SHORT COMMUNICATION

STUDY THE ECONOMICS AND ENERGETICS OF ORGANIC AND INORGANIC NUTRIENT MANAGEMENT ON SCENTED RICE VARIETIES (*ORYZA SATIVA* L.)

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Abstract: The field experiment was carried out at the Instructional Farm, IGKV, Raipur (C.G.) during kharif season of 2005.Variety Badshah Bhog and application of 50: 40:30 kg ha^{-1} + Bl with FYM gave higher values of gross return, net return and B: C ratio. Similarly, maximum energy use efficiency and energy output: input ratio found in Badshah Bhog over others. The best integrated nutrient management strategy identified from this study is blending of inorganic fertilizer with FYM for obtaining better quality produce of scented rice with higher yield.

Keywords: Rice, Organic, Economics, FYM

INTRODUCTION

Scented rice occupies an important status in domestic as well as in International market due to its several outstanding qualities and therefore earns premium prices. Chemical fertilizers are well known for their effects on the yield increment whereas; the aroma is improved by the use of organic nutrients integrated nutrient management are best approach for scented rice production (Prakash *et al.,* 2002).High cost of fertilizer and the low purchasing capacity of the small marginal peasants of the country, restrict the use of costly fertilizer inputs. Under such condition, there is need to explore the possibilities of using the expending native renewable sources of the plant nutrition. The bio-organic and inorganic manures are getting global importance for rice cultivation. Since the efficiency of applied mineral nutrients by the crop is markedly influenced in presence of this readily available sources, viz. various organic manures.

MATERIAL AND METHODS

The experiment was conducted during *kharif* season of 2005 at the Instructional Farm, Indira Gandhi Agricultural University, Raipur (C.G.). The experiment was laid out in split plot design with three replication. The main plot treatment consists of three scented rice varieties *viz.* Indira sughandheet Dhan-1, Gopal Bhog, Badshah Bhog and sub plot treatment consists of five different combination of inorganic and organic fertilizer *viz.* control (F_0), 10 t FYM ha^{-1} (F_1), Application of RDF *i.e.* 50: 40: 30 kg NPK ha^{-1} (F_2), Application of RDF *i.e.* 50: 40: 30 kg NPK ha^{-1}+ Bl with FYM (F_3), 5 t FYM ha^{-1} + remaining RDF through inorganic fertilizer (F_4). Twenty five days old seedlings were transplanted with 20 cm X 10 cm planting geometry. Cost of production for all treatments was worked out on the basis of the prevailing input and market price of the produce. The net return ha^{-1} was calculated by deducting the cost of production $ha^{-1}$from the gross return ha^{-1}. Ultimately, net return per rupees (cost: benefit ratio) invested was calculated treatment wise to assess the economic impact of the treatments by dividing the net return $ha^{-1}$by the cost of production.Energy output/ input ratio were calculated by using the following formula.

Energy output/input ratio (EO/EI)

$$= \frac{\text{Energy Output (EO)}}{\text{Energy Input (EI)}}$$

RESULT AND DISCUSSION

Economics

Among the varieties, Badshah Bhog fetched the highest gross return (Rs.41, 539.53 ha^{-1}) and the lowest gross return of (Rs.26, 331.23 ha^{-1}) was obtained with Indira Sughandheet Dhan-1. Similarly, net return was the highest with Badshah Bhog (Rs.26, 073.41 ha^{-1}) and lowest with Indira Sughandheet Dhan-1 (Rs.10, 764.10 ha^{-1}). Likewise B: C ratio was higher in Badshah Bhog and lowest in Indira Sughandheet Dhan-1.Among the different nutrient management treatments, application of 50:40:30 kg ha^{-1}+ Bl with FYM resulted the highest gross return of Rs.45, 037.11 ha^{-1}, net return of Rs.29, 222.97 ha^{-1} and B: C ratio of 2.85.Lowest value of these parameters were recorded with control treatment. This might be due to higher system yield obtained from integrated nutrient applied in plot. This corroborated the findings of Khanda *et al.* (2005). The highest net and gross income in case of Badshah Bhog among the varieties and application of 50:40:30 kg ha^{-1}+ Bl with FYM among the nutrient management treatments were due to comparatively higher seed and straw yield under these treatments. These results corroborated to the findings of Yadav (2001) and Yadav *et al*. (2005) who also reported higher profit from rice with integrated nutrient management or recommended dose of NPK fertilizers.

Energetics

Data pertaining to the different energy parameters are presented in Table 2 The data show that the maximum energy input was registered with Indira Sughandheet Dhan-1, while, maximum energy output was registered with Badshah Bhog. Maximum energy output: input ratio and energy use efficiency was also recorded with Badshah Bhog. Among the different nutrient management treatments, application of 50:40:30 kg ha^{-1}+ Bl with FYM recorded maximum energy input and output values followed by application of 50:40:30 kg ha^{-1} and application of FYM 5 t ha^{-1} + remaining RDF through inorganic fertilizer. Whereas, maximum value of energy output: input ratio and energy use efficiency were recorded under control treatment followed by application of 50:40:30 kg ha^{-1}+ Bl with FYM, FYM 5 t ha^{-1} + remaining RDF through inorganic fertilizer and application of 50:40:30 kg ha^{-1}. This was due to less energy input under these treatments proportionally to energy output. A similar result was undertaken by Jha *et al.* (2004).

Table 1: Economics of scented rice varieties as influenced by integrated nutrient Management

Treatments	**Gross realization (Rs. ha^{-1})**	**Net realization (Rs. ha^{-1})**	**B: C ratio**
Varieties			
Indira Sughandheet Dhan-1	26, 331.23	10, 764.10	1.69
Gopal Bhog	39, 659.53	24, 193.77	2.56
Badshah Bhog	41, 539.53	26, 073.41	2.68
Integrated nutrient management			
Control	25, 662.55	11, 736.60	1.84
FYM 10 t ha^{-1}	29, 536.00	13, 438.11	1.84
50:40:30 kg NPK ha^{-1}	40, 441.16	24, 694.78	2.57
50:40:30 kg NPK ha^{-1} + Bl with FYM	45, 037.11	29, 222.97	2.85
FYM 5 t ha^{-1} + remaining RDF through IF	38, 540.94	22, 576.25	2.41

Table 2: Energetics of scented rice varieties as influenced by integrated nutrient management

Treatment	**Energy input (MJ X 10^3)**	**Energy output (MJ X 10^3)**	**Energy output input ratio (MJ X 10^3)**	**Energy use efficiency (q/ MJ X 10^3)**
Varieties				
Indira Sughandheet Dhan^{-1}	7.31	164.14	22.45	17.08
Gopal Bhog	7.16	182.50	25.24	19.45
Badshah Bhog	7.16	195.04	27.24	20.81
Integrated nutrient management				
Control	4.48	142.51	31.81	24.39
FYM 10t ha^{-1}	7.53	157.65	20.93	16.01
50:40:30 kg NPK ha^{-1}	8.21	199.11	24.25	18.48

50:40:30 kg NPK ha^{-1} + Bl with FYM	8.27	211.17	25.53	19.38
FYM 5 t ha^{-1} + remaining RDF through IF	7.58	192.37	25.38	19.34

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