

Evaluating the Topsoil and Subsoil Physical Quality Using Relative Bulk Density in Urmia Plain

Authors : Hossein Asgarzadeh, Ayoub Osmani, Farrokh Asadzadeh, Mohammad Reza Mosaddeghi

Abstract : This study was conducted to evaluate the topsoil and subsoil physical quality using relative bulk density (RBD) in Urmia plain in Iran. Undisturbed samples were collected from two layers (topsoil and subsoil) of thirty agricultural soils. Categories of $0.72 \geq RBD$ (low degree of compactness), $0.82 > RBD > 0.72$ (moderate/optimum degree of compactness), and $RBD \geq 0.82$ (high degree of compactness) were used to evaluate soil physical quality (SPQ). Two topsoils had a low degree of compactness, fourteen topsoils had an optimum degree of compactness, and the rest (i.e., fourteen topsoils) had a high degree of compactness. Only one subsoil had an optimum degree of compactness, and twenty-eight subsoils (i.e., 93%) had a high degree of compactness, indicating poor SPQ of the subsoil layer in the studied region. It seems that conventional tillage in the past decades destroyed the pore system in the majority of studied subsoils. The high degree of compactness would reduce soil aeration and increase soil penetration resistance which could restrict root and plant growth. Conversely, a low degree of soil compactness is expected to reduce the root-soil contact.

Keywords : compactness, relative bulk density, soil physical quality

Conference Title : ICASS 2022 : International Conference on Agricultural Soil Science

Conference Location : Rome, Italy

Conference Dates : August 30-31, 2022