NITROGEN STOCK IN A CLAY RHODIC HAPLUDOX UNDER NO-TILL

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INTRODUCTION

Nitrogen (N) transformations in the soil-plant system are extremely dynamic, and like C, is closely linked to changes in soil organic matter (SOM).

Soil texture and management, climate, and crop residue quantity and quality are some factors that control the magnitude and speed of changes in SOM.

Hence, cropping systems appropriate to each region may increase N stock in soil.

MATERIAL AND METHODS

Soil samples were taken after soybean harvest, in the 6th year of a field experiment under no-til.

Analysis: bulk density (sampling rings) and total-N (CHNS Elemental Analyzer).

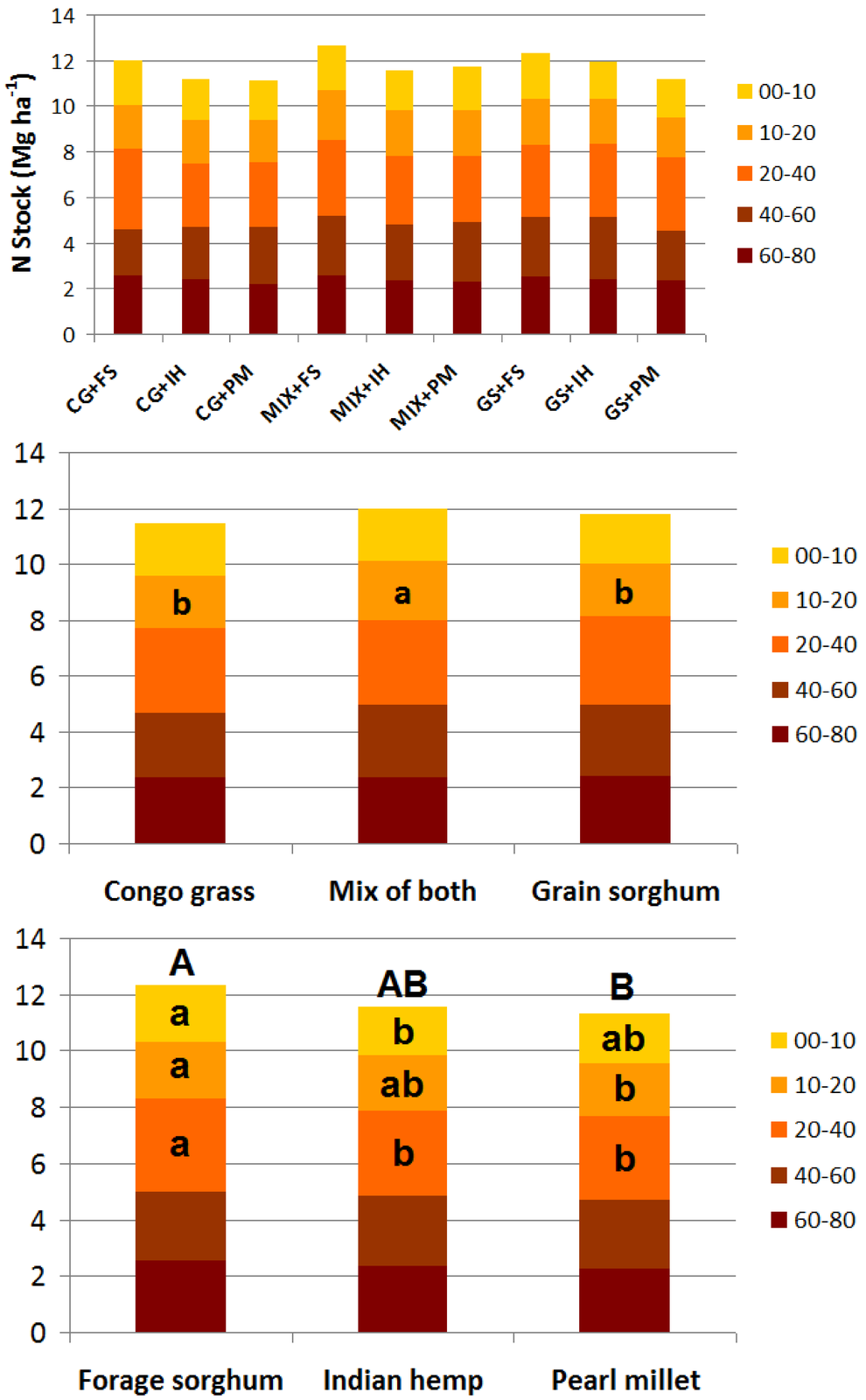
N stock = N (%) × bulk density (g cm^{-3}) × depth of soil layer (cm)

Fall/Winter crops
– Congo grass (*Brachiaria ruziziensis*) (CG)
– Grain sorghum (*Sorghum bicolor*) (GS)
– Mix of both (MIX)

Spring crops
– Forage sorghum (*Sorghum bicolor*) (FS)
– Indian hemp (*Crotalaria juncea*) (IH)
– Pearl millet (*Pennisetum glaucum*) (PM)

Summer crop
– Soybean (*Glycine max* (L.) Merril)

RESULTS AND DISCUSSION



Nitrogen stock in soil as affected by fall/winter and/or spring crops.

CONCLUSION

The use of forage sorghum in cropping systems under no-till increases N stock in soil in the 20 to 40 cm deep.

Funding: FAPESP