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Livelihood security to urban and peri urban farm families through two tiers horticultural based cropping system

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ABSTRACT

The study was carried out during 1997-98 to 2003-04 under Diversified Agricultural Support Project-a-World Bank Funded Project of Uttar Pradesh. The objective of this study was to increase the income and improve the cash flow system of small-marginal farmers, residing in the vicinity of town and urban. The pilot area was selected at Kaimganj in Farrukhabad district, having sandy loam to loam soils and maximum area cover with plantation crops *viz.*, mango, ber and guava. Five to seven year old mango fields were selected for two tier cropping system. The alleys of mango tree intercropped with important vegetable crops like potato, brinjal, pumpkin, vegetable pea, garlic and onion, because the local market is available for the disposal of these vegetable crops. Generally, farmers planted Dashari mango at the distance of 8 x 8 m in rows. The associated crop of potato planted at the distance of 50 cm apart on 12 ridges between two rows of mango and adjusted 75% plant stand. Onion planted in 40 rows at 15 cm apart in the interspaces of two rows of mango and 75% plant stand was adjusted. Three rows of pumpkin were planted between two rows of mango at 200 x 50 x 75 cm apart and adjusted 75% plant population. Vegetable pea planted in 20 rows at 30 cm apart between two rows of mango and plant stand was adjusted 75%. Brinjal planted at 60 cm apart in 10 rows between two rows of mango and adjusted 72% plant population in interspaces of mango. The 75% plant stand of garlic was adjusted with plantation of 40 rows at 15 cm apart between two rows of mango. Potato, brinjal, green fruits of pumpkin, green pods of vegetable pea, garlic and onion yield 225, 218, 278, 92, 73, and 255 q/ha, respectively. The mango based cropping systems have maintained cash flow system and improved the economic status of farming community. The standards of living of small and marginal farm families scaled up and created eco- friendly environment.

Key words : Dashari mango, Eco-friendly, Scaled up, Farming community

INTRODUCTION

Fruit trees *viz.*, guava, aonla, ber and citrus are commonly grown in the central tract of U.P. Among these fruit trees mango is the king of the tract while guava covers the major parts of sandy loam and loamy sand group of soils, located at river side. The alluvial soil of UP has deeper depth and most suitable for the cultivation of fruit trees and field crops, therefore, mango based cropping system a viable option. The mango has slow growing nature and it is planted at wider space. This provides an opportunity to use the available natural resources. In younger garden of mango, the field crop can be economically harvested up to 5-6 years and sometime 8-9 years. The younger mango trees have little or no adverse effect on growth and yield of field crops. Alone Dashari mango cultivation is being adopted by farm house holds of U.P. since long time. The mango based cropping system with valuable field crops was found more remunerative. On the basis of suitability of this system, the agricultural scientists have recommended this system to the farm families of Gangetic alluvial part of UP. The farm families reside in the central parts of U.P. have tested and accepted mango based cropping system and harvested yield levels of associated different crops are the subject matter of this manuscript.

MATERIALS AND METHODS

The study was carried out during 1997-98 to 2003-04 in Central Gangetic plains of U.P. The selected pilot area typically represents soil, climate and socio-economic condition of Agro-climatic zone V. The length of growing period of selected area varies between 120-150 days. The soil of representative area developed over alluvium. The major soil belong to loamy sand, sandy loam and loam are most suitable for filler cropping with mango. Generally farmers planted Dashari mango at the distance of 8X8 meter in rows. The associated crop of potato planted at the distance of 50 cm apart on 12 ridge between two rows of mango and adjusted 75 % plant stand. Onion planted in 40 rows at 15 cm apart in the inter space of two rows of mango and 75 % plant stand was adjusted. After harvesting of potato three rows of pumpkin were planted between two rows of mango at 200 x 50-75 cm apart and adjusted 75 % plant population. Vegetable pea planted in 20 rows of 30 cm apart between two rows of mango and plant stand was adjusted 75 %. Brinjal planted at 60 cm apart in 10 rows between two rows of mango and adjusted 72 % plant population in the interspaces of mango. 75 % plant stand of garlic was adjusted with plantation of 40 rows at 15 cm apart between two rows of mango. The recommended doses of fertilizers were given to the different crops as and when required after harvesting of associated crops, the deep intercultural was done in mango garden and field was sanitized. Mango fruits plucked when they showed the sign of maturity and marketed after post production management

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Table 1: Yield of different crops under alleys of mango

Sr.No.	System	No. of rows of companion crop in two rows of mango	Plant stand of companion crops (%/ha)	Average yield (q/ha)	
				Mango	Companion crops
1.	Mango+ potato	12	75	20-25	225.00
2.	Mango+ onion	40	75	20-25	255.00
3.	Mango+ pumpkin	2	75	20-25	278.00
4.	Mango+ vegetable pea	20	75	20-25	92.00
5.	Mango+ brinjal	10	72	20-25	218.00
6.	Mango+ garlic	40	75	20-25	73.00

RESULTS AND DISCUSSION

The fields recorded under mango based cropping system have been given in Table 1. The farm families harvested mango fruits by 20.00-25.00 q/ha at initial stage from two tier cropping system, which was equal to the fruits yield of mono cropping of mango. The potato yield 225.00 q/ha tubers. Onion yielded 225.00 q/ha bulb from the interspaces of mango. The pumpkin gave 278.00q/ha green fruits from mango+ pumpkin system of cropping system. The vegetable pea planted for green pods in the interspaces of mango gave 92q/ha green pods. The associated vegetable crop of brinjal yielded 218.00q/ha fruits. The garlic raised in the interspaces of mango yielded 73.00q/ha bulbs. The mango based cropping system added synergetic effect on the fruits yield of mango and yield of companion crops due to positive effect of root secretion of mango on associated crops and *vice versa*. These results are in concordant to the findings of Singh (2003) and Chandra *et al*. (2006).

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