

IMPACT OF RICE PROCESSING VILLAGES ON HOUSE HOLD INCOME OF RURAL FARMERS IN ANURADHAPURA DISTRICT

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ABSTRACT

“Rice processing village” is a concept introduced by the Institute of Post-Harvest Technology in 2005 to promote quality rice production as a cottage industry with the assistance of a number of state and non-state sector organizations. An evaluation study conducted in 2009 revealed that, of the beneficiaries, 75% are females who were underemployed before. One family has processed an average quantity of 14,496Kg of paddy and has earned an average profit of Rs. 121,203 per annum. Profit earned per Kg of paddy was Rs. 9.02 and Rs. 11.83 including and excluding family labor respectively through processing. This is a financially viable and labor intensive enterprise that is appropriate for rural villagers. Due to the profitability, this enterprise has grown at an average annual rate of 172% during past five years. Financial problems, lack of storage and high prices of paddy unavailability of paddy during the off – season are some of the common problems faced by the producers while marketing was a problem in interior locations. Credit programmes, infrastructure development, supplying paddy at a stable price throughout the year and forming rice producer’s associations are some areas where state intervention is required.

Keyword: Rice processing, Rice marketing, Rural development, Producer associations.

INTRODUCTION

Paddy sector in Sri Lanka

Paddy production in Sri Lanka was 3.82 million metric tons in 2008 and contribution of the agriculture sector to the gross domestic product (GDP) was 12.1% in the same year (Central Bank of Sri Lanka, 2009). Paddy farming is a direct source of income for the majority of the rural farmers as well as an indirect source of income for the providers of support services, paddy millers and traders of paddy and rice. Paddy is a crop grown almost in all parts of the country and districts of Anuradhapura, Pollonnaruwa, Ampara and Kurunegala collectively account for nearly 50% of the annual production of paddy (HARTI, 2008).

The paddy sector receives the highest priority in the development agenda

because paddy is the staple food in Sri Lanka. Over time, the paddy sector has been transformed rapidly from the traditional to commercial status due to the adoption to new methods of cultivation, and high yielding varieties, and extensive investment in irrigation, and settlement and other infrastructural developments undertaken at different periods of time since independence (HARTI, 2008). The annual paddy production satisfies around 95 percent of the domestic requirement and per capita consumption of rice fluctuates around 100Kg per year depending on the prices of rice, bread and wheat flour (Central Bank of Sri Lanka, 2009).

Anuradhapura is the largest district of the country and more than 90% of the people of the district are living in rural areas

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(Central Bank of Sri Lanka, 2007). According to available statistics, nearly 19-23% of paddy produced in Sri Lanka is from two major district, Anuradhapura and Pollonnaruwa (Department of Census and

Statistics, 2008) and the annual paddy production in the area also has increased over time.

Profitability in paddy production

Table 01: Costs and returns of paddy per acre

Description	Cost/Returns (Rs)
Fertilizer (With subsidy)	1,500.00*
Seed paddy	2,900.00
Labor for land preparation	4,000.00
Tractor charger for land preparation	6,000.00
Agro chemicals	3,000.00
Harvesting, threshing with machine	7,000.00
Post harvest handling	3,000.00
Total Cost	27,400.00
Gross income	63,000.00
Net income	35,600.00

Source: <http://villagerinsrilanka>, 2008

*Without Subsidy it is Rs. 16,500.00

Paddy fertilizer subsidy has reduced the per acre cost of fertilizer by Rs.15, 000 and is equal to reduction in cost of production of a Kg of paddy by Rs.7.50. Assuming that the per acre yield of paddy is 100 bushels, cost of production and yield were the same in both Yala and Maha and it both seasons were successful, the maximum profit a farmer could earn was Rs 71,200 from one acre of paddy during the cropping year. This equals to a monthly profit of Rs.5933 in the dry zone. The majority of the rural farmers own paddy fields of less than one acre in extent and the average family size is around four members. When all these factors are considered, it is clear that paddy farming is becoming financially less attractive despite the government subsidies on credit, fertilizer, irrigation water and prices plus the heavy social investment in research and development and technology dissemination. Under these circumstances, value addition to paddy at the village level

as a cottage industry is an act with paramount importance.

Paddy milling industry

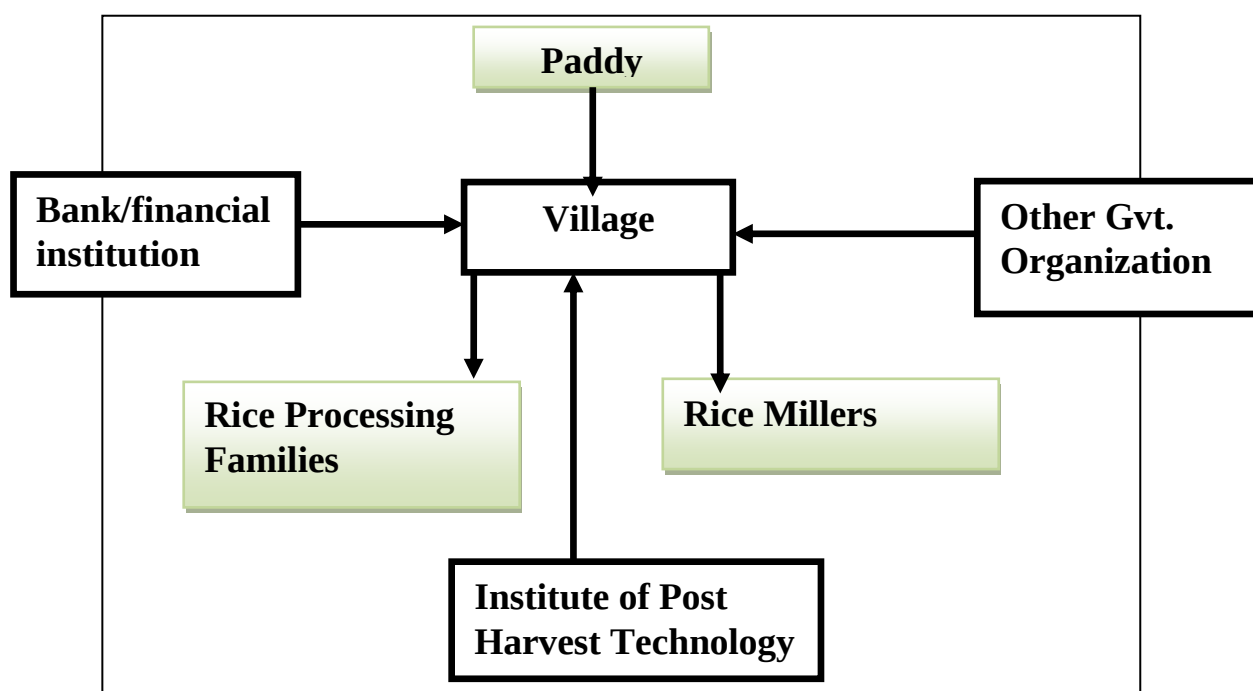
There were over 7,000 paddy mills in the country in 1986 and of which the majority was small scale mills (Palipane, 2003). At present this sector is dominated by the private millers. Modern, semi – modern and custom are the different types of paddy mills found in Sri Lanka. Custom and commercial rice mills are the two forms of mills available locally and custom mills, mills rice mainly for home consumption using the conventional technology and commercial type mills are used by the large scale millers.

Nearly 70% of rice consumed in Sri Lanka is parboiled rice and advantages in parboiling are the higher milling recovery, higher nutritional value and low percentage of broken grains. The present parboiling techniques adopted by the

millers affects the quality of rice adversely and thus it should be upgraded (HARTI, 2008).

During the harvesting seasons millers face problems due to low quality of paddy, high transport cost, storage losses and lack of labor and capital. Low quality of paddy is a serious problem during rainy season because farmers sell wet paddy threshed

using harvesters. With the increase in awareness, consumer has become more quality conscious. as a result, branding of rice has become popular in the local rice market. In order to satisfy this requirement the Institute of Post-Harvest Technology (IPHT) has introduced some guidelines to millers (Palipane, 2003).



Source: Institute of Post Harvest Technology

Figure 01: Structure of a Rice Processing Village

MATERIALS AND METHODS

Sampling

A convenient sample of 04 divisional secretariat (DS) areas (Rajanganaya, Kahatagasdigiliya, Kekirawa and Nuwaragampalatha-central) were selected based on the number of RPVs in operation. A sample of five villages from each DS division was selected at random and a sample of five farm families was selected from each village using the lists of participants maintained by the IPHT. Thus the total sample was 100. A field survey

was conducted to collect information from sampled farmers.

- a. Growth rate of the enterprise was measured in the following manner to assess whether the RPV programme is a success.

Annual growth rate (X_i) was calculated first and the overall growth rate (GR) was calculated thereafter.

$$X_i = \left[\frac{Q_{Ei} - Q_{Bi}}{Q_{Bi}} \right] \times 100 \dots\dots\dots 01$$

$$GR = (X_1 + X_2 + X_3 + X_5 + X_6)^{1/5} \dots\dots\dots 02$$

Where;

X_i = Growth rate (%) of the i^{th} year

Q_{Bi} = Quantity of rice produced at the beginning of the i^{th} year (Kg)

Q_{Ei} = Quantity of rice produced at the end of the i^{th} year (Kg)

b. Annual profit of the enterprise was calculated as given below

GR was calculated as the geometric mean of annual growth rates

$$\Pi_i = Y_i - TC_i \dots\dots\dots 03$$

$$Y_i = Q_{Ri} \cdot P_{Ri} \dots\dots\dots 04$$

$$TC_i = C_{RPi} + D_i \dots\dots\dots 05$$

$$C_{RPi} = C_{Pi} + C_{Mi} + C_{TRi} + C_{PKi} + C_{Oi} \dots\dots\dots 06$$

$$C_{Pi} = Q_{pi} \cdot P_{Pi} \dots\dots\dots 07$$

$$C_{Mi} = C_{Pi} \cdot C_i \dots\dots\dots 08$$

$$C_{TRi} = L_i \cdot C_{TRi} \dots\dots\dots 09$$

Where:

Π = Profit (Rs) in year i

Y_i = Gross revenue of year i (Rs)

TC_i = Total cost incurred in rice processing in i^{th} year (Rs)

Q_{Ri} = Total quantity of rice produced in i^{th} year (Kg)

P_{Ri} = Average retail price of rice in i^{th} year (Rs/Kg)

C_{RPi} = Material cost of processing rice in i^{th} year (Rs)

D_i = Depreciation allowance of capital items in the i^{th} year (Rs)

C_{Pi} = Cost incurred on paddy purchasing in i^{th} year (Rs)

C_{Mi} = cost of paddy milling in i^{th} year (Rs)

C_{TRi} = cost of transport in i^{th} year (Rs)

C_{PKi} = cost of packaging of the i^{th} year (Rs)

C_{Oi} = other cost incurred in the i^{th} year (Rs)

Q_{pi} = quantity of paddy purchased in i^{th} year (Rs)

P_{Pi} = average retail price of paddy in i^{th} year (Rs/Kg)

C_i = average cost of milling a Kg of paddy in i^{th} year (Rs)

L_i = total distance travelled in i^{th} year (Km)

C_{TRi} = per Kg cost of transport incurred in i^{th} year (Rs)

Once the nominal profits were calculated those values were corrected for inflation as explained below.

$$\Pi_{Ri} = \frac{\Pi_{Ni}}{C_{Pli}}$$

Where:

Π_{Ri} = Profit of the year i in real terms (Rs)

Π_{Ni} = Profit of the year i in nominal terms (Rs)

C_{Pli} = consumer price index of year i .

RESULTS AND DISCUSSION

Nearly $\frac{3}{4}$ of the respondents are females and 65% of them are between 36 and 50 years of age. Full time farmers account for 76% of the sample. This information uncovers the fact that small scale rice processing is an economic venture that is popular among rural women. Therefore, this activity could be promoted as a mean and of reducing unemployment among rural women as well as evaluating the social status of this marginalized group of people of the rural community.

As farmers have to purchase a set of utensils to parboil paddy. They need outside financial assistance at the initial stage. Study revealed that 85% of the participants have received subsidies. Farmers who did not receive subsidies had obtained credit. Based on the findings it is realistic to state that channeling of capital to farmers either through government sector or non-government sector organizations would catalyze the rate of farmer adoption. Therefore that factor

should receive due attention when this programme is introduced to a new area.

Cost analysis

Costs of paddy, milling and transport have accounted for 93, 6 and 1 percent of the total operational cost respectively when the cost of family labor was excluded. The average amounts of paddy processed by a village and a family within a period of one year are 76,908 and 14,496 Kg respectively. Farmers have faced difficulties due to lack of money to purchase sufficient quantities of paddy, dearth of storage facilities and highly volatile paddy prices. This information again justifies the requirement of a credit programme to support farmers. At the same time, it would be beneficial to supply paddy at a stable price throughout the year through public sector institutions such as Paddy Marketing Board and Multi-Purpose Co-operative Societies (MPCs).

Table 02: per family Cost of processing paddy per family (excluding family labor and depreciation)

Cost item	Cost (Rs/year)
Milling cost	31,008.00
Cost of paddy	460,932.00
Other costs Transportation, packing, Loan payments	5700.00
Total	497,640.00

Average quantity of paddy milled by a family within a period of one year is 14,496 Kg. Annual average cost incurred by a family in rice production is Rs. 497,640.00 and the average cost of milling a Kg of paddy is Rs 32.35. Average total cost includes milling cost (Rs. 31,008.00)

cost of paddy (Rs. 460,932.00) and other costs (Rs.5700.00) (Table 02). Average amount of labor consumed within a month is 46 man days. Out of the annual labor requirement, 30% is male labor while the balance is female labor. Daily wage rate of a male is Rs. 700.00 while that of a female

labor is Rs.600.00 and the total labor cost incurred is Rs 28,812.0 per annum per family. Females do not spend time especially for this activity and they attend to it while attending to their day –to-day

activities of the household. Therefore, this could be seen as a mean and of increasing the utility of under-utilized female labor in rural communities.

Table 03: Profit earned by a family in paddy processing (Rs)

Description	Cost/Income
Average selling price (Rs/Kg)	60.00
Average income (Rs/year)	622,044.00
Less:	
Average total cost (Rs/year)	497,640.00
Description allowances (Rs/year)	3201.00
Equals:	
Profit excluding labor cost(Rs)	121,203.00
Profit per Kg including family labor (Rs)	9.02
Profit per Kg Excluding family labor	11.83

Results indicate that farmer earns an average profit of Rs. 9.02 per Kg of paddy including family labor and Rs.11.83 excluding family labor when it is processed (Table 03). Therefore, this is a practice that could increase family income. Based on this information it is reasonable to state that, this is a practice that is worth introducing to other part and of the country too.

Growth rate of the enterprise

During the period of last five years these farmers have made an impressive progress. The average growth rate of the enterprise was 139.36, 277.29, 120.96, 272.15 and 117.84 percent respectively in year and Through public sector institutions, probably capital could be provided either individually or collectively through Rice Producer's Associations. Unavailability of sufficient amount of soaking tanks and drying yard facilities also has constrained the growth rate of the enterprise.

Rice Marketing

Majority of the farmers have sold rice by themselves in small quantities as well as in bulk. A group of farmers (9%) have sold

one, two, three, four and five. The overall growth rate is 171.85 percent. This information indicates that farmer acceptance of the activity is high and thus they have expanded the scale of the enterprise gradually overtime.

Problems encountered

Lack of capital, unavailability of storage facilities and lack of marketing facilities are the major constraints faced by the farmers (Table 04). These constraints could be lifted through a credit programme and the provision of paddy and purchasing of rice at stable prices.

rice in small quantities by themselves and another 5% of them have sold through retail outlets of the area. The balances 8% of them have sold through the retail outlet of the producer's association.

According to the results, 70% of the entrepreneurs have not experienced problem in rice marketing, because the quality of their product is high. Another 20% of them have suffered due to non – availability of a proper place to sell their rice and they have sold to limited number

of customers of the area. This was reported from Pallipothana, Kadurugaskada, Wahalkada, Parangiya Wadiya, Kapugollewa villages, which are located far away from the urban centers. The

balance 10% have faced problem due to lack of transportation (Figure 02).

Table 04: constraints faced by farmers

Constraints	% reported
Problem regarding expansion	
Capital	65
Capital and Marketing	20
Capital and storage	15
Problems regarding storage	
Rodent damage	89
Lack of storage	9
capacity/rodent damage	2
other	
Problems regarding marketing	
No. Marketing problems	70
No. well oriented market	20
place	10
Transport problem	

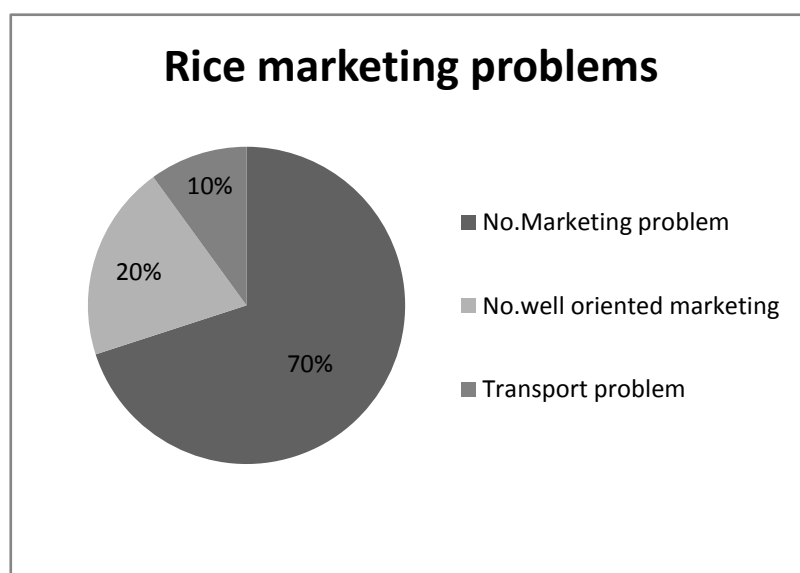


Figure 02: Problems of rice marketing

CONCLUSIONS

Of the respondents 74% are women and paddy cultivation is their main occupation. In general, unavailability of credit and storage facilities is the common problems faced by the entrepreneurs. The RPV programme is largely a labor incentive one, and family labor can be utilized in rice processing. The average amount of paddy processed by a family within a period of one year is 14,496Kg and average use of labors is 46 man days. Cost of labor accounts for Rs. 28,812.00 per annum. Analysis revealed that additional profit gained from a Kg of rice is Rs. 11.83 and a family has earned an additional profit of Rs. 10,100.56 per month by selling rice instead of paddy. Of the average total cost (without imputed labor cost) of the enterprise 92.59%, 6.26% and 1.15% respectively are on paddy, milling and other expenses. Average growth rate of the enterprise is 172% per annum. The new technology has the ability to produce good quality rice at reasonable cost that benefits both consumers and the processors.

Recommendations

Based on the results of the study the following recommendations could be made. This technology should be disseminated to the other parts of the country, especially to the post-conflict areas such as North and East because these are paddy producing areas where economically handicapped are living. Steps should be taken to provide credit on time at reasonable interest rates. The government should intervene to establish a programme enabling these small scale people to purchase paddy at a stable price throughout the year. Launch a strong awareness programme to make the general public aware of the benefits and potentials of the programme. Create regionalized markets for rice and link producers with large scale buyers such as Cargills and Keels. Establish a national level organization aggregating all these rice processors scattered throughout the island in order to increase the bargaining as well as marketing power of produces because this type of a state sponsored monopoly would make the small scale producers strong enough to compete with the giants in the business.

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