RESEARCH PAPER:

Economic viability of tree spice based cropping system under forest eco-system of Kanyakumari district

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SUMMARY

Field experiment was conducted at Horticultural Research Station, Pechiparai during 1994-2008 to find out the suitability of spices as intercrops in different cropping systems *viz*., mixed and multi-storeyed cropping under forest agro-ecosystem. The results of the study indicated that inclusion of pepper alone with forest trees (mixed cropping) or a combination with cinnamon and pine apple (multi-storeyed cropping) was highly remunerative and it resulted in a net profit of Rs. 1,01,500/ and Rs. 1,18,200 /-, respectively. This cropping system could result in a higher benefit cost ratio.

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Kanyakumari District, the high rainfall zone of Tamil Nadu is located in the Southern tip of peninsular India. The hill region of this district lies 35km away from the coast and spreads from the East to the West. The major area in this zone is occupied by tropical rain forest trees and the cropping system adopted is multi species cropping system. The Horticultural Research Station, Pechiparai is situated in the hill slopes under forest agro-ecosystem. The altitude of the region is 200m above MSL. The dominant tropical forest trees occupying this region are *Terminalia paniculata* (Maruthu), *Terminalia crenulata* (Thenbavoo), *Pterocarpus marsupium* (Vengai), *Premna tomentosa* (Naithekku), *Terminallia bellarica* (Thani), *Cmelina arbirea* (Kumil), *Atrocarpus hirsutus* (Ayini) etc. For the effective utilisation of resources like horizontal and vertical space, sunlight, water and nutrients in the forest agro-ecosystem, integrated cropping systems offer great scope, which would also help in the addition of lot of biomass thus indirectly improving the nutrient status of the ecosystem.

In India around 52 spices including tree spices, seed spices and herbal spices are cultivated. Most of these spices can be grown alone or in combination with other crops as a system. The choice of crop depends on the physiography, topography, soil, climate and the market demand. Major spices *viz*., black pepper, nutmeg, clove, cinnamon, ginger, vanilla and seed spices are ideal component for inter/mixed cropping. Thus, the present study was formulated to assess the potentiality of spices as intercrop in various cropping systems of forest based agro-ecosystem.

MATERIALS AND METHODS

Field experiments were initiated at Horticultural Research Station, Pechiparai during 1994 to find out the productivity and profitability of different spice crops *viz*., pepper, clove, nutmeg, cinnamon, chillies and ginger in mixed (Experiment I) and multistoreyed cropping (Experiment II) systems under forest agro-ecosystem. The forest trees in the experimental plot were lopped once in six months during the rainy season for regulation of shade and to provide sufficient sunlight.

Elite clones of pepper (Panniyur 1) clove (IISR-Sel.7), nutmeg (IISR-MF-2), cinnamon (IISR-CV7), pineapple (Maritious), ginger (Varadha) and chilli (local selection) were used for planting.

Experiment I (mixed cropping):

Pepper, clove, nutmeg and cinnamon