

Winter vegetables- a profitable combination with coconut for better livelihood of the farming community

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Coconut the Kalpabriksha is an important plantation crop and is closely related to human life from ritual to livelihood. West Bengal contributes about 384.14 million nuts from an area of 30.82 thousand hectare. A spacing of 7.5 m in the square system is recommended for coconut (175 palms/ha) for optimum production. The rooting pattern of coconut is such that only 23 percent of land area is effectively utilized. Coconut palm, like other monocots, has a typical adventitious root system. About 74 percent of these roots produced by a palm under good management condition do not go beyond 2 m lateral distance and 82 per cent of the roots are confined to 30 to 120 cm depth of soil. Thus, the active root zone of coconut is confined to 25 percent of the available land area and about 75% land is available for growing of inter/mixed crops for more return and employment generation. It has been estimated that 56% sunlight can penetrate through the canopy of around 25 years of coconut palm between 10.00-16.00 hrs. Thus there is ample scope for growing of intercrops for better utilization of available natural resources like land (75%), sunlight (56%) and nutrients.

Cultivation of vegetables under coconut plantation

Vegetables play an important role in our daily diet by providing different minerals, dietary fibre, hormones and antioxidants. Different winter vegetables were tried in coconut garden at ICAR-Central Plantation Crops Research Institute, Research Centre, Mohitnagar to see their performance under coconut plantation, effect of intercrop on coconut yield, increase of system productivity and net return from the system. Raised bed having 0.3 m height, 1.2 m width and 4 meter length was prepared for each vegetable crop in between the interspace of palm leaving the 2 m area of active root zone of coconut. Seeds/seedlings of different vegetables like cabbage, cauliflower, knolkhol, spinach, radish, French beans, lafa sag - cluster mallow, tomato and carrot were sown/transplanted during winter month. Recommended agronomic practices were followed throughout the growth period of the crops.

Yield of vegetables under coconut plantation

The study showed that the yield of cabbage was not as good



Spinach



Radish



Beans

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spinach



Tomato



Knolkhol



Lafsag



Cabbage

as open condition. Low yield was also noticed in carrot and tomato in comparison to open condition. The yield of spinach, knolkhol and beans was almost as like as open condition. The vegetative phase of all the winter vegetables was more under coconut canopy. First flowering/flower bud initiation of tomato, beans and cabbage was delayed in comparison to open condition due to shade. But the crop duration of all the crops was more. As a result the harvest duration is increased. Farmers can harvest the crop for more time span. It was also found that evaporation rate of the soil in intercropped area under coconut plantation is less. So minimum irrigation was required for the growth of the intercrops. Space utilization by intercrops also suppresses the weed growth in interspace. Thus the cost of cultivation of the system is reduced.

Yield of coconut under intercrop system

Coconut yield was increased under different inter cropping system. Increased coconut yield ranged from 14.8% to 25.9% over coconut as monocrop. Maximum percent (25.9%) increased yield was recorded in Coconut + carrot combination followed by Coconut + cauliflower (24.2%), coconut + radish (22.4%). Coconut yield is increased under intercropping system due to better management practices for interspace. Hence farmers can achieve more income from coconut in addition to the income from intercrops.

Percentage increase of total system productivity

Though the yield of intercrop is not as good as open condition but the inter space of the coconut plantation is properly used by

growing vegetable crops. The yield of intercrops when converted to nut yield of coconut, the system productivity increases manifold. Percent increase of system productivity ranged from 80% to 276%. Maximum percent increase of system productivity (276%) was in coconut + tomato combination followed by coconut + radish (231%) and coconut + cauliflower (211%) combination.

Percentage increase of net return

The net return of all the combinations along with monocrop was calculated. It was found that more than 100% increase on net return for all the crop combinations was observed over coconut monocrop system. Maximum percent (323%) increase on net return was recorded on coconut + tomato combination where return per rupee investment was also more (6.3) in these combination followed by coconut + radish (251%) and coconut + cauliflower (214%). However return per rupee was recorded maximum (7.7) in coconut + spinach combination than the other combinations.

The performance of different intercrops (winter vegetables) is different in the system. Some vegetables performed well and some were not. But the growing of these crops definitely add more income to the farming community by the utilization of resources like light, water and nutrients through the proper distribution of different intercrops in time and space. It also enhances the total system productivity and net return from the system which leads towards doubling of farm income and provides economic stability to the farming community against production and price risk. ■