

عنوان مقاله:

Influence of poultry manure and its biochar, *Funneliformis mosseae* and salinity stress on corn yield and micronutrients concentration

محل انتشار:

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خلاصه مقاله:

Direct use of poultry manure (PM) as an organic fertilizer in agriculture may cause environmental concerns; therefore, application of its biochar might be an effective solution. A greenhouse experiment was conducted to investigate the influence of PM and its biochar (PMB) (control, 1% and 2% PM (w/w), 1% and 2% (W/W) PMB) on the growth and micronutrients concentration of corn under salinity stress (0.5, 3.6, 7.9 and 12.4 dS m⁻¹) in the presence or absence of arbuscular mycorrhizal fungus (AMF) (*Funneliformis mosseae*). Results indicated that application of PM and PMB significantly increased corn shoot dry weight (SDW) compared to that of control in non-AMF plants. However, SDW was higher in PMB application compared to that of PM by 15% and 8% for 1% and 2% (w/w) application rates, respectively. In AMF-plants, addition of 2% PMB had no significant effect on SDW compared to that of control. Hence, co-application of PMB (2%), and AMF did not increase SDW due to the fact that AMF was ineffective to enhance corn yield (at high phosphorous (P) concentration in 2% PMB rate). Salinity stress, at low levels (3.6 and 7.9 dS m⁻¹), increased SDW of corn but at a higher level (12.4 dS m⁻¹), decreased it significantly, in both non-AMF and AMF plants. In general, shoot micronutrients concentration (except for Cu) significantly increased along with increasing soil E_{ce} levels in AMF and AMF plants. In non-AMF plants, only addition of 2% PMB increased shoot Mn concentration by 20% compared to that of control. However, in AMF plants, application of PM (2%) and PMB (1% and 2%) decreased Mn concentration by 27%, 16%, and 9% compared to those of control treatment, respectively. Poultry manure biochar increased corn shoot Zn, Cu and Fe concentrations compared to those of control due to the higher concentration of these nutrients in biochar compared to PM. In conclusion, pyrolysis of PM almost eliminated foul odor of PM and increased dry matter yield of corn

کلمات کلیدی:

Arbuscular mycorrhizal fungus, Organic manure, Micronutrients concentration, Pyrolysis, Sodium chloride

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