

Productivity and economics of chilli (*Capsicum annuum*)-based intercropping systems under different fertility levels

B. MALLANGOUDA, G. S. SULIKERI, B. G. MURTHY AND N. C. PRATHIBHA

University of Agricultural Sciences, Dharwad, Karnataka 580 005

Received: December 1994

Chilli (*Capsicum annuum* L.) is a pre-dominant crop of the transitional belt of Dharwad in Karnataka. However, a single-crop system can be converted into double-or multiple-crop system under rainfed condition. Hence the present study was undertaken to increase the cropping intensity by selecting the suitable companion crop in chilli and to find out suitable economic fertilizers level for both crops.

The study was conducted at Dharwad during the rainy season of 1989 and 1990 on medium deep-black soil. The soil had available nitrogen 0.064%, available phosphorus 0.008% and available K_2O 0.014%, with pH 7.6. The treatments consisted of 3 cropping systems, viz. chilli + garlic (*Allium sativum* L.), chilli + onion (*Allium cepa* L.), and chilli + coriander (*Coriandrum sativum* L.), and 5 fertilizer levels, viz. recommended dose of NPK alone for both crops, recommended dose of NPK + farmyard manure (FYM) for both crops, 50% of recommended dose of NPK + FYM for both crops, FYM alone for both crops, and the control. The recommended dose of fertilizers for garlic, onion and coriander were 125, 62.5 and 62.5 kg/ha, 125, 50 and 125 kg/ha and 37.5, 37.5 and 37.5 kg/ha of N, P and K respectively. The recommended dose of FYM was 25,000 kg/ha to each crop. The treatments were replicated 4 times in factorial randomized block design with a plot

size of 4.5 m x 4.5 m. The common spacing of 30 cm x 7.5 cm was followed for garlic, onion and coriander, but for chilli it was 90 cm x 45 cm. Six-week-old seedlings of chilli were transplanted 1 month after sowing of companion crops.

The highest gross return was obtained in chilli + garlic companion cropping with recommended dose of fertilizer + FYM, followed by chilli + coriander with recommended dose of fertilizer + FYM (Table 1). It may be due to higher yield of main crop of chilli. However, this trend was not true with chilli + onion with recommended dose of fertilizers + FYM, wherein the maximum contribution to gross return was from the companion crop (onion) rather than from main crop. The least gross return was recorded in chilli + garlic system without fertilizer + FYM (control). This may be due to the lower yield levels of both main crop as well as companion crops (Table 1).

The net return was also higher in chilli + garlic with recommended dose of fertilizer + FYM. It may be due to higher economic yield and good market prices for the main crop, though cost of cultivation was highest. But chilli + coriander system with recommended dose of fertilizer + FYM was the next best treatment for net returns. This was due to lowest cost of cultivation (Table 1). The least net return was obtained under chilli + garlic without fertilizer and FYM (control).

Table 1. Economics of different companion cropping systems and fertilizer application in chilli

Treatment	Yield (kg/ha)		Cost of cultivation (Rs)	Gross returns/ha (Rs)	Net return/ha (Rs)	Base-crop-yield equivalent (Rs/ha)
	Main crop	Companion crop				
Chilli + garlic with recommended dose of NPK alone	370.36	956.79	3,317	12,839	9,522	7,644
Chilli + garlic with recommended dose of NPK + FYM	577.84	1,120.03	4,767	17,050	12,283	8,960
Chilli + garlic with 50% of recommended dose of NPK + FYM	411.53	769.29	4,041	11,916	7,875	6,146
Chilli + garlic with FYM alone	390.94	785.56	3,315	11,758	8,443	6,272
Chilli + garlic (control)	186.90	477.78	2,065	6,439	4,374	3,808
Chilli + onion with recommended dose of NPK alone	334.36	2,560.38	3,508	9,802	6,294	5,110
Chilli + onion with recommended dose of NPK + FYM	380.58	4,698.38	4,758	14,725	9,967	9,394
Chilli + onion with 50% of recommended dose of NPK + FYM	334.37	2,962.98	3,998	10,607	6,609	5,922
Chilli + onion with FYM alone	260.62	2,148.15	3,242	7,945	4,703	4,284
Chilli + onion (control)	196.21	2,042.34	1,992	6,832	4,840	4,074
Chilli + coriander with recommended dose of NPK alone	267.49	868.77	2,792	12,433	9,641	8,680
Chilli + coriander with recommended dose of NPK + FYM	380.65	960.22	4,042	14,931	10,889	9,590
Chilli + coriander with 50% of recommended dose of NPK + FYM	322.37	834.48	3,652	12,858	9,206	8,330
Chilli + coriander with FYM alone	269.04	824.04	3,262	12,009	8,747	8,232
Chilli + coriander (control)	169.75	765.90	2,012	10,035	8,024	7,644

Price (Rs/q): Chilli 1,400; garlic 800; onion 200; coriander 1,000

It was due to lower yield of main crop.

The lower net returns was due to lower yield of main crop (chilli) and companion crop, with lower market prices of companion crop (onion). Kadalli (1987) also obtained lower economic returns from chilli + onion cropping.

Base-crop-yield equivalent was maximum when chilli + coriander grown with full recommended dose of fertilizer and

FYM for the both crops. This may be due to absence of adverse effect of coriander on the base crop of chilli. The next best companion crop was onion in chilli.

REFERENCE

- Kadalli, V. G. 1987. Studies on performance of different companion crops of vegetable under rainfed conditions of Dharwad tract. M. Sc. (Agriculture) Thesis, University of Agricultural Sciences, Dharwad.

Indian J. Agron. 40 (3) : 504–507 (September 1995)

Effect of transplanting date, number and age of seedling on rice (*Oryza sativa*)

A. S. BALI, K. N. SINGH, AMARJIT S. BALLI, B. A. GANAI AND B. HASAN

Division of Agronomy, Sher-e-Kashmir University of Agricultural Sciences and Technology, Shalimar, Jammu and Kashmir 191 121

Received: February 1994

A field experiment was conducted at Shalimar Campus (34.1°N, 74.89°E and 1,650 m above mean sea-level) during the rainy season of 1988 and 1989. The soil of experimental site was silty loam in texture with pH 6.8, containing 1.21% organic carbon, 13.7–15.2 kg P/ha, 112–128 kg K/ha and 0.01–0.012% N. The treatment combinations consisting of 2 ages of seedlings (5 and 7 weeks), 3 densities of seedling (3, 6 and 9 seedlings/hill) and 3 dates of transplanting (5 June, 20 June and 5 July) were tried in randomized block design with 3 replications. Seedlings of different age at the each transplanting were ensured by staggered sowing of nurseries. A uniform

basal dose of 40 kg N, 45 kg P₂O₅ and 20 kg K₂O/ha was applied in all the treatments. The remaining 40 kg N/ha was applied in 2 equal splits, at tillering and panicle-initiation stages of the crop. Application of butachlor @ 1.5 kg ai/ha 3 days after transplanting, followed by 1 hand-weding at 21 days was done to control weeds in the crop.

Five-week-old seedlings gave higher grain yield than 7-week-old seedlings during 1988, with a 6.3% increase over the latter (Table 1). However, during 1989 seedling age did not exert much influence on grain yield which was lower than that of 1988 season because of decreased