

## Effect of Intercropping on Insect Pests of Groundnut and Their Natural Enemies

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In tropics, intercropping has been an important component of small farm agriculture (Lamb, 1978) and one of the reasons for the evolution of these cropping patterns may be the reduced incidence of insect pests (Altieri *et al.*, 1978). Kennedy and Raveendran (1989) reported that groundnut intercropped with pearl millet reduced the incidence of leafminer, leaf hopper and thrips substantially. The results on the effect of intercropping pearl millet with groundnut on the population of leafminer, leaf hopper and thrips and the activity of their natural enemies are reported hereunder.

Field experiments were conducted at the Agricultural Research Station, Aliyarnagar during Kharif '89 and Summer '90 seasons in strip plot design with a plot size of 5 m x 4 m. Groundnut variety POL.2 was raised with a spacing of 30 cm x 10 cm. The intercropping system adopted were (a) Groundnut and pearl millet Co 7 (b) Groundnut and cowpea C 152 and (c) Groundnut and sorghum Co 25 in different ratios *Viz.*, 4:1, 6:1 and 8:1 for the main and intercrops. The different intercrops

were raised in the ratios indicated with a spacing of 15 cm within each row. A sole crop of groundnut was also raised for comparison.

Observations on the populations of leaf hopper, thrips, aphids and predatory coccinellid beetles on groundnut and intercrops were recorded at weekly intervals from the third week after sowing, on ten randomly selected plants in each plot. The larvae of the leafminer were collected at weekly intervals from third week onwards of sowing from the same plants and cultured on soyabean leaves till adult emergence. The parasitoids emerged were identified. The mean population of insects and per cent parasitism on the leafminer were worked and data analysed statistically.

The incidence of leaf hopper, thrips and aphids was significantly reduced when pearl millet was intercropped with groundnut even though the difference at subplot level was not statistically significant (Table 1). The incidence of leaf hoppers, thrips and aphids in groundnut pearl millet system was 2.6, 2.0 and 6.8 per plant respectively, as compared to 11.9,

**Table 1.** Relative abundance of pests and natural enemies on groundnut-based intercropping systems

Cropping system	Kharif '89						Summer '90					
	No./plant						No./plant					
	Leaf hoppers	Thrips	Aphids	Leaf miner	Cocci-nellids	Parasiti-zation (%)	Leaf hoppers	Thrips	Leaf miner	Cocci-nellids	Parasiti-zation (%)	
Groundnut + Pearl millet	2.7 <sup>a</sup>	2.2 <sup>a</sup>	6.8 <sup>a</sup>	2.4 <sup>a</sup>	4.3 <sup>b</sup>	36.15 <sup>a</sup>	2.5 <sup>a</sup>	1.8 <sup>a</sup>	2.1 <sup>a</sup>	5.1 <sup>b</sup>	35.24 <sup>b</sup>	
Groundnut + Cowpea	14.8 <sup>b</sup>	6.1 <sup>b</sup>	17.3 <sup>b</sup>	15.0 <sup>b</sup>	1.6 <sup>a</sup>	17.66 <sup>a</sup>	4.1 <sup>b</sup>	4.3 <sup>c</sup>	4.8 <sup>b</sup>	2.6 <sup>a</sup>	20.70 <sup>a</sup>	
Groundnut + Sorghum	4.7 <sup>a</sup>	2.4 <sup>a</sup>	7.5 <sup>a</sup>	4.5 <sup>a</sup>	2.0 <sup>a</sup>	21.56 <sup>b</sup>	3.9 <sup>b</sup>	2.7 <sup>b</sup>	3.7 <sup>b</sup>	3.6 <sup>a</sup>	23.73 <sup>a</sup>	
Groundnut alone	17.1 <sup>b</sup>	17.6 <sup>c</sup>	22.3 <sup>c</sup>	15.8 <sup>b</sup>	1.5 <sup>a</sup>	15.79 <sup>a</sup>	6.8 <sup>c</sup>	5.5 <sup>d</sup>	6.1 <sup>c</sup>	2.9 <sup>a</sup>	19.82 <sup>a</sup>	

Means followed by the same letters are not significantly different (P=0.05) by L.S.D.

11.5 and 22.2 per plant in pure crop of groundnut. Interestingly, the groundnut/pearl millet system recorded significantly higher population of predatory coccinellid beetles than in the pure crop, the actual number recorded being 4.7 and 2.2/plant. *Coccinella* sp. and *Menochilus sexmaculatus* F. were the predominant predators identified. The aggregation of predatory coccinellids at higher levels might be due to their movement from the colonizing source to the area of activity, the groundnut - pearl millet cropped area. Perhaps this system provided vital food, shelter and resting site as reported by Risch (1981). Gavarra and Raros (1975) found more predatory spiders and predatory coccinellids in groundnut-maize cropping system than in sole crop of groundnut.

Similarly, the infestation of leafminer was also much less in groundnut-pearl millet system with 34.8% and 33.3% parasitism during Kharif and Summer season respectively. *Chelonus* sp. was the dominant parasitoid identified. Availability of pollen, nectar and favourable microclimate in the pearl millet intercropped groundnut plots might have favoured the parasitism. Risch (1981) reported similar findings.

The results of the present study revealed that it would be possible to reduce the insect pests of groundnut and increase the population of entomophagous insects by intercropping with pearl millet.

Key Words : Ground nut, pearl millet intercropping, pests, parasitism, *Menochilus sexmaculatus*

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