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Original Research Article

To Study the Effect of Dibbled Paddy on Yield, Yield Contributing Characters and Economics of Paddy

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A B S T R A C T

An experiment entitled, "Yield optimization in dibbled paddy" was conducted during *kharif* 2013. at Post Graduate Research Farm, College of Agriculture Kolhapur The objective of experiment is to find out the suitable critical input for optimum yield in dibbled paddy, to find out the contribution of each production factor (input) and to work out the economics of different treatments. To study the optimization of dibbled paddy on yield attributes, yield and economics. Adoption of full package of practices (T_1) recorded significantly higher yield attributes, yield and economics of paddy as Compare to remaining package of practices and followed by T_2 (exclusion of seed treatment).

Keywords

Paddy,
Urea-DAP
briquette etc

Introduction

Rice (*Oryza sativa* L.) is one of the most important staple food grain crop of the world, which constitute the principle food for about 60 per cent of the world's human population and 2/3rd of Indian population (Anonymous, 2006). Hence, a significant portion of the world's agricultural research has been focused on rice. This leads to development of modern rice varieties and their improved technologies that have greatly increased the global rice production. India is the world's second largest rice producer and consumer next to china. Total area under rice in India is 44.0 million hectares with annual production of 104.3 million tons and productivity was 2.37 tons ha^{-1} (GOI, 2012). In Maharashtra, rice is cultivated over an area of 1.52 million hectares with an annual production of about 2.28 million tonnes and productivity was 1.50 tons ha^{-1} (Anonymous, 2009). The major rice growing districts in Maharashtra are Thane, Raigad, Ratnagiri, Kolhapur and Sindudurg along the West coast while Bhandara and Chandrapur in the Eastern parts of the State. The main reason of low productivity and profitability are vagaries of nature, low fertilizer use efficiency, poor crop management and adherence of farmers to traditional crop management practices.

In Maharashtra rice is grown either by direct seeding or by transplanting method. In Western parts of *Kolhapur*, it is mostly grown by transplanting method, however, there are some of the pockets, where direct seeding can also be practiced. The

transplanted rice gives higher grain yield over direct sown crop, however, it is realized that transplanting of rice involves intensive labour oriented operations like raising of nursery, puddling and transplanting which are time consuming and costlier too. Due to the rapid industrialization in the region, scarcity of labour is posing a severe problem to agriculture in general and rice cultivation in particular.

Though, the puddling operation in transplanted rice helps in retention of more water and minimizing weed population. Direct seeded rice helps to maintain the physical properties of the soil, which proved advantageous in attaining desired tilth and timely sowing of the succeeding crop.

Among the various agronomic practices judicious use of manures and fertilizers is one of the important strategies for increasing production of rice per unit area. The breeding of high yielding varieties have laid the basis for rice production in India.

These improved varieties can give the anticipated yield per unit area, when grown under favorable environmental conditions without which they are not able to manifest their maximum yield potential. The rice crop responds well to improved cultural practices such as seed treatment, plant spacing's, integrated weed management and use of Urea-DAP briquettes.

These critical inputs, if judiciously used can augment in rice productivity. The contribution of these critical inputs, individually and in combination has to be studied for optimization of rice yields. In this view, the present investigation entitled "Yield optimization in dibbled paddy" was planned and conducted at Agronomy research farm at College of Agriculture, Kolhapur in the *kharif* season of 2013.

Materials and Methods

The study was carried out on medium black soil at the Post graduate research farm, College of Agriculture Kolhapur. The available nutrient content in the soil was nitrogen (256.36 kg ha^{-1}), phosphorus (29.04 kg ha^{-1}) and potassium (276.4 kg ha^{-1}). The experiment was laid out in a randomized block design with nine treatments *viz*, T_1: Full package of practices for dibbled paddy, T_2:(T_1)–(exclusion of Seed treatment), T_3:(T_1)–(exclusion Pre-emrgence herbicide application of Goal 0.125 kg a.i. ha^{-1}), T_4 :(T_1) –exclusion Use of Urea-DAP briquette (57 kg N + 29 kg P_2O_5)+ 50 kg K_2O ha^{-1}, T_5:(T_1)–(exclusion Post emergence herbicide application of Almix 20 gm ha^{-1}, T_6 :(T_1) – (exclusion T_2+T_3), T_7 :(T_1)–(exclusion T_3+T_4) R.D.F.(100:50:50kg NPK ha^{-1}), T_8:(T_1)– (exclusion T_2+T_4) + R.D.F, T_9: (T_1) – (exclusion T_2+T_3+T_4) + R.D.F.

Application of Urea-DAP briquette @170 kg + 50 kg k_2o per ha and remaining treatments entire dose of P and K was applied at the time of sowing and N was applied in two splits. The seeds were dibbled in june in 25x15-25x15 cm (paired row) at 20 cm apart.

Full package

Recommended variety – Indrayani

Seed treatment- Chemical (3g thirum kg^{-1} seed) + biofertilizer (Azatobacter + PSB @ 25g kg^{-1} seed)

Recommended spacing - (25 x15 cm -25 x15 cm)

Recommended fertilizer - Urea+ DAP briquette 170 kg ha^{-1} +50 kg K_2O ha^{-1}.

Recommended pre-emergence herbicide Oxyflourfen 23.5% E.C. (Goal)- 0.125kg a.i. ha^{-1}.

Recommended post emergence herbicide metasulfuron methyl 10% + chlorimuron ethyl 10% WP (Almix)- 20g ha^{-1} at 30 after sowing.

Results and Discussion

Effect on yield attributes of dibbled paddy

The highest, and significantly superior number of panicles, number of grains $panicles^{-1}$ $hill^{-1}$, Grain weight $plant^{-1}$ (g) was recorded with T_1 (full package) as compared to rest of treatments under comparison, however, it was on par with T_2 (exclusion of seed treatment). However Test weight (g) was not significantly influenced by different treatments, while the maximum test weight was recorded T_2 (exclusion of seed treatment). The These results were in accordance with the findings of Dubey and Rai (2013), The higher number of panicles $hill^{-1}$ may be attributed to the higher number of tillers resulted by adoption of all recommended practices at proper stages.

Effect on yield of dibbled paddy

Adoption of full package of practices (T_1) recorded significantly higher grain yield (56.47q) and straw yield (92.97q) as compared to rest of the treatments except, T_2 (exclusion of seed treatment).These results was in accordance with the findings of Mahadkar *et al.,* (1998).

Effect on economics of dibbled paddy

Under the full package of practices the working cost of cultivation was (Rs 54,987). Which gives the highest Gross monetary 1,38,440, Net monetary returns (Rs 83,450)and B:C ratio (2.51),which was significantly superior to rest of the treatments under comparison.

Table.1 Effect of yield attributes and yields of dibbled paddy

Treatment details	Number of panicles $hill^{-1}$	Number of grains $panicle^{-1}$	Test weight (1000) grain wt (g)	Grain wt $plant^{-1}$(g)	Grain Yield q ha^{-1}	Stover yield q ha^{-1}
(T_1) Full package	154.53	13.60	23.33	28.27	70.35	118.43
T_2): (T_1)– Seed treatment	147.47	12.73	23.00	27.07	68.05	112.26
T_3): (T_1) –Goal herbicide	144.20	12.47	23.33	26.20	62.42	102.37
T_4:(T_1)–Urea - DAP briquette (57 kg N + 29 kgP_2O_5)+ 50 kg K_2O	105.40	8.13	21.33	15.27	42.45	70.98
T_5): (T_1)–Almix herbicide	134.33	11.47	23.33	24.87	57.86	102.62
T_6) : (T_1)– (T_2+T_3)	131.60	9.13	22.67	23.27	57.13	94.52
T_7):(T_1)–(T_3+T_4)+R.D.F.(100:50:50kg NPK ha^{-1})	127.13	9.00	22.00	21.47	49.07	78.91
T_8) :(T_1)–(T_2+T_4) + R.D.F.	131.33	9.07	22.67	21.47	55.78	83.33
T_9):(T_1)–(T_2+T_3+T_4)+ R.D.F	115.67	8.47	22.00	16.73	45.13	73.30
S.E. ±	2.72	0.57	0.96	0.95	1.80	2.77
C.D.at 5%	8.15	1.70	N.S	2.85	5.40	8.33

Table.2 Effect on economics of dibbled paddy

Treatment details	Cost of cultivation (Rs ha^{-1})	Gross monetary returns (Rs ha^{-1})	Net monetary returns (Rs ha^{-1})	B:C ratio
T_1) Full package	54,987	138.44	83.45	2.51
T_2): (T_1)– Seed treatment	54,787	133.72	78.93	2.44
T_3): (T_1) –Goal herbicide	53,947	122.59	68.65	2.27
T_4:(T_1)–Urea - DAP briquette (57 kg N + 29 kgP_2O_5)+ 50 kg K_2O	49,990	83.51	33.52	1.67
T_5): (T_1)–Almix herbicide	54,037	114.41	60.30	2.11
T_6) : (T_1)– (T_2+T_3)	53,747	112.29	58.54	2.08
T_7):(T_1)(T_3+T_4)+R.D.F.(100:50:50kg NPK ha^{-1})	51,105	96.22	45.11	1.88
T_8) :(T_1)–(T_2+T_4) + R.D.F.	51,945	108.74	56.79	2.09
T_9):(T_1)–(T_2+T_3+T_4)+ R.D.F	50,905	88.59	37.69	1.73
S.E. ±	-	1.32	1.11	-
C.D.at 5%	-	3.96	3.33	-

While the lowest value of working Cost of cultivation, Gross and Net monetary returns and Benefit cost ratio were recorded, to the tune of (Rs 49,990), (Rs 83,511), (Rs 33,520) and (1.67) with exclusion of chemical fertilizers from the full package, respectively

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