https://doi.org/10.29321/MAJ.10.A03418

Madras agric. J. 61, (9) : 398 - 401, August, 1974

Studies on Intercropping of Short Duration Vegetables with Maize

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ABSTRACT

Studies were conducted for four consecutive seasons on intercropping of bhendi, cowpea, radish, clusterbeans lab—lab, beet root, knol khol and carrot. The results indicate that none of the vegetables had any adverse effect on the yield of the main maize crop and in addition the cultivation of bhendi along with maize gave an additional return of Rs. 934/ha during summer and Rs. 2632/ha during monsoon seasons. The next best vegetable was found to be cowpea giving an additional return of Rs. 700/ha in summer and Rs. 1934/ha in the monsoon season.

INTRODUCTION

The hybrid varieties of maize are fast gaining popularity in Tamil Nadu. They yield on an average 5000 to 7000 kg of grain per ha, depending on the environmental factors. Raising a subsidiary crop along with a main crop, such that there is no adverse effect on the main crop is an accepted practice to increase the profit per unit area in unit time. Many intercropping combinations have been found highly profitable (Singh and Pchand, 1969)

Since maize is of short duration and is also raised under a wide spacing it affords possibilities for raising still shorter duration vegetables as an intercrop along with it. In the present study, different short duration vegetables were intercropped along with maize for four consecutive seasons, to study whether it would be an economic proposition to intercrop short duration vegetables along with maize and also to study the effect of the intercrop on the yield of maize.

MATERIALS AND METHODS

The trials were laid out for four consecutive seasons, in the Millets Breeding Station, Tamil Nadu Agricultural University, Coimbatore, in a randomised block design with three replications. In the summer seasons of 1970 and 1971, the following treatments were tried i e., 1. Maize + Bhendi 2. Maize + Cowpea. 3. Maize + Radish, 4. Maize + Clusterbeans, 5 Maize + Lab lab and 6. Maize alone. In addition to the above treatments three

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more treatments were added during the monson seasons of 1970 and 1971 i. e., 1. Maize + Beet root, 2. Maize + Knol khol and 3. Maize + Carrot.

The hybrid maize variety Deccan was used as the main crop of maize and the vegetables were intercropped along with it. The plot size adopted was 10.4 × 4.8 m. The spacing adopted for maize was 60×25 cm and the vegetable seeds were sown on the opposite side of the ridge with a spacing of 15 cm from seed to seed. The fertilizer dose adopted was that recommended for maize i. e., 132 kg N + 66 kg P_2O_5 + 44 kg K_2O per ha. which was given in two split doses i.e., $\frac{1}{3}$ N + P + K at sowing and $\frac{2}{3}$ N at 30 days after sowing. No extra fertilizer was given for the vegetable crop. The irrigations were given once in 7-10 days depending upon soil moisture and rainfall. Plant protection measures as given in the package of practices for maize alone were followed The vegetables were harvested as and when they were ready for harvest and the green weight recorded. The maize cobs were harvested when they matured and after drying the cobs, the grains were threshed using a hand operated maize thresher.

TABLE 1. Maize grain yield recorded in the four seasons in kg/ha

Treatments	Summer 1970	Summer 1971	Monsoon 1970	Monsoon 1971
Maize + Bhendi	4525	4574	7439	6610
,, Radish	4532	4807	7692	6526
,, Cowpea	3210	3433	6094	6440
,, Clusterbeans	4054	4704	7100	7026
,, Lab lab	4954	3819	6908	6435
,, Beet root	–	–	7396	7218
,, Carrot	–	–	7919	6644
,, Knol khol	–	–	7723	6892
Maize alone	4935	3975	7683	6749
Whether significant or not	Not significant			

RESULTS AND DISCUSSION

The yield of maize recorded in the different seasons is given in Table 1.

The maize grain yield ranged from 3200 to 4900 kg/ha during the two summer seasons and from 6000 to 7900 kg/ha during the two monsoon seasons. In all the four seasons in which the trial was conducted, differences in maize grain yield between the different treatments were not significant. This indicated that none of the vegetables that were intercropped along with maize had any significant adverse effect on the maize yield. However, when cowpea was intercropped with maize, the yield of maize was substantially lower, though not significant, probably due to the twining habit of cowpea. It was also noted that none of the vegetables caused any variation in the height or duration of the maize crop. Narang (1967) has also reported that in maize + soyaben mixture, there was no harmful effect as

TABLE 2. Yield of vegetables in the four seasons and their monetary values

Treatments	Summer '70		Summer '71		Average value (Rs.)	Monsoon '70		Monsoon '71		Average value (Rs.)
	Yield (kg/ha)	Value (Rs)	Yield (kg/ha)	Value (Rs)		Yield (kg/ha)	Value (Rs)	Yield (kg/ha)	Value (Rs)	
Maize + Bhendi	1816	908	1918	959	934	7360	3680	3168	1584	2632
„ Radish	993	496	377	189	343	4192	2096	313	156	1126
„ Cowpea	615	492	1135	908	700	3411	2728	1425	1140	1334
„ Clusterbeans	1680	840	51	26	433	839	419	138	69	244
„ Lab lab	1631	816	1144	572	694	852	426	499	149	288
„ Beet root	—	—	—	—	—	2766	2212	—	—	1106
„ Carrot	—	—	—	—	—	497	393	—	—	199
„ Knol khol	—	—	—	—	—	762	610	—	—	305
S. E.	Not significan		150				278		122	
C. D. (P = 0.05)			344				846		284	

judged from the morphological characters of maize.

Since the money value of each vegetable is different, the actual yield of the vegetable was converted into its monetary value. The cost of the vegetable taken was the prevailing market price i e., bhendi, radish, clusterbeans and lab lab at 50 paise/kg and cowpea, beet root, knol khol and carrot at 80 paise/kg. The monetary values for the yield obtained in the different vegetables were subjected to statistical analysis and the results are given in Table 2.

The results indicate that both in the summer and monsoon seasons bhendi has given the maximum additional return. During the summer seasons it gave an average additional return of Rs. 934/ha and during the monsoon season it was Rs. 2632/ha. The next best vegetable seems to be cowpea with an additional return of Rs. 700/ha during summer and Rs. 1934/ha during the monsoon season.

The first picking of bhendi was taken up on the 45th day after sowing and further pickings were done with 3 to 4-day intervals and in all there were about 12 pickings in each seasons. Another advantage of bhendiis the ease with which it can be harvested unlike cowpea or lab lab in which the vines twine around adjacent maize plants and difficulty was felt in entering the plot and harvesting the green pods without injuring either the maize crop or the vegetable crop.

Even though beet root recorded good yield during the monsoon '70 season, in general, the cold season vegetables did not fare well, probably due to the higher temperature prevailing under Coimbatore conditions. The three cold season vegetables did not yield any return during monsoon '71 season and as such these were not included for the statistical analysis of the data for the season and only the yields from the other vegetables were included in the analysis.

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