

Studies on cultivation feasibility of intercrops under mango orchard

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Accepted : April, 2008

ABSTRACT

Qualitative evaluation for cultivation feasibility of various crops was conducted under shaded condition of mango orchard at Dholi centre of Rajendra Agricultural University, Pusa, Bihar during *rabi* season of 1999-2000. Information on percentage germination / establishment, mortality, yield of inter crops under the modified environment of mango orchard were generated. Economics of growing inter crops were evaluated.

Key words : Inter crops, Mango, Chilli, Peppermint, Barseem, Corriander.

Traditional farming practices and monoculture production system in long term results in low production. Diversification of present cropping pattern coupled with development of suitable technology packages is the need of the day to cope with the ever increasing demand for diversified products and assured income. Under current changing scenario, the horizontal land can not be extended but vertically it can be increased manifolds through agro-forestry based diversification. Development of different agroforestry land use systems are more energy efficient than sole cropping, add to diversification of production system and help sustainable productivity by conserving and improving resources (Bower, 1982; Maydell, 1985). It promotes sustainable and diversification production at an economically acceptable level with a minimum amount of external input. Agri-horti based agroforestry system allows intercropping of annual crops tuber crops, root crops, spices, fodder crops, medicinal and aromatic herbs along with beekeeping in different fruit trees/orchards will be highly promising option for multiple production from the same piece of land at the same time. Under this system fruit trees as main crop has long gestation period. Intercropping of some promising intercrops from the pre-bearing stage to the mature stage of the fruit trees will be very useful to utilize inter-spaces of the main crop for additional yield and income in off-seasons.

After division of Bihar State, more than 2.0 lakh hectare are under different orchards remain unutilized, under-utilized and uncultivated. Mango bears fruits once

in year or after one year and farmers get returns once annually or biannually. The inter-spaces of the mango orchard can be also utilized in this way for optimization of production per unit area/volume and generation of extra income.

Keeping in view the multifold advantages of mango based agri-horti-cropping system, a study was undertaken to quantify the performance of some promising intercrops under shaded conditions of mango orchard with its cost-benefit analysis under agro-climatic conditions of Bihar.

MATERIALS AND METHODS

An experiment was conducted for suitability evaluation for cultivation of various crops *viz.* chilli, tomato, palak, peppermint, barseem, corriander, cowpea and oat under heavy shades of mango orchard during *rabi* season of 1999-2000 at research farm of Tirhut, College of Agriculture, Dholi located at 25°08' N latitude and 85°60' E longitude and at an altitude of 52.12 m above mean sea level on south bank of river Budhi Gandak. The soil of the experimental plot was well drained and alluvial in nature. The soil texture in general is predominantly loamy to sandy loam. The physico-chemical analysis of the experimental plots revealed pH-8.3, soil texture-sandy loam, organic carbon (O.C.)-0.37 per cent, available phosphate (P_2O_5)-18.5 kg ha⁻¹, available potash (K_2O)-112.0kg ha⁻¹ and electric conductivity (Ec)-0.19 dsm⁻¹. Dholi is subjected to moderate weather conditions and represents the agro-climatic zone-1 of Bihar. The hottest months are April-May with maximum average temperature around 37°C and January is the coolest month with an average minimum temperature around 8°C. Dholi receives an overage 1250 mm annual rainfall. Rainfall