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**EFFECT OF ORGANIC AND BIO MULCHES ON COB YIELD AND
BIO-MULCH GREEN YIELD IN BABY CORN VARIETY COBC.1**

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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 yield of babycorn and green yield of bio mulches. The highest response for plant characters was recorded due to the application of sugarcane trash at 10 cm thickness. It was closely followed by the application of coirpith at 2 cm thickness.

Keywords: baby corn, bio-mulch, green yield and cob yield

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



Volume 4 Issue 2 2007
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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.

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 Bakiet 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



Volume 4 Issue 2 2007
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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., T₀ -control, T₁-Dried water hyacinth at 10 cm thickness, T₂-Sugarcane trash at 10 cm thickness, T₃-coir pith at 2 cm thickness T₄-Sawdust at 2 cm thickness, T₅-Mint was sown 20 DAS main crop T₆-coriander was sown 15 DAS main crop and T₇-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 m² were formed. Seeds of CoBC-1 baby corn, obtained from Horticultural Research Station Bhavanisagar was used for experimentation. The varietal characteristics of CoBC-1 is given below.

Plant height	100-125 cm
Number of cobs per plant :	2-3
Average yield :	25- 50 g
Single cob weight :	10-25 cm
Crop duration :	75 days

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.



Volume 4 Issue 2 2007
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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 observations were recorded and subjected for statistical analysis (Panse and Sukhatme, 1967).

RESULTS AND DISCUSSION

Cob yield and bio-mulch green yield (t ha^{-1}), significant variation was noticed in all the treatments when compared to control. The highest response was noticed in trash mulching (T_2) which recorded 10.43 and 10.67 t ha^{-1} during successive cropping seasons. This was followed by coir pith mulching (T_3) which recorded 9.15 and 9.38 t ha^{-1} in the first and second crops respectively. This was followed by T_1 , T_6 , T_5 , T_7 , and T_4 in order. The least yield was obtained in control (T_0) which recorded 3.02 t ha^{-1} in both the first and second crop seasons.

The yield of babycorn increased when it was mulched with sugarcane trash followed by coir pith and water hyacinth residue. Bio-mulching of babycorn with coriander and mint also significantly increased the yield. The present results corroborate with findings of Kolandaiswamy *et al.* (1967) who reported that sugarcane trash mulching significantly increased the yield of irrigated sorghum and cotton, Yadav *et al.* (1987) observed that sugarcane yield increased due to trash mulching, and Vijayabaskar (1998) reported that coir pith mulching, significantly increased the sunflower yield. Similarly, intercropping of green chilli and onion increased the total yield of both crops (Kadalliet *et al.*, 1998), and cabbage and radish intercropping also increased total yield of both crops (Chavanet *et al.*, 1990). In the same way,



Volume 4 Issue 2 2007
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intercropping of pigeon pea and cow pea increased the grain yield of pigeon pea compared to sole cropping, and intercropping of maize and potato showed increased yield in both crops (Sinha *et al.*, 1999)

SUMMARY

The sugarcane trash mulching gave the best yield followed by, 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 baby corn which in turn yielded the best. In coriander bio-mulching, the baby corn yield was not significantly increased and the yield was increased due to addition of green yield from bio-mulch. But, other mulching practices, though gave increased baby corn yield.

Based on the yield sugarcane trash at 10 cm thickness was found to be superior over other practices of mulching.

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Volume 4 Issue 2 2007
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**Effect of organic and bio-mulches on the cob yield and bio-mulch green yield
(t ha⁻¹) of babycorn variety CoBC.1**

Treatment		Babycorn yield		Bio-mulch green yield	
		I Crop (2001)	II Crop (2002)	I Crop (2001)	II Crop (2002)
T ₀	Control	3.02	3.02	-	-
T ₁	Water hyacinth residue at 5 cm thickness	7.32	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
T ₆	- Coriander as bio-mulch	6.07	6.30	3.71	3.48
T ₇	- Fenugreek as bio-mulch	4.23	4.19	3.45	3.32
	S.Ed.	0.25	0.22	0.08	0.07
	CD (p=0.05)	0.51	0.44	0.16	0.14