Nutrient Dynamics of Fruit Based Diversified cropping Models for Arid Region of Rajasthan

MK Jatav, Hare Krishna SR Meena and BD Sharma

ICAR-Central Institute for Arid Horticulture, Bikaner-334006

Abstract—*Agriculture is the chief means of subsistence for the rural people in the hot arid areas. But the farmers face recurrent famine and the consequent economic losses owing to the fragile agroclimatic conditions. The conditions of low and erratic rainfall, extreme temperature conditions, high evapotranspirations, scarce water resources in fertile and saline soils with ill-defined profile development threatens sustainable agriculture. In order to mitigate the risk of total crop failure, suitable crop combinations in the inter space of orchard during initial years can generate extra income, improved productivity ameliorate and improved ecological situation in a sustainable manner.. After completion of eight year cycles of eight different cropping models viz., Aonla-Ber-Cluster bean-Fennel (M-1), Aonla-Bael-Cluster bean-Coriander (M-2), Aonla-Khejri-Cluster bean-Ajowain (M-3), Aonla-Drumstick-Cluster bean-Dill (M-4), Aonla-Khejri-Grass (L. sindicus) (M-5), Aonla-Mosambi-Cluster bean-Mateera (M-6), Aonla-Kinnow-Cluster bean-Chick pea (M-7) and Aonla-Mulberry-Kachari-Mustard (M-8), composite surface soil samples (0-15 cm) were taken from each cropping system, air-dried and passed through 2 mm sieve. Nutrient status was determined as par standard methods. All different eight fruit based cropping models significantly registered high OC, EC, pH Nitrogen (kg/ha), Potassium (kg/ha) and micronutrients (Zn, Cu, Fe and Mn ppm) with averages of 0.15%, 1.72, 8.26,175.24, 330.28 and (2.31, 0.40, 9.49 & 10.59), respectively. Maximum value of OC,EC, pH, Nitrogen, Potassium and micronutrients (Zn, Cu, Fe and Mn ppm) was under Aonla-Khejri-Cluster bean-Ajowain cropping model followed by Aonla-Ber-Cluster bean-Fennel. The average yield of aonla varied considerably in different cropping model systems with highest being recorded in aonla-khejri (46.2 kg per plant), followed by aonla-ber, aonla-Kinnow and aonla-mulberry, while the lowest was recorded in aonla-moringa. The higher yield in aonla involving ber and khejri could be due to synergistic crop interaction.*