

## ABSTRACT

Soil fertility is very important for sustainable agriculture. But modern agricultural practices cause soil fertility losses and also soil degradation. So that the agroforestry concept helps prevent soil degradation and also maintain soil fertility. Therefore this study was carried out to find out the effects of agroforestry on soil fertility by evaluating the N, P and K states of soils.

Two agroforestry land use systems namely alley cropping system and mix farming system have been selected. For the comparison, adjacent two land plots without any cropping system were selected as controls. Representative soil samples were taken from 0-10, 10-20, 20-30, 30-40, 40-50 and 50-60cm depths from plots having two different cropping systems and two control plots. Soils were brought to the laboratory to be analyzed for total nitrogen, potassium, phosphorus and available nitrogen, phosphorus and exchangeable potassium

When comparing the results, there was an increase of some nutrients in agroforestry land use systems than control land. Total nitrogen, total phosphorus, total potassium and available nitrogen, available phosphorus and exchangeable potassium were high in mix farming system than its control. Available nitrogen, available phosphorus and total potassium were high in alley cropping system than its control. All the amounts of nutrients decreased with depth. Because of that much of the nutrients accumulate in the surface layer of soils. Total nitrogen, available nitrogen, available phosphorus and exchangeable potassium were significantly high in mix cropping system than control.

From the results it can be concluded that the agroforestry systems could be practiced to improve and maintain soil fertility by increasing N, P, and K status of soils.