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Yield and Monetary Returns from Sorghum + Soybean Intercropping system as Affected by Different Row Proportion

Sorghum is an important coarse cereal of tropical climate, grown mostly under rainfed condition in fertility low, depleted and water deficit soils of arid and semi-arid regions of India. Intercropping is a potential agronomics system for maximizing crop production on drylands over space and time in subsistence farming situation besides effective utilization of natural resources (Willey, 1979). Soybean is supplementing the edible oil needs of the country and therefore, gaining much importance in these days. The total productivity and economic returns per unit area were found to be increased by intercropping of sorghum + soybean.

A field experiment was conducted in *kharif* season of 2002 at Experimental Farm of Sorghum Research Station, Parbhani. The experiment was laid in Randomised Block Design in three replications with four different row ratios viz., 2:1, 3:3, 4:2, 6:3, sole sorghum and sole soybean. Sorghum var. PVK 801 and JS 335 of soybean crop was selected. The experiment was conducted in replacement series of intercropping system. Sorghum with 45 cm row spacing and 12.5 cm and 5 cm plant to plant distance in soybean. The gross plot size 6.30 m x 5.0 m and net plot sizes were 4.05 m x 4.0 m for treatment 6:3 row proportion, and for 2:1, 3:3, 4:2 and sole sorghum and sole soybean plot size of 5.4 m x 4.0 m.

The recommended dose of fertilizer was given at the time of sowing i.e. half dose of N and full dose of P_2O_5 and K_2O as a basal dose and remaining half dose of N was applied 30 days after sowing only to sorghum rows.

The data presented in table 1 reveals that sorghum grain equivalent yield (kg/ha) was highest in 6:3 row ratio of sorghum + soybean (6884 kg/ha) which was at par with 2:1 row ratio but significantly superior over sole sorghum

Table 1. Yield and monetary return from sorghum + soybean intercropping as influenced by row proportion.

Treatment	Sorghum grain yield (kg/ha)	Soybean seed yield (kg/ha)	Sorghum grain equivalent (kg/ha)	Grass monetary return (Rs.ha)	Cost cultivation (Rs/ha)	Net monetary return (Rs.ha)	Additional returns (Rs/ha)
2:1 sorghum + soybean	3397	664	6720	24062	9497	14565	4883
3:3 sorghum + soybean	2295	862	5852	20893	9483	11410	1728
4:2 sorghum + soybean	2769	589	5540	19835	9356	10479	797
6:3 sorghum + soybean	3364	715	6884	24648	9380	15292	5610
Sole sorghum	4038	-	5326	19070	9388	9682	-
Sole soybean	-	2116	-	24143	9437	14706	-
SEm $\pm$	76	52	123	470	-	426	-
CD at 5%	230	156	370	1417	-	1285	-

because the net monetary returns from soybean seed yield more compared to sole sorghum in 6:3 and 2:1 ratio.

The data (Table 1) indicated that sorghum grain equivalent yield (kg/ha) was highest in 6:3 row ratio of sorghum + soybean (6884 kg/ha) which was at pr with 2:1 row ratio but significantly superior over sole sorghum and other row ratio, while minimum yield was observed in sole sorghum. Thus indicating intercropping of sorghum with soybean as profitable system. Results are in confirmation with Mohta and De (1980). The maximum gross monetary returns were obtained from 6:3 row proportion which was significantly superior all other treatment but at par with 2:1. Although cost of cultivation for all treatments was near about similar but net monetary returns were high in 6:3 (15292 Rs/ha) and 2:1 (14565 Rs/ha) row proportion which were at par with each other but significantly superior over other treatments. Minimum net return was observed in sole sorghum (9388 Rs/ha).

Maximum additional return over sole sorghum was observed in 6:3 row ratio which was 5610 Rs/ha, indicating profitability of soybean as intercrop in sorghum cultivation.

Thus, it can be concluded that when soybean was taken as intercrop in sorghum, yield of sorghum was not affected. This intercropping has generated addition returns of 5610 Rs/ha over cultivation of sole sorghum thus indicating feasibility and profitability of system.

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