

# **THE EFFECT OF FERTILIZER SUBSIDY ON PADDY CULTIVATION IN ERAVUR PATTU DS DIVISION, BATTICALOA DISTRICT**

G. Kajenthini

*Department of Economics, Faculty of Commerce and Management  
Eastern University*

## **Introduction**

As in many Asian countries, the paddy sector plays a vital role in socio-economic development in Sri Lanka. It supplies rice requirements, creates employment opportunities directly for the rural labor force and additional employment through forward and backward linkages, and also provides inputs to the industrial sector (Semasinghe, 2014).

Salunkhe and Deshmush (2012) observe that "...agriculture subsidies play an important role in the agriculture sector in every country". Developing countries have introduced fertilizer subsidies at various times and to different degrees (Sharma, & Thaker, 2009). Subsidies not only promote input use but have also raised output in India, Malawi and Sri Lanka (Wiggins & Brooks, 2010).

The government of Sri Lanka has traditionally intervened in agriculture sector development including the paddy sector. Interventions include provision of subsidized credit, other input subsidies, a guaranteed price, and a farmer pension scheme. Of these the fertilizer subsidy program is an important intervention aimed at lowering the cost of production increasing paddy production in Sri Lanka (Ekanayake (2006))<sup>1</sup>. Government expenditure on the fertilizer subsidy increased from Rs.19,706 million in 2013 to Rs.31,802 million in 2014 (Central Bank Annual Report 2014). The subsidy has encouraged the use of fertilizer by paddy farmers, and is a key factor contributing to the recent increase in paddy production and productivity (Semasinghe (2014), Herath et al (2003)).

It is possible that the actual incentive effects of the subsidy vary according to location, type of farmer, efficiency in implementation and

---

<sup>1</sup>The main objective of the fertilizer subsidy programme is to make fertilizer available as cheaply as possible to encourage its wider use consequently increasing agriculture productivity

other factors. Batticaloa is a major paddy surplus-producing district in Sri Lanka. Within Batticaloa, the Eravur Pattu divisional secretariat (DS) division is well-known for its contribution to paddy production (Bhavan and Maheshwaranathan, 2012). The main objective of this study is to examine the effects of the fertilizer subsidy in the Eravur Pattu DS division.

### **Methodology**

Primary data was collected from the Eravur Pattu DS division in order to estimate a Cobb-Douglas production function on cross-sectional data with the quantity of subsidized fertilizer as one of the explanatory variables.

The model,  $Y = f \{X_1, X_2, X_3, X_4\}$ , was converted to log-linear form and the regression equation specified as follows.

$$\ln PY = \beta_0 + \ln\beta_1 FS + \beta_2 CE + \ln\beta_3 CS + \ln\beta_4 CL + \varepsilon,$$

where the dependent variable is paddy yield (Kg),  $\beta_s$  are parameters and  $\varepsilon$  is an error term. Explanatory variables are defined as follows.

FS: Application of subsidized fertilizer (Kg)

CE: Land Extent (acres)

CS: Cost of Seed Paddy (Rs)

CL: Cost of Labour (Rs)

The target population of 308 farmers constituted the number who had obtained the fertilizer subsidy for the *Yala* season<sup>2</sup> 2014/2015, out of 1,152 farmers registering for the subsidy and accounting for 4625 acres. Data was gathered from a sample of 100 farmers through a structured questionnaire. The model was estimated by Ordinary Least Squares (OLS) regression analysis using the STATA computer package.

### **Results and discussion**

Table 1 shows the results of the estimation.

---

<sup>2</sup> *Yala* season indicates the period of May to August, while the major season, *Maha* is from September to March.

**Table 1. Results of OLS Estimation**

Variable	Coefficient	t statistic	p value
Amount of subsidized fertilizer	0.672***	4.83	0.0000
Land Extent	0.007	0.45	0.653
Cost of Seed Paddy	0.093	0.88	0.383
Cost of Labour	0.330***	3.40	0.001
R-Squared	0.6947		
Adjusted R-Squared	0.6818		
F Value	54.03		
Prob>F	0.0000		

\*\*\* indicates significance at 1% level

The estimated relationship between paddy yield and use of subsidized fertilizer, land extent, cost of labor and cost of seed paddy is:

$$PY = 0.3580099 + 0.672* FS + 0.007 CE + 0.093 CS + 0.330* CL$$

The R-Squared value indicates that approximately 69 percent of the variation is explained by all the variables in the Cobb-Douglas production function, while the model shows overall significance at one percent level, as per the F-test. Fertilizer and labor cost are statistically significant at one percent, while cost of seed paddy and the land extent cultivated are found to be insignificant in affecting paddy yield.

Fertilizer has a positive coefficient elasticity of 0.672 implying that an increase of one percent in the usage of fertilizer would lead to an increase of 0.67 per cent in paddy yield. Assuming that purchases of fertiliser respond positively to a drop in price (due to the subsidy), subsidising fertiliser should impact positively on output. Similarly, a one percent increase in labour costs (indicating additional labour use) translates into 0.33 per cent increase in paddy yield.

### Conclusion

According to the results of the study, use of (subsidized) fertilizer and labor costs are positively associated with paddy yield in Eravur Pattu DS division. Seed paddy and land extent were not related with paddy yield.

To the extent that a subsidy on fertilizer encourages its use, the fertilizer subsidy impacts positively on paddy yield. This conclusion is in line with findings of previous studies such as Weerahewa et al, (2010), Chandrasiri and Karunagoda, (2008), and Semasinghe (2014). At current levels of

usage in Eravur Pattu, the response of yield to fertilizer is inelastic, which probably indicates relatively high applications of fertilizer at present.

### **References**

- Ekanayake, H. K. J. (2006) 'The Impact of Fertilizer Subsidy on Paddy Cultivation in Sri Lanka'. *Staff Studies* Vol. 36, Nos. 1 & 2 pp.73-101
- Herath, H. M. K. V., Gunawardena, E. R. N., and Wicramasinghe, W. M. A. D. B. 2003. 'The Impact of "Kethata Aruna" Fertilizer Subsidy Programme on Fertilizer Use and Paddy Production in Sri Lanka'. *Tropical Agricultural Research*, Vol.25(1): 14-26
- Salunkhe, H. A., and Deshmush, B. B. (2012) "The Overview of Government subsidies to agriculture sector in India". *IOSR Journal of Agriculture and Veterinary Science*, Volume 01 Issue 5 (Nov.-Dec.) pp.43-47
- Semasinghe, Wanninayake M. (2014) 'Economic and Social Cost of Fertilizer Subsidy on Paddy Farming in Sri Lanka'. *International Journal of Science and Research* Vol.3 (Issue 10, October): 1261-1267
- Wiggins, S. and Brooks, J. (2010) 'The Use of Input Subsidies in Developing Countries'. *Global Forum on Agriculture. Policies for Agricultural Development, Poverty Reduction and Food Security*. Paris: OECD