more than Rs 100 000.00. In respect to the profit per ha per season, 72% were in the category of Rs 25 000.00 to 100 000.00. Around 22 % and 6% of respondents' profit was less than Rs 25 000.00 and more than Rs 100 000.00. This provides the picture regarding the economic performance of the traditional *chena* cultivation in *Monaragala* district in Sri Lanka. Yield (r= 0.40) and income (r= 0.60) were positively correlated with the number of family member of the farmer because their labour requirements are fulfilled by the family member.

Further, wild life attacks and cattle problems (83%), legal action taken by the forest department (67%) drought (65%) pest and diseases (54%) and marketing problems (43%) were indicated as major problems faced by the farmers. However, around 74% of respondents were willing to continue the *chena* cultivation because they have no other alternative livelihood in this dry area. Nevertheless, majority (54%) was neutral or dissatisfied about their situation because they did not have land ownership.

4. CONCLUSION AND POLICY IMPLICATION

Average monthly income, cost of production and profit of the *chena* farming have recorded as Rs 49 356.00, 12 420.00 and 36 935.00 per ha per season, respectively. Labours, land preparation and agro chemicals cost were recorded as major cost components of the cultivation. Sesame, Kurakkan, Cowpea and Maize were the major cultivated crops. Further, wild life attacks and cattle problems, legal action taken by the Forest Department, drought, pest and diseases and marketing problems were indicated as major problems faced by the farmers. Majority of respondents were willing to continue the *chena* cultivation because they have no other alternative livelihood in this area.

Introducing registration procedure for land ownership, construction of electrical fence to avoid wild life attack and plan a proper irrigation method to secure the water supply throughout the year were the major suggestions to improve the farming towards commercial level rather than *chena* cultivation.

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