

Impact of Phosphorus Solubilizers on Soil Organic Matter in Soybean Crops

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INTRODUCTION & AIM

Soybean is a globally important crop for food and industrial use. Efficient phosphorus management is critical for root development and biomass formation, but its use remains challenging in tropical soils. BiomaPhos, developed by EMBRAPA in Brazil, uses *Bacillus subtilis* and *Bacillus megaterium* to enhance phosphorus availability and is widely applied in Brazil with global potential. This study evaluated the impact of different phosphorus doses (0%, 50%, 100%), with and without BiomaPhos, on soil organic matter in soybean crops. A field experiment with a split-plot design was conducted, followed by statistical analysis to identify significant differences.

METHOD

The experiment was conducted in a field with a split-plot design and by considering two factors: inoculation with BiomaPhos and phosphorus doses (0%, 50%, and 100%).

Soil samples were collected after harvest and analyzed to measure organic matter. Statistical analyses included the calculation of means, standard deviations, and comparisons using t-test to identify significant differences. Soil organic matter means were consistently higher without BiomaPhos at all phosphorus doses.

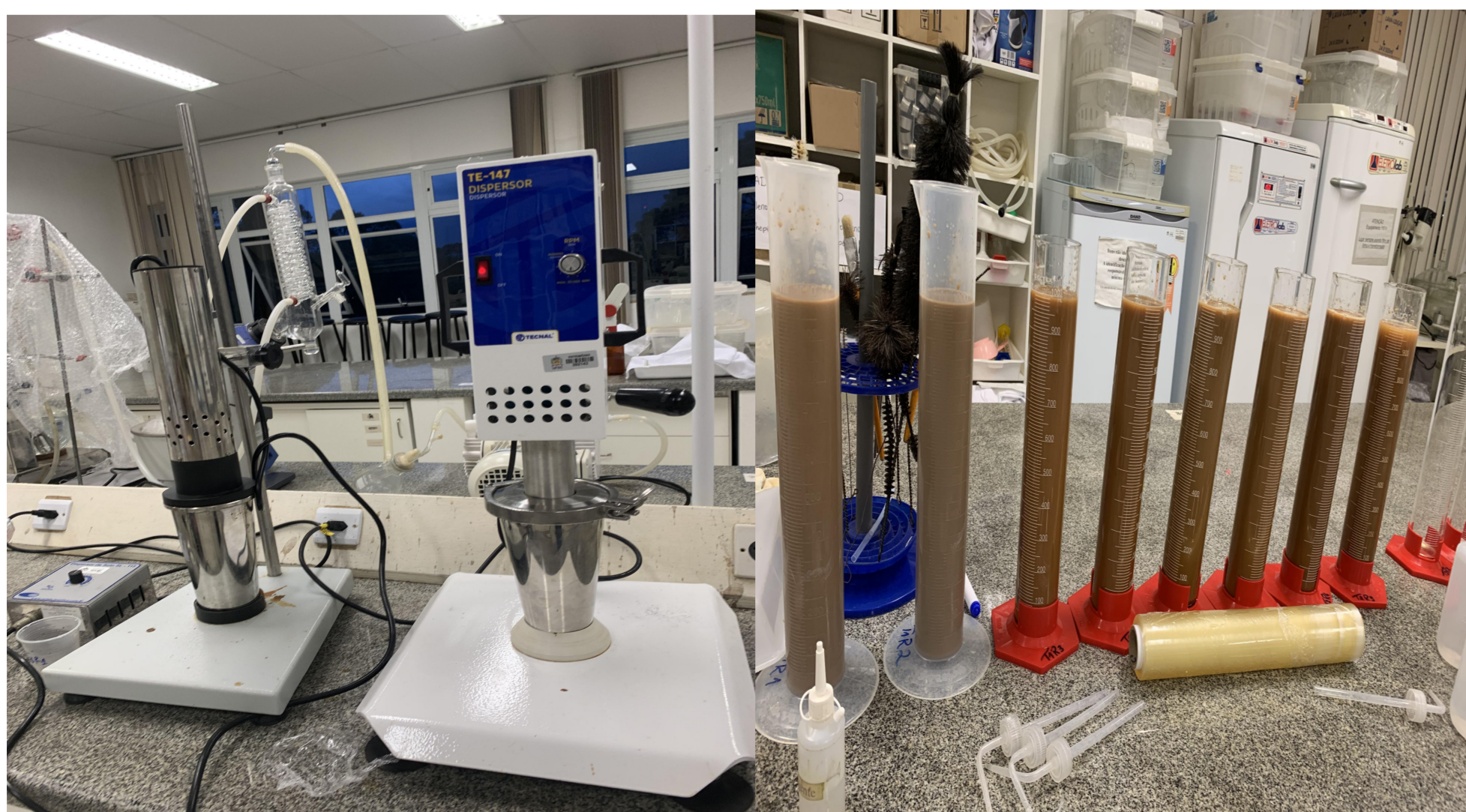


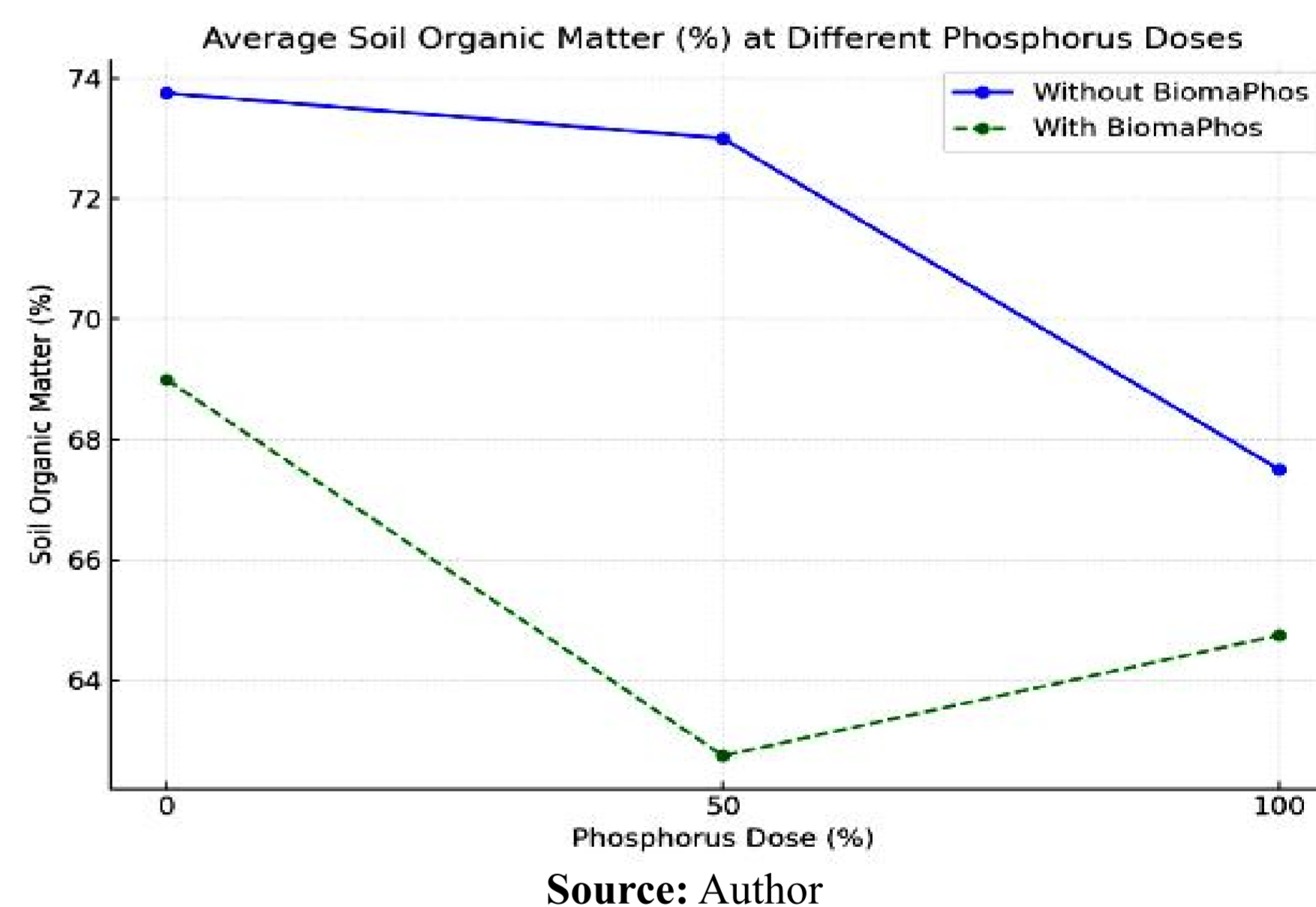
Fig: Organic Matter Analysis

RESULTS & DISCUSSION

Oil samples were collected after harvest and analyzed to measure organic matter. Statistical analyses included the calculation of means, standard deviations, and comparisons using t-test to identify significant differences.

Soil organic matter means were consistently higher without BiomaPhos at all phosphorus doses. The mean organic matter was 73.75% and 73.00% for the 0% and 50% doses without BiomaPhos, respectively, compared to 69.00% and 62.75% with BiomaPhos. At the 100% dose, the means were 67.50% without BiomaPhos and 64.75% with BiomaPhos, grafic.1.

Grafic 1 – Average soil organic matter at different phosphorus doses, with and without BiomaPhos



Source: Author

The results show that although BiomaPhos increases phosphorus availability, it also reduces the percentage of organic matter in the soil, regardless of the dose applied.

CONCLUSION

This reduction suggests that BiomaPhos may be affecting soil dynamics in a way that is not conducive to the conservation of organic matter. Since organic matter is essential for soil fertility and structure, this change may have implications for long-term soil health.

FUTURE WORK / REFERENCES

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