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Research Notes

Production potential of blackgram genotypes under intercropping situation

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The red lateritic soil of Pudukottai district in Tamil Nadu is traditionally known for redgram belt. Instead of growing sole crop of redgram, intercropping of any short duration crop like blackgram would be more profitable. Intercropping is a viable agronomic practice for increasing the production as well as productivity of a system from a unit area during a cropping period. Intercropping system not only provides certain insurance against biotic and abiotic stresses but also provides extra yield advantage by simple means of growing crops (Willey, 1979). Planting geometry in intercropping system has important effects on the balance of competition between component crops and their productivity. Intercropping of sorghum with cowpea in paired rows (2:2)

recorded highest land equivalent ratio (2.77) and monetary return compared with other intercropping systems (Mishra *et al.*, 1997). Hence, the study was conducted to investigate the suitable blackgram genotype and planting geometry for improving productivity of redgram + blackgram intercropping system.

A field experiment was conducted during the *kharif* seasons of 2003 and 2004 at National Pulses Research Centre, Vamban. The experimental soil was paralithic haplustalf, sandy clay loam in texture and had pH 6.1, organic carbon 0.3% and low in available N, P and K. The experiment was laid out in randomized block design with three replications. The treatments included were; T1 - Redgram uniform row

Table 1. Redgram grain equivalent yield, economics and LER.

Treatments	Redgram grain eq. yield (kg/ha)			Net return (Rs/ha)		BC ratio		LER		
	2003	2004	Pooled	2003	2004	2003	2004	2003	2004	
T ₁	Red gram uniform row + Blackgram (Vamban 4)	631	650	640	836	1121	1.1	1.1	1.43	1.16
T ₂	Red gram uniform row + Blackgram (SU 03-10)	970	791	880	5921	3236	1.7	1.4	1.49	1.12
T ₃	Red gram uniform row + Blackgram (SU 03-13)	797	792	794	3326	3251	1.4	1.3	1.60	1.25
T ₄	Red gram uniform row + Blackgram (SU 03-69)	931	782	857	5336	3101	1.6	1.3	1.67	1.18
T ₅	Red gram Paired row + Blackgram (Vamban 4)	541	641	591	-541	986	0.9	1.1	1.72	1.22
T ₆	Red gram Paired row + Blackgram (SU 03-10)	697	719	708	1826	2156	1.2	1.2	1.63	1.25
T ₇	Red gram Paired row + Blackgram (SU 03-13)	581	669	625	86	1406	1.0	1.2	1.67	1.12
T ₈	Red gram Paired row + Blackgram (SU 03-69)	636	637	637	911	926	1.1	1.1	1.69	1.02
T ₉	Pure crop of red gram - Normal row	222	566	393	-4399	761	0.4	1.1	1.00	1.00
T ₁₀	Pure crop of red gram - Paired row	117	533	325	-5974	266	0.2	1.0	1.00	1.00
T ₁₁	Pure crop of Blackgram - (Vamban 4)	664	546	605	2081	311	1.3	1.0	1.00	1.00
T ₁₂	Pure crop of Blackgram -(SU 03-10)	1161	838	999	9536	4691	2.2	1.6	1.00	1.00
T ₁₃	Pure crop of Blackgram (SU 03-13)	973	715	843	6616	2846	1.8	1.4	1.00	1.00
T ₁₄	Pure crop of Blackgram (SU 03-69)	1018	767	892	7391	3626	1.9	1.5	1.00	1.00
	SEd	82.7	53.3	49	-	-	-	-	-	-
	CD (0.05)	170.3	109.5	102	-	-	-	-	-	-

+ Blackgram (Vamban 4), T2 - Redgram uniform row + Blackgram (SU 03-10), T3 Redgram uniform row + Blackgram (SU 03-13), T4 Redgram uniform row + Blackgram (SU 03-69), T5 Redgram Paired row + Blackgram (Vamban 4), T6 Redgram paired row + Blackgram (SU 03-10), T7 Redgram Paired row + Blackgram (SU 03-13), T8 Redgram Paired row + Blackgram (SU 03-69), T9 Pure crop of redgram - Normal row, T10 Pure crop of red gram - Paired row, T11 Pure crop of Blackgram (Vamban 4), T12 Pure crop of Blackgram (SU 03-10), T13 Pure crop of Blackgram (SU 03-13) and T14 Pure crop of Blackgram (SU 03-69). The recommended dose of fertilizer viz., 25:50:25 NPK kg/ha was applied as basal. The crop was irrigated at critical stages. Need based plant protection measures were given as per the Crop Production Guide. The data on plant height, number of branches/plant, number of pods/plant, number of seeds/pod, test weight and grain yield were recorded. Benefit-cost ratio and LER were calculated by following standard procedure.

Redgram + Blackgram (SU 03-10) recorded a maximum redgram grain equivalent yield of 970 kg/ha in 2003 whereas it was 792 kg/ha for redgram + blackgram (SU 03-13) under uniform row in 2004. Irrespective of the planting system *i.e.* redgram grown in uniform row or paired row, the redgram + blackgram (SU 03-10) recorded higher redgram grain equivalent yield.

Redgram raised with blackgram (SU 03-10) under uniform row gave a maximum net

return of Rs.5926 and Rs.3236 per hectare, for the year 2003 and 2004, respectively. The same system recorded a higher BC ratio of 1.7 and 1.4 during 2003 and 2004, respectively.

The LER was the maximum (1.7) with redgram + blackgram (Vamban 4) raised under paired row system of planting in 2003. Whereas during 2004, the maximum LER (1.25) was obtained with redgram + blackgram (SU 03-10) raised under uniform row system. Thus intercropping blackgram had advantage over pure cropping as reported earlier (Willey, 1979).

To conclude that irrespective of the planting system of redgram, the redgram (Vamban 4) + blackgram genotype SU 03-10 recorded higher yield advantage under red lateritic soil condition of Pudukkottai District.

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