

Research Notes

Agronomic management for perennial redgram through irrigation and mulching

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Perennial redgram BSR 1 has a long duration of 180 days. It can be kept in fields for more than two years after ratooning. Being a new introduction, no work has so far been carried out to evaluate the irrigation requirement and mulching. Ram babu *et al.*, (1999) reported that among three methods of irrigation scheduling *viz.*, Blanney-criddle, pan evaporation and modified Penman methods in annual redgram crops, pan evaporation showed the least deviation. Venugopal and Rao (1999) also found that the seed and dry-matter yields of redgram were linearly associated with seasonal evapotranspiration. The practice of mulching has been proved to be effective in conserving the soil moisture and improving the yield in many crops. Deho *et al.* (2002) also claimed that the use of sugarcane trash as a mulch showed the highest cane yield. Therefore, the present study was carried out to assess the optimum irrigation regime and a suitable mulch for increasing the productivity of perennial redgram.

Field experiment was conducted at Agricultural Research Station, Bhavanisagar with perennial redgram variety BSR 1 during the year 2003-04. Fertilizer dose of 25 kg N and 50 kg P₂O₅ was adopted as basal dressing. The experiment was laid out in split plot design with three replications. Irrigation regimes were kept in main plot and mulches in subplots. The three schedules of irrigation in the main plot were 0.45 (I₁), 0.60 (I₂) and 0.75 (I₃)

IW/CPE. In sub plot, the four treatments were no mulch (M₁), raw coconut coir pith @ 12.5 t ha⁻¹ (M₂), sugarcane trash @ 5 t ha⁻¹ (M₃) and plastic mulch (7.5 micron) (M₄).

The results indicated that there was no significant effect on number of pods per plant, pod yield and grain yield (Table 1).

The interaction effect of irrigation scheduling and mulching was also absent in all these parameters.

However, the irrigation at lower water requirement level of 0.45 IW/CPE ratio might be useful on water saving aspect. In the case of mulching also numerically higher yield (1738 kg ha⁻¹) was obtained in raw coconut coir pith application and this had an impact on the economics.

The water use efficiency and economics were also worked out (Tables 2 and 3).

From the above experimental data it could be inferred that the water use efficiency was the highest in 0.45 IW/CPE irrigation schedule with 1.050 kg ha⁻¹ mm⁻¹ of water. Further the saving in water was upto 32 per cent when comparing to 0.75 IW/CPE ratio with 0.45 IW/CPE ratio.

Table 1. Effect of irrigation and mulching on yield of redgram BSR 1

Treatment	No. of pods plant ⁻¹	Pod yield (kg ha ⁻¹)	Grain yield (kg ha ⁻¹)
Irrigation schedule (I)			
I ₁ : 0.45 IW/CPE	776	3031	1579
I ₂ : 0.60 IW/CPE	779	3194	1620
I ₃ : 0.75 IW/CPE	671	3072	1602
SEd	65.2	158.9	161.8
CD (P=0.05)	NS	NS	NS
Mulching (M)			
M ₁ : No mulch	783	3044	1470
M ₂ : Raw coconut coir pith	727	3283	1738
M ₃ : Sugarcane trash	761	3119	1556
M ₄ : Plastic mulch	699	2950	1639
SEd	86.8	236.8	168.1
CD (P=0.05)	NS	NS	NS

Table 2. Water use efficiency

Particulars	Irrigation regimes		
	0.45 IW/CPE	0.60 IW/CPE	0.75 IW/CPE
No. of common irrigation	4	4	4
No. of treatmental irrigation	11	14	18
Total no. of irrigation	15	18	22
Total quantity of water irrigated (mm)	750	900	1100
Rainfall received during crop period (28.1.2003 to 25.02.2004) (mm)	754	754	754
Total water used (mm)	1504	1654	1854
Grain yield kg ha ⁻¹	1579	1620	1602
a) Water use efficiency (kg ha ⁻¹ mm ⁻¹)	1.050	0.980	0.864
b) Percentage of water saving in 0.45 IW/CPE irrigation schedule			
i) Over 0.6 IW/CPE	16	-	-
ii) Over 0.75 IW/CPE	32	-	-

Table 3. Economics (Benefit - cost ratio)

Irrigation schedule \ Mulching	No mulch	Raw coconut coir pith	Sugarcane trash	Plastic mulch	Mean
0.45 IW/CPE	1.49	1.42	1.26	0.97	1.29
0.60 IW/CPE	1.28	1.31	1.46	1.12	1.29
0.75 IW/CPE	1.16	1.73	1.20	1.00	1.27
Mean	1.31	1.49	1.31	1.03	-

Among the irrigation levels, 0.45 and 0.6 IW/CPE ratio recorded the highest benefit cost (BC) ratio of 1.29 each. In the case of mulching, raw coconut coir pith registered the highest BC ratio of 1.49.

From this experiment, it could be concluded that application of raw coconut coir pith @ 12.5 t ha⁻¹ and adoption of the irrigation schedule of 0.45 IW/CPE would be efficient and economically viable technology for perennial redgram BSR 1 cultivation.

Reference

- Deho, N.A., Majeedano, H.I., Tunio, S.D. and Jarwar, A.D. (2002). Effect of mulching methods on weed management, growth and yield of sugarcane. *Pakistan Sugar Journal* **17** : 11-15. In : *Soils and Fertilizers Abstract*. **65** (7): 82-84.
- Rambabu, A., Rao, B.B. and Gopal, N.V.V. (1999). Empirical estimation of evapotranspiration in pigeon pea. *Journal of Agrometeorology* **1** : 85-88.
- Venugopal, N.V. and Rao, B.B. (1999). Pigeonpea evapotranspiration as influenced by sowing time and irrigation. *Journal of meteorology*, **1** : 79-83.

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Quality of Sunflower (*Helianthus annuus* L) seed as influenced by recycled organic manure from the livestock components

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Sunflower responds well to applied fertilizers (Tomar *et al.*, 1997). Information pertaining to integrated nutrient management (INM) with inorganics and organics on sunflower quality is lacking. Hence a field experiment was carried out at farmers field, at *Chinnamathampalayam village*, Periyayanayakanpalayam block in

Coimbatore district, Tamil Nadu, India during Adipattam (July-Aug) of 2004. The farm is situated in the Western agro-climatic zone of Tamil Nadu at 11 °N latitude, 77° E longitude and at an altitude of 426.7 m above MSL. The soil of the experimental field was sandy loam in texture (Typic Ustochrepts). The soil