

recorded in the control. Similar observations were also reported by Patil (1981) in chilli + cotton cropping systems.

The highest dry yield of chilli was recorded with chilli + garlic combination (3.87 q/ha). It was maximum with recommended dose of fertilizer + farmyard manure (4.46 q/ha). The increase was owing to more number of fruits and dry weight of fruit. Chilli + garlic intercropping

combination with recommended dose of fertilizer + farmyard manure recorded the maximum dry yield of chilli (5.77 q/ha) during the study.

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Cane yield and water-use efficiency of autumn-planted sugarcane (*Saccharum officinarum*) under sole and intercropping stand at different levels of irrigation

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A field trial was conducted during 1991–92 at Chiplima, Sambalpur (Orissa), on sandy-clay loam soil with autumn-planted sugarcane (*Saccharum officinarum* L.). The treatments consisting of 3 cropping systems, viz. sugarcane sole, sugarcane + wheat (*Triticum aestivum* L. emend. Fiori & Paol.), sugarcane + Indian mustard [*Brassica juncea* (L.) Czernj. & Cosson], and 3 levels of IW : CPE (0.8, 1.0 and 1.2) were tried in randomized block design with 3 replications. Sugarcane 'Co 6304' was planted on flat-bed rows 80 cm part on 11 October 1991 and Indian mustard 'M 27' (1 : 2) and wheat 'Sonalika' (1 : 4) were sown on 9 and 4 November 1991 respectively. The

sugarcane was fertilized with a basal dose of 100 kg P_2O_5 /ha and 60 kg K_2O /ha. Nitrogen was applied @ 225 kg/ha in 3 equal splits, at 30, 90 and 120 days after planting. The recommended dose of NPK was applied to intercrops of wheat and Indian mustard as per sole crop, i.e. @ 120, 60 and 60 kg N, P and K/ha, respectively for wheat; and 40, 20 and 20 kg N, P and K/ha for Indian mustard (50% N and full of P and K as basal and 50% N 21 days after sowing). Indian mustard, wheat and sugarcane were harvested on 30 January, 22 February and 16 December 1992 respectively.

Significantly highest cane yield of 131.60 tonnes/ha was obtained from sugarcane sole

Table 1. Cane yield, water requirement and water-use efficiency under different treatments in sugarcane-based intercropping

Treatment	Cane yield (tonnes/ha)	Irrigation requirement		Effective rainfall (cm)	Soil- moisture contribution (cm)	Water require- ment (cm)	Net return (Rs/ha)	Water- use efficiency (Rs/ha-cm)	Commercial cane sugar (%)
		Number	Depth (cm)						
<i>Cropping system</i>									
Sugarcane sole	131.60	18	108.0	37.2	3.5	148.7	21,319	143.37	9.12
Sugarcane + wheat	120.40	18	108.0	39.1	1.6	148.7	17,647	118.68	8.52
Sugarcane + Indian mustard	121.96	18	108.0	39.8	1.2	148.0	22,688	153.30	8.60
CD (P = 0.05)	4.079								0.41
<i>Irrigation level (IW : CPE)</i>									
0.8	119.76	15	90.0	36.5	2.5	129.0	18,741	145.28	8.57
1.0	125.14	18	108.0	39.1	2.3	149.4	20,847	139.54	8.69
1.2	129.06	22	132.0	40.4	1.5	173.9	22,066	126.89	8.97
CD (P = 0.05)	4.079								NS

IW : CPE, Irrigation water : cumulative pan evaporation

(Table 1). The intercrops of wheat and Indian mustard in sugarcane significantly reduced the yield of sugarcane by 8.5 and 7.3% respectively. Highest cane yield in sole system and reduction in cane yield due to intercrops were also reported by Porwal *et al.* (1994). However, sugarcane + Indian mustard was more remunerative than other systems, with a net return of Rs 22,688/ha, which was 6.4 and 28.6% higher than sugarcane sole and sugarcane + wheat respectively. Dixit and Mishra (1991) also found growing of intercrops in spring-planted sugarcane to be more remunerative.

The difference in cane yields, obtained due to various irrigation regimes, was found significant. The highest cane yield was recorded in the treatment of 1.2 IW : CPE ratio (129.06 tonnes/ha). However, it was on a

par with the treatment 1.0 IW : CPE ratio (125.14 tonnes/ha). The commercial cane sugar (%) was significantly superior in sole crop of sugarcane. The water-use efficiency expressed as net return (Rs) per hectare per unit of water required was found the highest when sugarcane was intercropped with Indian mustard (Rs 153.30/ha-cm), followed by Rs 143.37/ha-cm under sugarcane sole. The water-use efficiency decreased with increase in frequency of irrigation (Table 1).

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Production potential of Indian buckwheat (*Fagopyrum tataricum*)—based intercropping system

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Indian buckwheat [*Fagopyrum tataricum* (L.) Gaertn.] is a low-priced traditional crop of tribal belt of Himachal Pradesh, grown under sole-cropping system for meeting their religious and social demands. Growing

a high-priced crop along with Indian buckwheat will definitely raise the production potential of the crop. An experiment was therefore conducted during summer seasons of 1988, 1989 and 1990 at

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