B-104: Effect of soil compaction on the growth and yield of sweet potato in Inceptisols and Ultisols

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The effect of soil compaction on the growth and tuber yield of sweet potato was investigated in Alluvial soils of variable drainage and texture (Inceptisols) and on Red-yellow podzolic soils (Ultisols) in a greenhouse. Inceptisols and Ultisols were collected from Makandura and Walpita field experimental sites, respectively. Air-dried and sieved soil samples were uniformly packed in 25 l concrete containers to obtain 7 different bulk densities varying from 1.2 to 1.8 Mg m^{-3}. Single young cutting of variety "Wariyapola" was planted in each container. The experimental design was a RCBD with 3 replicates. The highest tuber yields were obtained at bulk densities of 1.3 to 1.5 Mgm^{-3}. Yield differences were due more to difference in tube size than tuber number. Compaction, however, did not show a significant adverse effect on maximum leaf number, although this parameter tended to decrease with increasing compaction. The results showed that loose soil or soil with low bulk density enhances more vegetative growth at the expense of tuber formation. On the other hand, high bulk density reduced tuber yield, vegetative growth and tuber enlargement. The best vegetative growth was obtained from the lowest soil bulk density. These results illustrate that the favourable bulk density of soil should be considered to obtain high yields and more marketable tubers of sweet potato.