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EFFECT OF ORGANIC AND BIO-MULCHES ON EQUIVALENT YIELD OF BABY CORN VARIETY COBC1

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ABSTRACT

Investigations were carried out to study the effect of organic and bio-mulches in the cultivation of babycorn (Zea *mays* L.) at the Orchard, Department of Horticulture, Faculty of Agriculture, Annamalai University during 2000-2002. The experiment was laid out in a Randomised Block Design with eight treatments replicated thrice. The treatments consisted of application of four organic mulches *viz*., sugarcane trash mulch at 10 cm thickness, water hyacinth residue at 5 cm thickness, sawdust at 2 cm thickness and coirpith at 2 cm thickness and cultivation of bio-mulches viz., coriander, mint and fenugreek. Significant effects due to application of organic mulches and cultivation of bio-mulches were found in the growth and yield parameters of babycorn. The highest response for plant characters wasrecorded due to the application of sugarcane trash at 10 cm thickness. It was closely followed by the application of coirpith at 2 cm thickness. Besides, spectacular effect on weed control was observed due to mulching treatments.

The best equivalent yield was recorded due the application of sugarcane trash at 10 cm thickness. This was followed by the application of coirpith at 2 cm thickness. Among the bio-mulches tried, satisfactory results were obtained by growing coriander for greens.

Key words: baby corn, equivelalent yield, bio-mulches and organic mulches

INTRODUCTION

Babycorn is the dehusked maize ear, harvested within 2-3 days of silking, i.e. prior to fertilization (Pandey *et al.*, 1998). It is a genotype of *Zea mays* L. Babycorn cultivation provides tremendous avenues for diversification, value addition and

revenue generation. After successful venture in many South-East Asian countries, it is gaining fast popularity in Indian market too, particularly in metropolitan cities. Good quality and higher green-fodder yield for its cultivation adds enormously to total economic returns besides higher profit per unit area, compared with green maize. Babycorn is used in a variety of traditional and continental dishes besides being canned. It has high nutritive value comparable to many vegetables (ParodaShashi, 1994). Babycorn, being a relatively new introduction in our country requires the development of suitable production technology in realizing higher yield and monetary returns before it could be popularized among the growers. Depending on agro climatic conditions, 3-4 crops of babycorn are taken in an *year* recording high returns.

Mulching is one of the ways for recycling the organic waste materials. Mulching is not only an effective way to recycle organic waste material but also helps to minimize evaporation of water, control weed infestation, reduce runoff and soil loss, increase soil moisture status, control soil temperature fluctuation and improve physical, chemical and biological properties of soil which lead to better yield of crops.

Sugarcane produces 10-12 tonnes of dry leaves per hectare per year. These leaves are generally called trash. In India, it is estimated that 26.6 million tonnes of sugarcane trash is produced every year. Sugarcane trash mulching has been reported to be useful in many crops (Nagarajan *et al*, 1987 and Palaniappan, 2002). Secondly coirpith is a renewable agro waste arising out of the extraction of fibre from husk of the coconut. Extraction of 1 kg of coir fibre generates 2 kg of coirpith. In India, it is estimated that 0.5 million tonnes of coirpith is produced every year. It's disposal is a problem in coir industry and it is a pollutant of the environment. On the other hand, there are reports stating that coirpith can be used as mulching material (Ramaswami, 2000).

Another weed controlling aspect is growing compatible and suitable crops as bio-mulches. Unlike intercrops, the choice of bio-mulches lies in selecting them based on duration and compatibility with no antagonistic effect on crop plants. Here, no alteration in spacing of main crop and no fertilizer application is done to benefit the bio-mulches. In turn, the crops are chosen in such a way that they too contribute for economic returns (Abdul Baki*et al*, 1997).

Though, productivity of any crop is greatly influenced by various factors viz., genetic makeup and environmental features, infestation due to weeds pose an universal problem in cultivation aspect irrespective of nature of crop grown. Since baby corn is utilized fresh, spray residues disprove the quality of the crop.

MATERIALS AND METHODS

Investigation was carried out to assess the use of organic and bio mulches in the cultivation of baby corn at orchard, Department of Horticulture during 2001-2002. The experiment was conducted with four organic mulches viz., sugarcane trash mulch at 10 cm thickness, water hyacinth residue at 5 cm thickness, sawdust at 2 cm thickness and coir pith at 2 cm thickness and cultivation of three bio-mulches viz., coriander, mint and fenugreek. which were treated viz., T_0 -control, T_1-Dried water hyacinth at 10 cm thickness, T_2-Sugarcane trash at 10 cm thickness, T_3-coir pith at 2 cm thickness T_4-Sawdust at 2 cm thickness, T_5-Mint was sown 20 DAS main crop T_6-coriander was sown 15 DAS main crop and T_7-Fenugreek was sown 15 DAS main crop. There were eight treatments replicated thrice in Randomized block design (RBD).

The experimental field was ploughed to a fine tilth. During last ploughing, basal dose of 75 kg of N, 60 kg of P and 20 kg per hectare along with FYM incorporated and the field was levelled. Irrigation channels and beds of size 4 x 3 m^2 were formed. Seeds of CoBC-1 baby corn, obtained from Horticultural Research Station Bhavanisagar was used for experimentation. The germination percentage was found to be 71-60. Hence, three seeds were sown per hill leaving 60 cm between rows and 30 cm between plants. On the 25th day, the plants were top dressed with 75 kg of N and 25 kg K ha'^{1} and earthed up. Irrigation was done at periodic intervals to maintain the plants healthy.

According to the treatment schedule, mulching was practiced after 15 days of crop germination. The mulch materials used were sugarcane trash at 10 cm thickness (12 t ha^{-1}), coir pith at 2 cm thickness (10 t ha^{-1}). Sawdust 2 cm thickness (10 t ha^{-1}) and crop residue at 10 cm thickness (10 t ha^{-1}). For the bio-mulches, seeds of fenugreek and coriander were sown and cuttings of mint were planted 20 DAS of

main crop. The most important component in baby corn production technology is the avoidance of pollination by the way of detasselling. If the silk is pollinated, the kernels and the cobs become hard. Removal of tassels or detasselling is known to improve the quality of young cob by directing the products of photosynthesis away from growth and maintenance of the tassels. Hence, detasselling was done.

Periodical harvest was done once in two days after 2 or 3 days of silking. The cobs were removed one by one as a single plant is capable of yielding up to 3 cobs. The total duration of harvest extended over a period of ten days. Cobs were stored at low temperature immediately after harvest to prevent deterioration in quality. The observations were recorded and subjected for statistical analysis (Panse and Sukhatme, 1967).

RESULTS AND DISCUSSION

Equivalent yield (t ha^{-1}), (Table 1.) Among the treatments, application of sugarcane trash at 10 cm thickness (T_2) gave the highest yield of 10.43 and 10.67 t ha^{-1} in two successive cropping seasons which was higher than that of the equivalent yield obtained by application of coriander as bio-mulch (T_6) which recoded 10.15 and 10.12 t ha^{-1} in the two respective seasons. This was followed by T_3, T_5,T_7, T_1, and T_4. However, T_5 and T_7 showed statistically insignificant differences among themselves.

Equivalent yield was significantly influenced by all the treatments. The highest equivalent yield was registered by sugarcane trash mulching. Babycorn equivalent yield with coriander bio-mulching [babycorn yield + (1.1 x coriander yield)] was the next best. This was followed by coir pith mulching, water hyacinth residue mulching, mint bio-mulching [babycorn yield + (1 x mint yield)] and fenugreek bio-mulching [babycorn yield + (1.2 x fenugreek yield)]. But, the values of T_7 (coriander bio-mulching) was on par with T_4 (coir pith mulching). Similar results were reported by Rahman *et al.* (1992) in cabbage and coriander intercropping, Jat*et al.* (1998) in maize and soybean intercropping, Solaiappan*et al* (1998) in cotton and cluster bean intercropping. Sinha *et al.* (1999) in maize and potato intercropping.

CONCLUSION

The sugarcane trash mulching gave the best equivalent yield followed by coriander bio-mulching, coirpith mulching, water hyacinth residue mulching, mint bio-mulching, fenugreek bio-mulching and sawdust mulching in order. Sugarcane trash mulching at 10 cm thickness gave good density thereby providing ample moisture and nutrients to the babycorn which inturn yielded the best. In coriander bio-mulching, the babycorn yield was not significantly increased and the equivalent yield was increased due to addition of green yield from bio-mulch. But, other mulching practices, though gave increased babycorn yield, the equivalent yield was much lesser.

REFERENCE

Abdul-Baki, A., A.D. Morse, T.E. Devine and J. R. Tassdde. 1997. Broccoli production in forage soybean and foxtail millet cover crop mulches. **Hort. Sci.,** 32(5):836-839.

Jat, R.L., B.L. Gaur, Sureshkumar and R.K. Kulhari. 1998. Effect of weed management, fertilizers and rhizobium inoculation on growth, yield and attributes of maize (Zea*mays)* and soybean *(Glycine max)* under maize + soybean intercropping system. **Indian J.Agron., 3(1):**23-26.

Nagarajan, R., K. Ramasamy, T.S. Manickam, G.V. Kothandaraman and S. Subramanian. 1987. Coir waste in crop production. Bulletin, Centre for soil and crop management studies. Tamil Nadu Agricultural University, Coimbatore and Coir. Res. Inst., Kavaloor.

Palaniappan, S.P. 2002. Efficiency management of organic residues/wastes / for sustainable crop production In: National seminar on recent trends on the use of humic acid for sustainable agruculture.Feb.27-28, 2002, held at Department of Soil Science and Agricultural Chemistry. Annamalai University, India, pp. 111.

Pandey, A.K., Prasad, Kamta, Mani, V.P., Chauhan, V.S and Singh, Prem. 1998. Improved maize production technology for mid-hills of N-W Flimalayas. **Technical Bulletin, 11:1-46.**

Panse VG, Sukhatme PV. Statistical Methods for Agricultural Workers, ICAR, New Delhi, 1967, 381.

ParodaShashi. 1994. Thailand meibabycornKisafalata Ki Kahani, Kheti 48(1): 15-18, 21.

Rahman, A.K.M.M., S.M.M. Flossain and M.M. Flamid.1992. Effect of intercropping garlic, onion and coriander with cabbage and cauliflower. **Punjab. Veg. Grower, 27:** 27-31.

Ramaswami, P.P. 2000. Recycling of agricultural and agro-industry wastes for sustainable agricultural production. **J. Indian. Soc. Soil. Sci., 47(4):661-665.**

Sinha. K.K., S.S. Mishra and S.J. Singh. 1999. Yield and economics as influenced by winter maize (Zea*mays)* - based intercropping systems in North Bihar. **Indian J. Agron., 44(1): 30-35.**

Solaippan, U. and A.A. Dason. 1998. Influence of sowing time, intercropping and mulching on the growth and yield of rainfed cotton (*Gossypiumhirsutum).***Indian J. Agron. 43(4):** 616-621.

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Table .1. Effect of organic and bio-mulches on equivalent yield of baby corn variety cobc1

Treatments		Babycorn yield		Bio-mulch green yield		Equivalent yield	
		I Crop (2001)	II Crop (2002)	1 Crop (2001)	II Crop (2002)	1 Crop (2001)	li Crop (2002)
To	- Control	3.02	3.02	-	-	-	-
Ti	- Water hyacinth residue at 5 cm thickness	8.32	7.97	-	-	-	-
T_2	- Sugarcane trash at 10 cm thickness	10.43	10.67	-	-	-	-
T_3	- Coirpith at 2 cm thickness	9.15	9.38	-	-	-	-
T_4	- Sawdust at 2 cm thickness	3.70	3.74	-	-	-	-
T_5	- Mint as bio-mulch	5.49	5.48	2.96	2.90	8.45	8.38
T_6	- Coriander as bio-mulch	6.07	6.30	3.71	3.48	10.15	10.12
T_7	- Fenugreek as bio-mulch	4.23	4.19	3.45	3.32	8.36	8.17
	S.Ed.	0.25	0.22	0.08	0.07	0.14	0.11
	CD (p=0.05)	0.51	0.44	0.16	0.14	0.26	0.23

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