

RESEARCH NOTES

A study on Crop Residues Management in Chilli

A field experiment was conducted at the Agricultural College Farm, Dharwad during kharif 1981-82. The experiment consisted of 12 treatments (Table 1) having different crop residues and polythene mulch, with three replications and was laid out in RBD. The soil was black clay loam with pH 7.7 and the total nitrogen, available P_2O_5 and K_2O were 0.065, 0.008 and 0.015 per cent, respectively. A fairly well distributed rainfall of 749 mm was received during the cropping season. Seedlings of chilli variety Byadagi (six weeks old) were transplanted at 90 x 90 cm spacing keeping three seedlings per hill. A common dose of 100 : 50 and 50 N, P_2O_5 and K_2O kg/ha, respectively, was applied in two splits: half each ten days after transplanting and at 30 days after first application. Stubbles of hybrid sorghum, straw/stalks of maize and cotton of the previous year were collected and cut into pieces of 20-25 cm. The residues were either spread on the soil surface or incorporated into soil to a depth of four to five cm, four weeks before transplanting of chilli. The polythene mulch was covered on the soil surface (between rows) on the date of transplanting.

Data in Table 1 show that application of 10 t/ha each maize stalks (1310 kg/ha) and sorghum stubbles (1300 kg/ha) incorporated in soil recorded higher yield of ripe dry chilli when compared to other treatments except with spreading 10 t/ha sorghum stubbles (1251 kg/ha) and 5 t/ha maize stalks (1246 kg/ha). The treatment of clean cultivation without crop residue produced significantly lower yield (1181 kg/ha). The polythene mulch plot recorded significantly lower yield (1158 kg/ha) than those which received various levels of sorghum

stubbles and maize stalks. The findings are in accordance with results obtained by Dhesi *et al.* (1974) and Banarjee *et al.* (1977).

The plots which received 10 t/ha each of maize stalks and sorghum stubbles incorporated in soil recorded higher 100 ripe dry weight in all four pickings resulting in increased yield. Similar trend was also noticed with respect to plant height, total dry matter/hill and number of fruits/hill (Table 2). Umrani *et al.* (1973) also reported increased yield and yield components of wheat and sorghum, respectively in crop residue treated plots than bare soil.

Maximum gross income (Rs. 9170/ha) was recorded with application of 10 t/ha maize stalks followed by 10 t/ha sorghum stubbles (Rs. 9100/ha) incorporated in soil. Although all the plots receiving various kinds and levels crop residues were higher in gross income as compared to clean cultivation, only the treatments receiving 10 t/ha each of sorghum stubbles and maize stalks incorporated in soil and 5 t/ha maize stalk spread on soil surface as well as incorporated in soil were superior to clean cultivation. This is because the yield increase in crop residue treated plots over clean cultivation was marginal but the cost increased on crop residue was more, as a result the net profit was less. The polythene mulch treated plot recorded a net loss of Rs. 8,832/ha due to heavy initial expenditure.

Dept. of Agronomy
College of
Agriculture
Dharwad-580005

S.B. KONI
M. M. HOSMANI
S. M. HIREMATH
L.H.MALLIGAWAD
(Received October, 1989)

Table 1. Effect of crop residues and polythene mulch on the yield, gross income, cultivation cost of net profit

Treatment	Yield of ripe dry chilli (kg/ha)	Gross income (Rs/ha)	Cost of cultivation (Rs/ha)	Net profit (Rs/ha)
10 tonnes sorghum stubbles/ha spreading	1251	8757	2950	5744
10 tonnes sorghum stubbles/ha incorporation	1300	9100	2977	6062
5 tonnes sorghum stubbles/ha spreading	1199	8393	2687	5643
5 tonnes sorghum stubbles/ha incorporation	1213	8491	2715	5716
10 tonnes maize stalks/ha spreading	1242	8694	3050	5581
10 tonnes maize stalks/ha incorporation	1310	9170	3077	6032
5 tonnes maize stalks/ha spreading	1246	8722	2737	5922
5 tonnes maize stalks/ha incorporation	1235	8645	2765	5820
Polythene mulch	1158	8106	16938	(-)-8832
10 tonnes cotton stalks/ha spreading	1188	8316	2950	5303
Clean cultivation without crop residue	1181	8267	2425	5779
Unweeded control	477	3339	2027	1286
S.Em ±	19.24	—	—	—
C D at 5%	56.00	—	—	—

References

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irrigation on the soil temperature for potato culture. *Indian Journal of Agronomy*, 9 : 277-280.

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Table 2. Effect of crop residues and polythene mulch on the yield components of chilli

Treatment	Plant height (cm)	Total dry matter production (g/hill)	No. of fruits/hill	100-ripe dry weight (g)			
				Picking			
				I	II	III	IV
10 Tonnes Sorghum stubbles/ha spreading	88.83	268.67	175	99.3	96.6	77.3	61.0
10 Tonnes sorghum stubbles/ha incorporation	87.83	276.82	177	101.3	101.0	80.3	60.0
5 Tonnes sorghum stubbles/ha spreading	83.17	261.51	166	97.3	94.3	77.6	59.0
5 Tonnes sorghum stubbles/ha incorporation	82.58	266.25	166	96.3	96.0	77.6	58.3
10 Tonnes maize stalks/ha spreading	90.58	275.18	178	101.0	101.0	79.6	61.3
10 Tonnes maize stalks/ha incorporation	91.58	277.53	180	102.0	100.0	80.3	60.3
10 Tonnes maize stalks/ha spreading	84.58	269.36	167	97.3	96.6	78.0	59.3
5 Tonnes maize stalks/ha incorporation	83.67	264.13	168	93.0	97.0	78.0	59.0
Polythene mulch	85.58	258.47	161	95.0	96.3	77.6	58.6
10 Tonnes/ha cotton stalk spreading	83.08	252.50	163	94.3	98.3	77.6	58.3
Clean cultivation without crop residues	83.42	254.60	163	96.0	95.3	77.6	59.0
Unweeded control	60.33	67.08	74	81.0	71.6	38.3	10.0
S.E.m \pm	2.26	5.34	3.93	1.8	2.4	6.1	3.3
C D at 5%	6.61	15.62	14.50	5.4	7.2	18.1	9.7