

Soil Strength in SE Coastal Plain Soils under Fallow and Winter Rye Cover. (S06-busscher141954-Poster)

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Abstract:

In southeastern US Coastal Plain hardpan soils, inverse linear relationships have been found relating average soil strength within the top 60 cm of the profile and yield for corn (*Zea mays* L.), soybean (*Glycine max* L. Merr.), and wheat (*Triticum aestivum* L.). We expected to find a similar relationship for cotton (*Gossypium hirsutum* L.) relating soil strength to root growth and lint yield. Strengths varied among treatments of surface tillage, deep tillage, and rye (*Secale cereale* L.) cover crop. Root growth decreased with increasing mean soil strength or with the 95th percentile of soil strength distribution, which acted as a stabilized, surrogate measurement of maximum strength that cotton roots would encounter. Cotton lint yield did not decrease with increasing strength. Lack of effect on yield may have been the result of management practices that employed controlled traffic in all plots and a small disk in conventionally treated plots. Conservation management practices may help reduce the frequency of subsoiling while maintaining viable production practices for cotton grown in traditionally wide (0.97-m) rows.

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