MULTIPLE CROPPING IN PLANTATION CROPS

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Plantation crops are, generally, grown in the tropics and to a limited extent in subtropics. These areas have an equable climate. There is plentiful precipitation, though sometimes not well distributed. The total sunshine hours exceed 2000 per annum. These situations favour plant growth around the year and the resultant natural vegetation is the evergreen forests.

These natural forests till they are interfered with by man consist of tall-growing trees, creepers that wind around these tree trunks and the under growth of bushy shrubs. Eco-climate developed in such environment favours luxuriant plant growth and the ecosystem, in nature, is also capable of self maintaining at a high level of productivity.

When these ever green forest lands are brought under cultivated crops, the whole system undergoes changes. The soil fertility gets depleted due to continued cropping without adequate replenishment of plant food, either taken up by the crops or lost through erosion, leaching, volatilisation, etc. The tillage and exposure to the sun brings about marked reduction in soil organic matter. Changes in the soil structure and composition result in poor retention of soil moisture and nutrients. To obtain sustained satisfactory production, high level management practices have to be adopted in later years.

With limits for physical expansion of cultivated area, the pressure on the existing cultivated land is increased. To produce more from the existing agricultural land intensified management practices like multiple cropping have to be adopted. In perennials (plantation crops) this can be achieved only through growing a number of crops simultaneously in the same piece of land. In other words, it is an attempt at reproducing the naturally occurring system of a combi-

nation of compatible crops having their canopies at different vertical heights and their roots foraging the soil at different depths and lateral distances. At CPCRI, Kasaragod, a 'multistoreyed cropping' system was successfully established from 1972. The crop combination consisted of coconut+pepper+cacao+pineapple. In Coorg district, Karnataka State, jack+pepper+orange+coffee are grown together in some estates with advantage.

In the initial years organic manures, fertilisers and frequent irrigations have to be carried out to obtain a proper establishment and growth of the various crops in multistoreyed cropping. However, the experience at CPCRI, Kasaragod, after seven years of establishing the crop mix, has shown that the crop growth and productivity were not affected when irrigation was given at wider intervals. This means that the whole system has acquired a capacity to sustain itself by drawing moisture from elsewhere for a period of time. Sizable amounts of leaf litter and other sheddings are added to the system from cacao, coconut and other plants. These in turn facilitate increased microbial activity and add plant nutrients to the soil. It appears that in course of time, such a crop mix would be able to maintain itself with very little added inputs. Such cropping systems, resembling the natural forests, may also compensate the adverse effect caused to the environment through deforestation.

The soil, climate and environment in areas, where plantation crops are raised, are congenial for high intensity cropping systems. Multistoreyed cropping or similar cropping systems have to be planned and feasibility trials taken up in other plantation crops also. For this, it is necessary to study the rooting pattern of the main crop and the quantum of sunlight that would be available to the crop or crops to be included in the crop mix. In successful crop mixes, it is also necessary to study the input requirement of the entire system rather than studying individual crop needs.