

Studies of intercropping in vegetables

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ABSTRACT

In the vegetables tomato, brinjal and chillies are well known and very popular vegetable grown successfully throughout the year in India, at the spacing of 45 to 60 cm in rows and 30 to 60 cm in plants and they require approximately 55 to 70 days for flowering after transplanting. Therefore, the inter space of these crops can be utilized by taking the intercrops of either of short duration like radish, coriander and palak our having straight growth like onion. In the present investigation intercropping of coriander, onion, palak and radish in *rabi* season with solanaceous vegetable crops is profitable. Intercropping of coriander with brinjal gave highest net profit followed by radish with tomato and palak with chilli.

Key words : Vegetable crops, Intercropping

INTRODUCTION

During recent years the interest in vegetable production has increased rapidly as a result of greater application of the food value of vegetables and of the place of vegetables in the Nations food requirement. The findings of scientific study and their wider application in the field have enhanced this interest to a great extent among grower and consumer. Thumpson and Kelly (1959) suggested that the intercropping in vegetable *viz.* advantageous from the point of view of economy of space, saving tillage, complete utilization of the surplus nutrients, better utilization of soil moisture and increased returns from land unit area. Ramkrishnan Nayar (1976) reported that intercropping besides providing variety of food, it gives ample employment opportunity for small growers. Keeping the above object in view an experiment on intercropping of palak, radish, coriander and onion in widely spaced plants of solanaceous groups was undertaken.

MATERIALS AND METHODS

The experiment was laid out in Randomized Block Design at the Department of Horticulture, College of Agriculture, M.A.U., Parbhani during *rabi* season 2002. Name of crops and varieties used in experiment are as follows

| Sr. No. | Name of the crop | Variety |
|---------|------------------|--------------------|
| 1. | Brinjal | Majrigota |
| 2. | Tomato | Pusa rubi |
| 3. | Chilli | Jwala |
| 4. | Onion | N-53 |
| 5. | Palak | Pusa all green |
| 6. | Coriander | Local |
| 7. | Radish | Japness white long |

The treatments details are: Brinjal – Sole T₁, Brinjal + Coriander T₂, Brinjal + Onion T₃, Brinjal + Palak T₄, Brinjal + Radish T₅, Tomato – Sole T₆, Tomato + Coriander T₇, Tomato + Onion T₈, Tomato + Palak T₉, Tomato + Radish T₁₀, Chilli – Sole T₁₁, Chilli + Coriander T₁₂, Chilli + Onion T₁₃, Chilli + Palak T₁₄, Chilli + Radish T₁₅, Coriander – Sole T₁₆, Onion – Sole T₁₇, Palak – Sole T₁₈, Radish – Sole T₁₉.

Thirty eight days old seedlings of chilli, tomato and brinjal of vigorous, healthy and uniform growth were selected and thrity days old seedlings of onion were selected and transplanted at each hill, on the same day. Seeds of coriander, palak and radish were dibbled before transplanting of main crops.

Fertilizer application

The recommended dose of fertilizers *viz.* nitrogen, phosphorous and potassium per hectare were applied to the crop. Complete dose of P₂O₅, K₂O and half dose of N was given as a basal dose to each plot of all crops at the time of transplanting or sowing and remaining half dose of N was given after 30 days of transplanting to all main crops. As the spacing of intercrops were wider in rows, only half the dose of various fertilizers were given at the time of sowing. Fertilizer doses of main as well as intercrops (kg/ha) used in experiment are as follows:

| Sr. No. | Name of the crops | N | P | K |
|---------|-------------------|-----|----|----|
| 1. | Brinjal | 100 | 50 | 50 |
| 2. | Tomato | 100 | 50 | 50 |
| 3. | Chilli | 120 | 60 | 60 |
| 4. | Onion | 100 | 50 | 50 |
| 5. | Coriander | 25 | - | - |
| 6. | Palak | 100 | 50 | 50 |
| 7. | Radish | 50 | 50 | 50 |

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Table 1 : Effect of different treatments on net profit in vegetable intercropping

| Treatments | Total expenditure (Rs.) | Yield of main crop (q/ha) | Yield of inter crop (q/ha) | Total produce (q/ha) | Monetary returns (Rs.) | Net Profit (Rs.) |
|-----------------|-------------------------|---------------------------|----------------------------|----------------------|------------------------|------------------|
| T ₁ | 5967 | 218.36 | - | 218.36 | 21836 | 15869 |
| T ₂ | 6265 | 171.42 | 37.86 | 209.28 | 36073 | 29808 |
| T ₃ | 7032 | 217.22 | 127.98 | 345.20 | 34520 | 27480 |
| T ₄ | 6398 | 219.26 | 110.83 | 330.09 | 33009 | 26610 |
| T ₅ | 6409 | 199.67 | 138.80 | 338.47 | 33847 | 27438 |
| T ₆ | 6022 | 136.57 | - | 135.57 | 27314 | 21292 |
| T ₇ | 6320 | 117.77 | 29.21 | 146.89 | 38159 | 31839 |
| T ₈ | 7087 | 92.77 | 123.45 | 216.27 | 30899 | 23812 |
| T ₉ | 6453 | 121.30 | 124.55 | 246.85 | 36715 | 30231 |
| T ₁₀ | 6464 | 136.65 | 135.66 | 272.31 | 40896 | 34432 |
| T ₁₁ | 6150 | 21.81 | - | 21.81 | 8724 | 2574 |
| T ₁₂ | 6448 | 13.16 | 22.08 | 35.24 | 16304 | 9856 |
| T ₁₃ | 7285 | 15.63 | 134.84 | 150.47 | 19732 | 12447 |
| T ₁₄ | 7051 | 15.36 | 134.80 | 150.16 | 19624 | 12573 |
| T ₁₅ | 6465 | 6.72 | 140.19 | 146.91 | 16527 | 10061 |
| T ₁₆ | 3278 | - | 108.23 | 108.23 | 54115 | 50737 |
| T ₁₇ | 4810 | - | 525.78 | 525.78 | 52578 | 47768 |
| T ₁₈ | 3938 | - | 539 | 539 | 53950 | 50011 |
| T ₁₉ | 3814 | - | 713.33 | 713.33 | 71333 | 67519 |

RESULTS AND DISCUSSION

The results of analysis of variance for different characters are presented in Table 1.

In the intercropping system the tomato radish (T₁₀) gave highest gross profit. In the brinjal cropping system brinjal + onion (T₃) was observed better than the other treatments of brinjal crop. In the chilli crop treatment (T₁₃) chilli + onion (T₁₃) were at par for net profit. It was interesting to note that the intercropping of any short duration vegetables in the experiment was observed profitable as compared to sole crops of any solanaceous group.

Economics:

It is not important whether a crop is producing more yield in quantity but it is very important whether the crops is giving more net profit from the point of view of cultivars. In this experiment intercropping of any vegetables in all the solanaceous vegetables was observed profitable as compared to sole crops. When only brinjal was considered in which brinjal + intercrops with coriander gave maximum net profit of Rs. 29,808. In tomato the treatment T₁₀ (tomato + radish) gave the maximum net profit of Rs. 34432, which was highest as compared to all treatments of solaceous crops due to heavy production of both the

crops.

In the present study there was no adverse effect of intercrops growth of main crops. These findings are in confirmation with the findings of Meenakshi *et al.* (1974). From the study it can be concluded that, intercropping of coriander, onion, palak and radish in *rabi* season with solaceous vegetables crops is always profitable. Intercropping of coriander with brinjal (T₂) gave highest net profit followed by radish with tomato (T₁₀) and palak with chilli (T₁₄).

REFERENCES

- Meenakshi, K.J., Fazlullah Khan, A.K. and Appadural, R. (1974).** Studies on intercropping of short duration vegetables with maize. *Madras agric. J. Aug.*, **61** (8): 389.
- Ramkrishnan Nayar, T.V. (1976).** Intercropping in young robusta coffee. *Indian Coffee*, **40** (2 & 3): 70-74.
- Thomposon, H.C. and Kelly, W.C. (1959).** *Vegetables crops*, published by Tata Mc Graw-Hill Publishing Co. Ltd. Bombay, New Delhi. 150-152.

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