



EFFECT OF DIFFERENT TILLAGE SYSTEMS ON THE SOIL CHEMICAL VARIABLES UNDER VEGETABLE PRODUCTION

Silva, J¹, Lima, C.E.P¹, Madeira, N.R¹, Guedes, I.M.R. ¹, Fontenelle, M.R¹.

Presenting author's e-mail: juscimar.silva@embrapa.br

¹*Embrapa Vegetables, Brasília, Brazil*

ABSTRACT

A long term trial is being carried out at the experimental field of Embrapa Vegetables, Brasília, Brazil, to evaluate the effect of different tillage systems on vegetable production. The soil chemical characteristics of a vegetable crop grown with six tillage systems (T1 = no-tillage + maize; T2 = no-tillage + maize + mucuna; T3= minimum tillage + maize; T4 = minimum tillage + maize + mucuna; T5 = conventional tillage+ maize; T6 = conventional tillage + maize + mucuna) for five year was evaluated at 0–10 cm and 10–30 cm depth. After vegetable harvesting, representative soil samples were taken on each plot, dried and sieved (< 2 mm) followed by chemical analyses of pH, exchangeable Ca and Mg, soil available P (SOP) and K, soil organic matter (SOM), and H+Al. SAP was the most affected variable, reducing 56% (T5) and 45% (T6) in the first year followed by a slight increase in the subsequent ones. No-tillage, for both cover crop combinations, presented a distinct pattern where the decrease on SAP reached 21% (T1) and 17% (T2) in the second year and then increased sharply. These data support the hypothesis that the systems causing less disturbance avoid soil P retention due to sorption reactions. SOM increased whereas soil pH and exchangeable Ca and Mg decreased almost linearly independent of the tillage system applied especially in the upper part of the soil profile. Such behaviour is probably due to strong nutrient absorption and exportation by crops throughout the years.