



Volume 4 Issue 1 2006
ISSN NO : 1300-669X

INFLUENCE OF ORGANIC AND BIO-MULCHES ON QUALITY ATTRIBUTES OF BABY CORN

S.MULLAIMARAN, K.HARIPRIYA AND T.R.BARATHKUMAR

Department of Horticulture, Faculty of Agriculture, Annamalai University,
Annamalainagar - 608002, Tamilnadu

ABSTRACT

The experiment was conducted to study the influence of organic and bio-mulches on quality parameters of baby corn in Department of Horticulture, Faculty of Agriculture, Annamalai University, Annamalainagar during 2001- 2002. The experiment was laid out in a randomized block design with eight treatments in three replications. 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. Among the organic and bio mulches were identified. The mulch materials used was sugarcane trash at 10 cm thickness (12 t ha^{-1}) which recorded the maximum level of quality attributes of baby corn.

Key Words: Baby Corn, Organic and Bio- Mulches, protein, Fiber Content, TSS and Quality Attributes

INTRODUCTION

Babycorn is the dehusked maize ear, harvested within 2-3 days of silking, i.e. prior to fertilization. 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,



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ISSN NO : 1300-669X

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. 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. Hence increasing quality attributes of babycorn.

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., 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 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



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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 quality parameters were recorded and subjected for statistical analysis (Panse and Sukhatme, 1967).

RESULTS AND DISCUSSION

The highest value for protein fibrecontent were recorded where the treatments were imposed with organic mulch as sugarcane trash mulch. The lowest value for quality character was recorded in control.

Regarding the TSS, Protein Content and Fiber Content were registered under Sugarcane trash at 10 cm thickness. But the values among all the treatments were statistically not significant since it was tried for one season. If the practice is continued for few more years there must be a change in the quality attributes. Application of mulches, irrespective of sources and rates recorded significantly higher organic carbon and this might be due to increased yield and quality and external application of organic manures as reported by Gupta, U.S. and R.K.Gupta. (1983) and Yadav et al., (2000). The differences in the TSS, Protein



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Content and Fibre with the application of different sources mulching might be due to the result of differential rate of oxidation of organic matter by microbes (Trehan, 1997). The decrease in soil pH after organic matter addition might be because of the production of CO₂ and organic acids during decomposition of organic mulches. Consequently, if there is decrease in soil pH directly it is related with increase in EC. Hence increasing quality characters. This is in accordance with Shelke et al. (2001). The increased biochemical characters might be due to incorporation of organic mulches (Meerabai., 2001).

The quality parameters of baby corn under different treatments imposed with Sugarcane trash at 10 cm thickness followed by coir pith at 2 cm thickness are recognized for valuable returns and were forwarded for further studies in baby corn

CONCLUSION

Among the treatments comprising organic and bio mulches under different treatments imposed with Sugarcane trash at 10 cm thickness followed by coir pith at 2 cm thickness are recognized values for TSS, Protein Content and Fibre Content were observed in the treatment combinations in baby corn cultivation field.

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Volume 4 Issue 1 2006
ISSN NO : 1300-669X

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Effect of organic and bio-mulches on biochemical analysis of baby corn

Treatments	Protein Content%	Fibre content %	TSS
control	15.99	3.99	1.33
Dried water hyacinth at 10 cm thickness	16.45	4.77	1.34
Sugarcane trash at 10 cm thickness	18.67	6.10	1.96



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ISSN NO : 1300-669X

coir pith at 2 cm thickness	17.34	5.91	1.66
Sawdust at 2 cm thickness	13.16	4.77	1.61
Mint was sown 20 DAS main crop	14.99	4.44	1.46
coriander was sown 15 DAS main crop	17.90	4.55	1.56
Fenugreek was sown 15 DAS main crop	14.90	4.88	1.45
SED	0.99	0.55	0.12
CD (P=0.05)	1.80	1.01	0.06