

Vineyard Soils of Karnataka - Characterization, Classification and Soil Site Suitability Evaluation

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Abstract : Land characterization, classification, and soil suitability evaluation of grapes-growing pedons were assessed at fifteen taluks covering four agro climatic zones of Karnataka. Study on problems and potentials of grapes cultivation in selected agro-climatic zones was carried out along with the plant sample analysis. Twenty soil profiles were excavated as study site based on the dominance of area falling under grapes production and existing spatial variability of soils. The detailed information of profiles and horizon wise soil samples were collected to study the morphological, physical, chemical, and fertility characteristics. Climatic analysis and water retention characteristics of soils of major grapes-growing areas were also done. Based on the characterisation and classification study, it was revealed that soils of Doddaballapur (Bangalore Blue and Wine grapes), Bangalore North (GKVK Farm, Rajankunte, and IIHR Farm), Devanahalli, Magadi, Hoskote, Chikkaballapur (Dilkush and Red globe), Yelaburga, Hagari Bommanahalli, Bagalkot (UHS farm) and Indi fall under the soil order Alfisol. Vijaypur pedon of northern dry zone was keyed out as Vertisols whereas, Jamkhandi and Athani as Inceptisols. Properties of Aridisols were observed in B. Bagewadi (Manikchaman and Thompson Seedless) and Afzalpur. Soil fertility status and its mapping using GIS technique revealed that all the nutrients were found to be in adequate range except nitrogen, potassium, zinc, iron, and boron, which indicated the need for application along with organic matter to improve the SOC status. Varieties differed among themselves in yield and plant nutrient composition depending on their age, climatic, soil, and management requirements. Bangalore North (GKVK farm) and Jamkhandi are having medium soil organic carbon stocks of 6.21 and 6.55 kg m⁻³, respectively. Soils of Bangalore North (Rajankunte) were highly suitable (S1) for grapes cultivation. Under northern Karnataka, Vijayapura, B. Bagewadi, Indi, and Afzalpur vineyards were good performers despite the limitations of fertility and free lime content.

Keywords : land characterization, suitability, soil orders, soil organic carbon stock

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