SHORT COMMUNICATION

EFFECT OF FERTILIZER LEVELS ON RELAY CROPS IN RICE

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Abstract: The effect of varying fertilizer level on relay crops in rice experiment was conducted at Instructional cum research Farm of Assam Agricultural University, Jorhat, during the *kharif* and *rabi* season of 2001-02. The grain and stover yield, rice equivalent yield are significantly affected by the different treatments combination. The highest value recorded at 125 per cent recommended levels of fertilizer. Total N, P and K uptake differed significant due to different treatment. The highest value recorded at 125 per cent recommended levels of fertilizer.

Keywords: Relay crops, Rice equivalent, Stover yield

INTRODUCTION

Relay cropping is profitable under rainfed conditions. In Assam, linseed, pea khesari is grown as relay crop with rice. The productivity of these crops relay cropping is mainly due to lack of proper fertilization (Dutta, 1993). Evaluation of optimum levels of fertilizer for relay crops is therefore very much required, which hitherto, is lacking in Assam. Therefore, the present study was under taken.

MATERIAL AND METHOD

The field experiment was conducted at Instructional cum Research Farm of Assam Agricultural University, Jorhat during *khirf* and *rabi* season of 2001-02. The soil of experimental site was acidic, sandy loam in texture with pH 5.4, organic carbon (0.65%) and available N (285.89 kg/ha), P (26.45 kg/ha) and K (147.84 kg/ha).The experiment was laid out in factorial Randomized block design with twelve treatment combination and three replications. The fertilizer doses were applied on relay crops at 50, 75, 100 and 125 per cent of recommended levels of N-P_2O_5-K_2O kg/ha respectively. The recommended levels of fertilizer for linseed, pea and khesari were 40-20-10, 20-46-10 and 20-40-10 N-P_2O_5-K_2O kg/ha respectively. All P and K and half dose of N as per treatment were applied at sowing of relay crops. The remaining half does of N were splited into two equal doses and top-dressed 30 and 45 days after sowing of relay crops. The rice variety "Ranjit" was grown as per recommended practices; linseed (var.T-397), pea (var.T-163) and khesari (var.LSD-3) were sown in the standing rice field 18 days before the harvest of rice.

RESULT AND DISCUSSION

The grain and stover yields of relay crops were significantly influenced by different treatment. The highest grain and stover yield was recorded at 125 per cent recommended fertilizer (Table 1). The interaction effect of relay crops and fertilizer levels was found to be significant. The highest grain and stover yield was recorded at 125 per cent recommended levels of fertilizer in all the relay crops. This might be due to the increase in growth and yield attributing character, which were increased significantly with increasing levels of fertilizers.The highest rice equivalent yields were recorded in pea followed by khesari and linseed at 125 per cent recommended levels of N-P_2O_5-K_2O kg/ha. Total N, P and K uptake differed significantly due to different treatment. The highest N, P and K uptake was recorded in pea followed by khesari and linseed respectively (Table 1). The interaction effect of relay crops and fertilizer levels was found to be significant.The highest N, P and K uptake was recorded at 125 per cent recommended levels of fertilizer, which might be due to higher nutrient content in seed and stover as well as higher seed and stover yield of relay crops (Table 2).

Table 1: Yield and Nutrient uptake by relay crops as influenced by fertilizer levels

Treatment	Grain Yield (kg/ha)	Stover Yield (kg/ha)	REY (kg/ha)	N uptake (kg/ha)	P uptake (kg/ha)	K uptake (kg/ha)
Linseed	349.63	662.36	4713	21.56	4.66	17.39
Pea	658.56	1426.07	6319	50.29	13.28	20.93
Khesari	593.58	1239.88	5104	34.21	9.84	17.60
CD (P=0.05)	4.02	3.48	53	1.43	0.11	0.15
Fertilizer level: N-P_2O_5-K_2O						
50%	439.64	969.84	5182	27.69	8.78	16.94
75%	496.48	1061.95	5273	32.05	9.11	18.13

100%	583.07	1176.31	5473	38.82	9.42	19.67
125%	616.50	1229.65	5585	42.85	9.72	19.82
CD (P=0.05)	4.64	4.02	61	1.65	0.13	0.17

Rice recommended dose= 40:20:20 N-P_2 O_5-K_2O kg/ha

Tables 2: Grain yield and Rice equivalent yield (kg/ha) of relay crops due to interaction of different levels of fertilizers.

Fertilizer Levels	**Grain yield (kg/ha)**			**REY (kg/ha)**		
	Linseed	Pea	Khesari	Linseed	Pea	Khesari
50%	313	550	455	4693	5973	4872
75%	332	608	548	4701	6166	4960
100%	368	712	669	4712	6472	5236
125%	384	763	701	4745	6663	5358
Mean	349	658	593	4713	6319	5104
CD P=0.05)	8.04					

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