

Stock and contents of carbon and nitrogen of soil managed with silicate agrominerals under pasture of *Urochloa brizantha* cv. BRS Paiaguas in the Cerrado

Introduction

Silicate agrominerals are being recognized as a strategic approach to enhance soil properties. This study assessed the impact of silicate agrominerals on carbon stocks (CS), total carbon content (TC), total nitrogen (TN), total organic carbon (TOC), C:N ratio, and soil density (Ds) in the 0-30 cm layers of a long-term pasture experiment in the Cerrado region.



Figure 1. Silicate agrominerals: kamafugite (A), biotite schist (B), basalt (C).

Methods

- ❑ Total carbon and nitrogen were determined by dry combustion (CHNS) (g kg^{-1})(A).
- ❑ Total organic carbon was determined by chromic acid wet oxidation method (g kg^{-1})(B).
- ❑ Carbon stock (CS) was determined by: $\text{CS (Mg ha}^{-1}\text{)} = \text{TC (g kg}^{-1}\text{)} \times \rho_s (\text{g kg}^{-1}) \times \text{depth (m)}$.
- ❑ Soil density (g cm^{-3})(C).

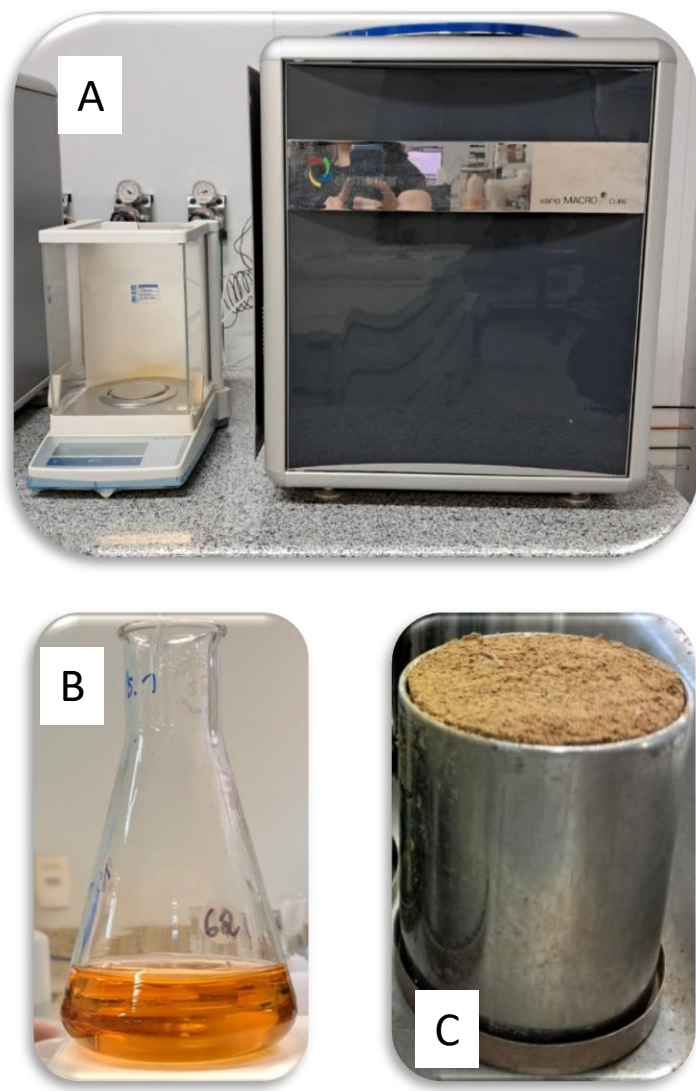


Figure 2. Determination methods: dry combustion (CHNS) (A), chromic acid wet oxidation (B), soil density (C).

Results and discussion

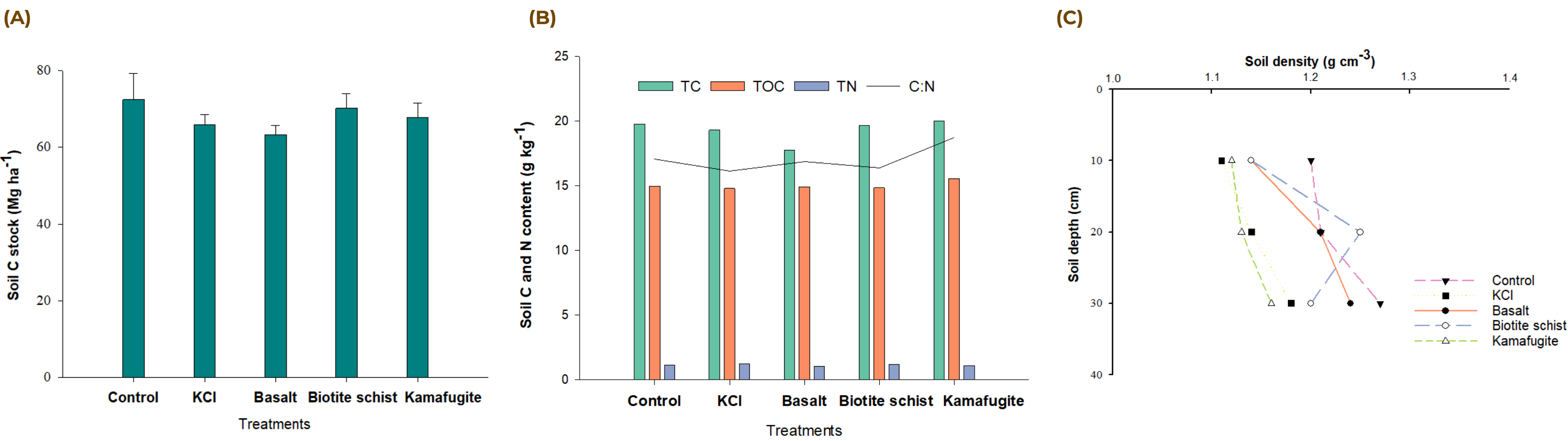


Figure 3. Soil C stock (Mg ha^{-1}) (A); Total carbon content (TC), total organic carbon (TOC), total nitrogen (TN) (g kg^{-1}) and C:N ratio (B); Soil density (g kg^{-1}) (C) in the different treatments cultivated with *Urochloa brizantha* cv. Paiaguás, for seven years, in the 0-30 cm layers. Treatments showed no significant difference by the F test ($p > 0.05$).

Conclusion

Kamafugite and biotite schist exhibited trends of improving the levels of TC and TOC in soil under pastures. This aligns with SDG 2 and offers an alternative for recovering degraded areas in meat and milk production systems, supporting public policies such as the Low Carbon Agriculture Plan.

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