EFFECT OF BENTONITE AND ORGANIC FERTILIZER ON WATER RETENTION CAPACITY OF SANDY SOIL IN NINH THUAN PROVINCE

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Summary

Sandy soil in the Central coastal region usually has high sand content, low organic matter, none structure, low water retention and nutrition. Ninh Thuan province has the lowest average annual rainfall compared to the whole country and droughts often occur periodically. Although local farmers have traditional practices of applying organic fertilizers, there is no concept of the role of bentonite in improving soil fertility. Meanwhile, bentonite plays a key role in increasing water and nutrients retention capacity for sandy soil. Results of the study, in the laboratory and in pot experiment to assess the water holding capacity of sandy soil collected in Ninh Thuan province by combined application of bentonite and cow manure, showed that bentonite and cow manure have significantly improved the field capacity, permanent wilting point and plant available water. At the same time, it has been proved that the application of bentonite at the rates of 2 - 4% (equivalent to 30 - 60 tonnes ha^{-1}) and cow dung from 20 to 40 tonnes ha^{-1} has the effect in increasing the maximum water holding capacity and plant available water of the soil. Therefore, it will increase the capacity of water supply to cropping systems on sandy soil in drought conditions such as in Ninh Thuan province. This is the premised basis for the use of bentonite combined with cow manure effectively in order to increase water supply capacity of the soil for crops and sustainable water resource management.

Keywords: *Bentonite, cow manure, sandy soil, soil water availability, soil water retention capacity.*