



## RESEARCH NOTE

# Response of summer gujari rice to various establishment techniques and weed control methods on different yield attributes

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**Abstract :** An experiment was conducted during summer season of the year 2009-10 at Regional Research Station, Anand Agricultural University, Anand to assess the response of rice to establishment techniques and weed control methods. Results revealed that transplanting 10-12 days old seedling with spacing of  $25 \times 25$  cm, 1 plant hill<sup>-1</sup> [System of Rice Intensification (SRI)] + 100:25:00 kg NPK, 25 kg ZnSO<sub>4</sub> ha<sup>-1</sup>, 25 per cent N from FYM recorded better results of yield attributes (*i.e.* effective tillers, panicles, grains, panicles length, panicles weight and test weight). Pyrazosulfuron and use of rotary weeder decreased weed intensity. However, the hand weedings were efficient.

**Key Words :** Establishment techniques, Weed control methods, yield attributes

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India is the world's second largest rice producer and consumer next to China. Total area under rice in India is 44 million hectares with annual production of 92.76 million tonnes (Anonymous, 2006). In India, attempt to introduce direct seeding in farmer's field often fails owing to non-competitiveness of direct seeded rice to weed. Weed is more in wet seeded rice than in transplanted rice to the extent of 50-60 per cent and even a complete crop failure.

In India, introduction of rice seedings to the field often fails owing to non-competitiveness of rice to weed. Weeds occur frequently in wet seeded than in transplanted rice which results into 50-60 per cent loss in the yield and even complete crop failure. Manual

weeding in rice fields is difficult because of problems in differentiating grassy weeds, labour scarcity, time consumption and relatively less effectiveness (Singh *et al.*, 2005).

Chemical weed control using herbicides, along or in mixtures may result in the control of weed species. Weed suppression can also be achieved through crop canopy management. The objective of present study was to evaluate successful weed management in rice fields with various crop establishment techniques and weed control methods and weed management practices.

An experiment was conducted with Gujari variety of rice during summer of 2009-10. The experiment was laid out in two factor Split Plot Design comprising of

**Table 1: Effect of rice establishment techniques and weed control methods on yield attributing characters of rice**

Treatments	Number of effective tillers hill <sup>-1</sup>	Number of panicles hill <sup>-1</sup>	Number of grains panicle <sup>-1</sup>	Panicle length (cm)	Panicle weight (g)	Test weight (g)	Grain yield (kg ha <sup>-1</sup> )	Straw yield (kg ha <sup>-1</sup> )
<b>Main plot treatment: Rice establishment techniques</b>								
S <sub>1</sub> : SRI	36.21	36.57	101.66	24.14	3.05	29.310	4563	5753
S <sub>2</sub> : Standard I	33.92	32.69	94.30	22.61	2.72	25.967	3694	4350
S <sub>3</sub> : Standard II	34.69	34.34	99.40	23.13	3.01	28.713	3960	4780
S <sub>4</sub> : Sprouted seed	32.98	31.46	93.82	21.99	2.62	24.599	3676	4322
S.E. ±	0.68	0.90	1.77	0.45	0.07	0.72	169.33	186.65
C.D. (P=0.05)	2.19	2.90	5.67	1.46	0.24	2.30	541.72	597.13
C. V. %	7.97	10.74	7.29	7.97	10.60	10.615	17.04	15.54
<b>Sub plot treatment: Weed control methods</b>								
W <sub>1</sub> : Pyrazosulfuron	34.80	34.97	98.96	23.20	2.95	28.103	4217	5247
W <sub>2</sub> : Rotary weeder	34.20	32.72	95.24	22.80	2.76	26.316	4197	5109
W <sub>3</sub> : Two hand weeding	35.74	36.27	103.76	23.82	3.06	29.136	4402	5493
W <sub>4</sub> : Weedy check	33.06	31.10	91.22	22.04	2.63	25.03	3078	3355
S.E. ±	0.57	0.59	1.26	0.38	0.05	0.47	141.90	179.98
C. D. (P=0.05)	1.64	1.71	3.63	1.09	0.14	1.36	407.07	516.21
C. V. %	6.64	7.08	5.21	6.64	6.99	6.99	14.28	14.99
Interaction (S×W)	NS	NS	NS	NS	NS	NS	NS	NS

NS= Non-significant

various establishment techniques viz., 1) SRI (transplanting 10 - 12 days old seedlings with spacing of 25 x 25 cm, 1 plant hill<sup>-1</sup> + 100:25:00 kg NPK, 25 kg ZnSO<sub>4</sub> ha<sup>-1</sup>, 25 % N from FYM) 2) Standard practice I (transplanting 25 - 30 days old seedlings with spacing of 20 x 15 cm, 2 plant hill<sup>-1</sup> + 100:25: 00 kg NPK, 25 kg ZnSO<sub>4</sub> ha<sup>-1</sup>) 3) Standard practice II (transplanting 15 - 20 days old seedlings with spacing of 25 x 25 cm, 2 plant hill<sup>-1</sup> + 100:25:00 kg NPK, 25 kg ZnSO<sub>4</sub> ha<sup>-1</sup>, 25 % N from FYM) and 4) Sprouted seed technique under puddled condition (25 x 25 cm by dibbling, 2-3 seeds hill<sup>-1</sup> + 100:25:00 kg NPK, 25 kg ZnSO<sub>4</sub> ha<sup>-1</sup>) and four weed control methods viz., 1) Pyrazosulfuron @ 150 g ha<sup>-1</sup> at 25 and 50 days after transplantation (DAT) 2) Use of rotary weeder at 25 and 50 DAT 3) Two hand weedings at 25 and 50 DAT and 4) Weedy check. All treatments were replicated four times. The sowing of nursery for transplanting was started on 15<sup>th</sup> December onward with 10 days interval as per the treatment.

The yield attributes were significantly influenced by establishment techniques and weed management practices (Table 1). The yield attributes were higher (in numbers/ length/ weight) in SRI. Hand weedings resulted

in better yield attributes (in numbers/ length/ weight). Pyrazosulfuron recorded better yield attributes (in numbers/ length/ weight) followed by rotary weeder.

Krishna *et al.* (2008) reported that the number of tillers plant<sup>-1</sup> and number of productive tillers plant<sup>-1</sup> were significantly more in SRI than the traditional practices.

Jayadeva and Shetty (2008) found that SRI recorded significantly higher grain and straw yield as compared to transplanting and aerobic practices. SRI out yielded direct seeding by recording higher grain and straw yield. SRI provides good aeration, favorable conditions for growth and as a result of which reduce weed competition for nutrient. Similarly, the higher yield was observed due to two hand weedings among the weed management practices.

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