



Effect of intercropping systems on growth, yield, fruit quality and leaf nutrient status of mango under rainfed situation

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Abstract : An intercropping experiment comprised of nine treatments such as mango ginger, turmeric, tomato, cowpea, French bean, ragi, niger, upland paddy and control (without intercrop) was laid out in Randomized Block Design with three replications to assess the effect of various intercrops on the performance of mango in the rainfed uplands of Odisha. The results of the study revealed that the growth of mango plants was appreciably influenced by the intercropping systems tried in the study which was evident from the incremental growth measured in terms of height, girth, canopy area and shoot growth of the concerned trees. Among different intercropping systems tried, mango + guava + cowpea exhibited better performance which has been reflected in the form of panicle production, fruit retention, fruit weight and fruit yield of mango closely followed by mango + guava + French bean system. The mango plants, under study, however, did not exhibit any kind of variation in quality parameters such as TSS and acidity in fruits. The leaf analysis result after completion of the study revealed that the N and P content of mango leaf were found to be maximum under mango + guava + cowpea intercropping system whereas the K content was estimated maximum in the mango + guava + French bean system.

Key Words : Intercropping, Mango, Rainfed upland

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INTRODUCTION

The mango plants start bearing 4 to 5 years after planting and reach their maximum bearing capacity within 10-12 years after planting. The mango plants when planted at a spacing of 10m x 10m provide an ample scope for growing of short duration crops as intercrops during initial years. The inter row space in mango remains underutilized in the early growing period and during which short duration, location specific and market driven crops may be grown as intercrops thus, allowing one to grow more than one crop and also to efficiently utilize the space and other natural resources. The intercrops not only generate an extra income but the practice also helps to

check the soil erosion through ground coverage and improves the physico-chemical properties of the soil. Intercropping is one of the techniques of land utilization for optimum production (Bhattachanagar *et al.*, 2007). Selection of suitable intercrops in mango orchard for maximum return as well as to improve the soil fertility status mainly depends upon the agro-climatic condition of the area where the crop is grown. Experimental evidences have also proved that yield stability is greater with intercropping than sole cropping. Although lot of research work has been done on fruit based intercropping system under irrigated conditions but information on guava based intercropping system in rainfed upland is lacking. Hence, an experiment on intercropping was carried out in a

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