YIDDISH

Vol 4 Issue 02, July 2009
ISSN NO: 0364-4308

BENEFITS COST RATIO OF ORGANIC AND BIO - MULCHING PRACTICES ON CULTIVATION OF BABYCORN

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

Department of Horticulture, Faculty of Agriculture, Annamalai University,

Annamalai nagar-608 002,Tamil Nadu, India.

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 andyield 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 weed control efficiency 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.Hence, from the results of yield and economics, application of sugarcane trash at 10 cm thickness was found to be the best than the other mulching practices tried for babycorn.

Keywords: baby corn, equivalent yield, green yield and economics

Vol 4 Issue 02, July 2009
ISSN NO: 0364-4308

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).

Water hyacinth, an aquatic weed is a global problem, particularly more severe in tropical nations like India. It is a fast growing, high nutrient utilizing and widely adaptable weed. It spreads and affects the quality and quantity of water resource. It has the capacity to double itself within a short period ranging from 1.5 to 12.5 days. It's annual productivity is about 100 tonnes (dry basis) per ha of water surface. Mulching is one of the ways to recycle this problematic aquatic weed by which its economic value can be recognized.

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).

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).

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.

RESULTS AND DISCUSSION

Details of cost of cultivation, gross return per ha, net return per ha and return rupee^{-1} invested are furnished in table 17. Among the treatments, T_2 (sugarcane trash) gave the highest net return of Rs.74,920 and 75,683 ha^{-1}in two successive seasons. This treatment also recorded the highest return per rupee invested i.e., Rs.3.55 and 3.44 in two cropping seasons respectively. The next best treatment was found to be T_6 (coriander biomulching) recording a net income of Rs.71,063 and 70,700 ha$'^{1}$ in two successive seasons and Rs.3.33 and 3.31 as return per rupee invested. Control (T_0) recorded the least net return of Rs.6,585 and 6, 421 and return per rupee invested was of Rs.1.28 and 1.27 in two successive cropping seasons respectively.

Babycorn (Zea*Mays* L.) is little known to the Indian maize growers as a commercial crop. The lack of knowledge in the use and economic importance of this crop seem to be the major factor besides the non-availability of production technology for adaption among the growers. The maize growers have to be provided with suitable agro techniques and assured market to augment their income by growing this crop. There lies scope for enhancement of crop production by recycling organic wastes as mulch material. (Dikshit and Khatik, 2000). The uses of organic mulches are, it suppresses weed growth, increases plant growth, soil moisture and yield. Field experiments were conducted to study the effect of organic mulches in the cultivation of Babycorn var. CoBC^{-1}. The response of various treatments of the experiment are discussed below.

The highest gross income was obtained with sugarcane trash mulching at 10 cm thickness. This might be due to higher grain and stover yields of babycorn. The next best result was obtained in coriander bio-mulching. This might be due to yield from both babycorn and coriander.

SUMMARY

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.

The return per rupee invested was maximum in sugarcane trash mulching. This was closely followed by coriander bio-mulching.

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

REFERENCES

Dikshit, P.R., S.K. Khatik. 2000. Contribution and potential of industrial wastes and sewage sludge for increasing crop production. **J. Industrial Pollution Control, 16(1**):81.

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.

Paroda Shashi. 1994. Thailand mei baby corn Kisafalata Ki Kahani, Kheti 48(1): 15-18, 21.

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

Vol 4 Issue 02, July 2009
ISSN NO: 0364-4308

Treatments	Cost of cultivation		Gross income (Rs./ha)		Net income (Rs./ha)		Return per rupee invested	
	I Crop (2001)	II Crop (2002)	I Crop (2001)	II crop (2002)	I Crop (2001)	II Crop (2002)	I Crop (2001)	II Crop (2002)
T_0 – Control	23615	23779	30200	30200	6585	6421	1.28	1.27
T_1 - Water hyacinth residue [1] at 5 cm thickness	28689	28981	83200	79700	54511	50719	2.90	2.75
T_2 - Sugarcane trash at 10 cm thickness	29380	38017	104300	106700	74920	75683	3.55	3.44
T_3 - Coirpith at 2 cm [3] " thickness	28240	28597	91500	93800	63260	65203	3.24	3.28
T_4 - Sawdust at 2 cm [4] thickness	27205	26811	37000	37500	9795	10689	1.36	1.38
T_5 - Mint biomulch	32317	32425	84500	83800	52083	51375	2.61	2.58
T_6 - Coriander biomulch	30437	30500	101500	101200	71063	70700	3.33	3.31
T_7 - Fenugreek biomulch	32412	32543	83600	81700	51188	49157	2.57	2.51

Benefits cost ratio of organic and bio - mulching practices on cultivation of baby corn