

Performance of groundnut (*Arachis hypogaea*)-based intercropping system

T. S. BHONDAVE¹, D. F. PATIL, P. G. BHOI AND N. T. KUNJIR

Mahatma Phule Krishi Vidyapeeth, Rahuri, Maharashtra 413 722

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A field experiment on intercropping of groundnut (*Arachis hypogaea* L.) with castor (*Ricinus communis* L.) and soybean [*Glycine max* (L.) Merr.] was conducted at the farm of Mahatma Phule Krishi Vidyapeeth, Rahuri, on loamy soil during rainy season (*kharif*) 1991.

Groundnut ('SB XI'), castor ('VI 9') and soybean ('MACS 58') were sown simultaneously on 3 and 4 July 1991 with a basal dose of 20 kg N/ha + 40 kg P₂O₅/ha. Eleven treatments consisting of 8 intercropping systems and 3 sole crop systems were tried in randomized block design with 3 replications (Table 1). In sole cropping groundnut was dibbled at 30 cm x 10 cm spacing, whereas in intercropping it was dibbled at 30 cm x 7.5 cm in 3 : 1 and 6 : 2 row proportions and at 30 cm x 8 cm in 4 : 1 and 8 : 2 row proportions for maintaining its 100% population (3.3×10^5 /ha). The intercrops of castor and soybean were dibbled at 30 cm and 10 cm within the rows respectively.

The yield attributes of groundnut except 100-pod weight, 1'000-kernel weight and shelling (%) were significantly reduced due to intercropping with castor and soybean. There was a drastic reduction in pod yield of base crop of groundnut (Table 1). The pod yield was maximum and significantly higher

in sole groundnut (15.07 q/ha) than that of the groundnut in intercropping treatments. The average reduction in pod yield due to castor and soybean intercropping was 33.11 and 12.47% respectively. The reduction was higher in the castor intercropping than soybean intercropping.

The intercropping of soybean had less adverse influence on groundnut, whereas that of castor was more. It might be due to greater shading effect of castor. Similar results were reported by Iyemperumal (1980) and Senthivel *et al.* (1989).

The highest groundnut equivalent (16.33 q/ha) and land-equivalent ratio (1.21) were recorded in the treatment of groundnut + soybean sown in 3 : 1 row proportion.

Thus intercropping of groundnut + soybean in a 3 : 1 row proportion was more beneficial.

REFERENCES

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Present address: ¹ All-India Co-ordinated Maize Improvement Project, National Agricultural Research Project, Sub-montane Zone, Shenda Park, Kolhapur, Maharashtra 416 012

Table 1. Yield and yield attributes of groundnut, groundnut equivalent, intercrop yield and land-equivalent ratio as influenced by intercrops

Treatment	Total pods/plant	100-pod weight (g)	100-kernel weight (g)	Shelling (%)	Base-crop yield (q/ha)	Intercrop yield (q/ha)	Groundnut equivalent (q/ha)	Land-equivalent ratio
Groundnut + castor (3 : 1)	9.60	82.45	28.33	67.57	10.03	9.92	15.82	1.14
Groundnut + castor (4 : 1)	9.60	83.00	27.23	67.00	99.95	9.49	15.49	1.11
Groundnut + castor (6 : 2)	10.00	82.80	28.20	68.67	10.10	8.71	15.18	1.08
Groundnut + castor (8 : 2)	10.47	83.10	29.70	68.40	10.25	8.94	15.46	1.10
Groundnut + soybean (3 : 1)	10.73	83.27	29.27	69.57	12.70	5.45	16.33	1.21
Groundnut + soybean (4 : 1)	11.13	84.20	30.37	69.77	12.83	4.59	15.89	1.16
Groundnut + soybean (6 : 2)	11.13	83.80	30.17	69.43	13.47	4.01	16.14	1.16
Groundnut + soybean (8 : 2)	11.07	84.03	30.33	69.60	13.77	3.49	16.10	1.15
Sole groundnut	15.87	86.37	30.47	70.23	15.07		15.07	1.00
Sole castor						21.22		1.00
Sole soybean						14.81		1.00
CD (P = 0.05)	1.87	NS	NS	NS	0.69		0.93	0.06

Price (Rs/q): Groundnut pod 1,200, castor 700, soybean 800