

Effect of different sowing methods on the yield and yield components of rice



Report

Submitted by

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Title: Performance assessment of number of seedling per hill to increase yield

Investigation issue:3-4 seedling per hill to minimize the loses.

Model:Performance assessment of number of seedling per hillto increase yield.

Objectives:To identify most suitable practice of seedling per hill with good yield of rice.

Materials & Methods

The experiment was conducted in 3 SAFBIN projects sites namely Paba, Boraigram and Potnitolaupazillas of greater Rajshahi. In each upazilla there was one PVS trial (one for each upazilla). 4-5 seedling per hill was treated as SRI.

Cultivar: BRRIdhan49

Design The trial was laid out in RCBD with 3 replications. Individual plot size was 6 m x 4 m with 4 border rows alongside the whole experimental field. 21 – 25 days old seedlings were transplanted having 3-4 seedlings per hill with spacing 20 cm X 15 cm.

Fertilizer Mgt: The following fertilizers were used:

Urea: 180 kg/ha applied in 3 equal splits (1st split 10 days after transplanting (DAT) + 2nd split 25 days DAT and 3rd split at the panicle initiation stage.

TSP: 75 kg/ha applied before final land preparation.

MOP: 90 Kg (½ at the basal + ½ with the 2nd top dress of urea)

Gypsum: 60 Kg/ha

Pest Mgt: Perching and judicious pesticide were used. In case of stem borer attack Virtako were applied. When rice bug infestation noticed at the flowering stage then any melathion sprayed avoiding pollination time (10 AM-14 AM). Rat infestation controlled by using bait, watering or put carefully Phostoxin tablet inside hole and blocked hole with mud.

Data Recording: Growth duration (days), fertile tiller/hill, thousand grain weight (gm) and yield (ton/ha) was harvested 10 m² for each variety and replication.

Data Analysis: Combined analyses were tested with Duncan's New Multiple Range Test (DMRT) (Gomez and Gomez, 1984). Simple correlation co-efficient was done to determine the relationships between grain yield and its components with the help of IBM SPSS statistics 20 programme.

Results

Combined analysis of the data obtained from baby trial viz. growth duration, fertile tiller, total grain weight and yield of the rice variety BRRIdhan49 are presented in (Table-1) and Fig.1 and 2. Growth duration varied Non-significantly between the treatments but locations had significant effect on growth duration so was interaction effect between location x treatment (Fig.1). The graph indicating that local agro-climatic condition of the trial location had strong effect on growth duration. So that the short growth duration was found at Baraigram, whereas the long duration was found at Patnitala and Paba.

Fertile tiller production differed between two treatments and their interaction with treatments was significant (Table-1). The result indicating that at all location, SRI was superior to non-SRI at Paba and Patnitala. The location varied significantly with the least fertile tiller obtained from the location Baraigram in SRI (system rice intensification) and the highest fertile was recorded in Non-SRI. In contrast, the highest data of fertile tiller was found in Patnitala and Paba in SRI (system rice intensification). In the case of total grain weight, location and their interaction with treatments was significantly differed (Table-1). Among the three locations significant variation was recorded for total grain weight. The highest total grain weight recorded in Patnitala followed by Paba and the least total grain weight was recorded in Baraigram. The grain yield was significantly differing using SRI at Paba and Patnitala location but Non-SRI was superior to SRI at Baraigram location.

Correlation between fertile tiller/hill and yield (ton/ha) using system rice intensification in three locations was presented in Fig. 2. Fertile tiller positively correlated with yield in SRI (system rice intensification), the positive slope indicates positive relationship which means that an increase in fertile tiller will lead to an increase grain yield. In case of non-SRI, the positive correlation between fertile tiller and yield was also recorded.

Table 1. Influence of system rice intensification (SRI) on yield components of BRRI Dhan-49 rice variety grown in three location. Data presents mean value with standard error. Differences within location × insecticide by LSD at 5% level.

Location	Treatment	Yield components		
		Fertile tiller/hill	Total grain weight (gm)	Yield (ton/ha)
Paba	SRI	15.333±.964 a	20.133±0.037 b	4.883±0.069 b
	Non-SRI	13.667±.964 a	20.033±0.037 b	4.617±0.069 b
Baraigram	SRI	11.000±1.669 b	18.000±0.065 c	3.800±0.119 c
	Non-SRI	12.000±1.669 b	18.200±0.065 c	4.000±0.119 c
Patnitala	SRI	17.400±0.964 a	23.000±0.037 a	5.313±0.069 a
	Non-SRI	16.533±0.964 a	23.000±0.037 a	4.967±0.069 a

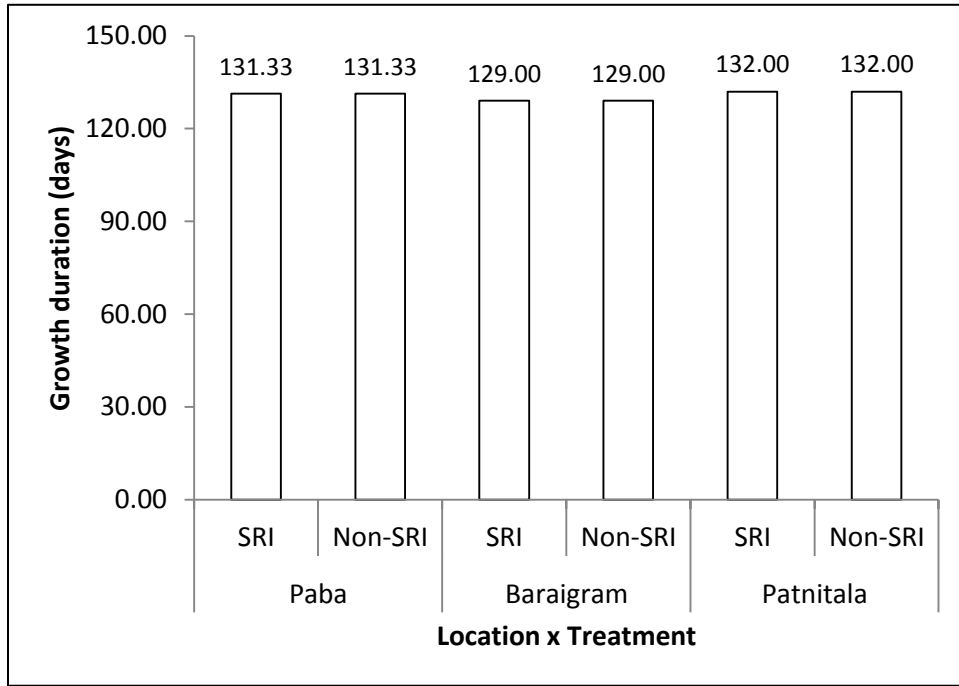
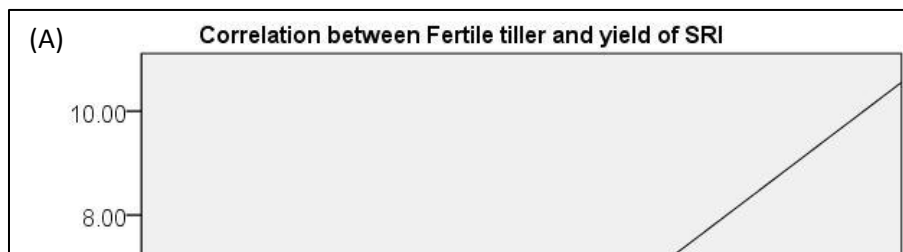


Figure 1. Effect of location and system rice intensification on growth duration of BRRi Dhan-49 rice



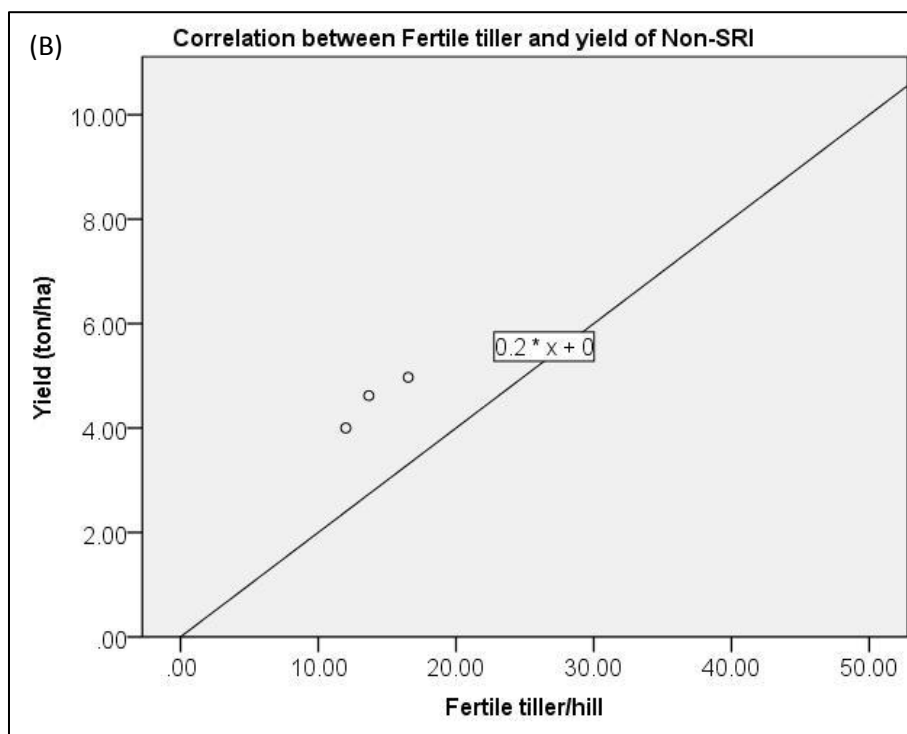


Figure2.Correlation between fertile tiller/hill and yield (ton/ha) using system rice intensification (A) and non-SRI (B) in three locations of Rajshahi Division.