



## Theme 1 Status and trends of global soil nutrient budget



# Native AMF communities in hop crop with bokashi-type fertilization in Brazil

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## INTRODUCTION

The cultivation of hops (*Humulus lupulus* L.) is starting in Brazil and the product has obtained excellent organoleptic results (DURELLO et al., 2019). The culture is encouraged for small producers and family farming due to the high income in small areas and the emergence of small breweries (SOARES & FIRMO, 2018). Thus, the crop is being studied to receive agroecological treatments that can guarantee the health of farmers and the quality of the products. This work aims to evaluate how different levels of bokashi type fertilizers affect AMF communities in a hop field.

## METHODOLOGY

Rhizospheric soil samples of the Cascade variety were collected in an experiment implemented in October 2021, georeference -22.183417° -42.844111° (Figure 1), evaluating fertilization with 0, 1, 2, 4, 8 and 16 Mg/ha of bokashi type fertilizer in hop production in Teresópolis, RJ, Brazil, in randomized block design with 4 repetitions. Samples were collected during the summer period by soil auger at a depth of 0-10 cm in the plot, totaling 24 composite samples. AMF spores were extracted from 50 cm<sup>3</sup> of soil sample and identified by morphology in the Mycorrhizae Laboratory, Embrapa Agrobiologia.



Figure 1. Hop experiment with bokashi-type's doses fertilizer in Teresópolis, Rio de Janeiro, Brazil.

## RESULTS

- Sixteen species of AMF were found in the hop rhizosphere, listed in descending order of occurrence in Table 1 and Figure 2.
- The first application of the fertilizer treatments did not significantly affect the number of spores and the number of species (Figure 3).
- Glomus glomerulatum*, *Glomus multicaule*, and *Sclerocystis sinuosa* did not occur in the treatment without fertilizer application (Table 1). *Acaulospora* species tended to decrease in the percentage of occurrence with increasing doses of fertilizer (Figure 2).
- Trap cultures of the samples are being conducted to extend the survey of AMF species present and the field sampling will be repeated during the cooler and drier period of the year (winter).

Table 1. Percentage of occurrence of AMF species in relation to the total number of samples in each treatment and in the total area in hop experiment with bokashi-type's doses fertilizer.

| AMF species                         | Treatments (ton/ha) |     |     |    |     |     | Area Total |
|-------------------------------------|---------------------|-----|-----|----|-----|-----|------------|
|                                     | 0                   | 1   | 2   | 4  | 8   | 16  |            |
| <i>Glomus macrocarpum</i>           | 100                 | 100 | 100 | 75 | 100 | 100 | 96         |
| <i>Glomus clavispurum</i>           | 75                  | 25  | 50  | 0  | 75  | 50  | 54         |
| <i>Glomus glomerulatum</i>          | 0                   | 75  | 50  | 50 | 75  | 50  | 50         |
| <i>Rhizoglyphus microaggregatum</i> | 25                  | 50  | 50  | 25 | 75  | 75  | 50         |
| <i>Glomus sp.</i>                   | 25                  | 50  | 0   | 75 | 50  | 50  | 42         |
| <i>Ambispora leptoticha</i>         | 25                  | 50  | 0   | 50 | 25  | 25  | 29         |
| <i>Glomus multicaule</i>            | 0                   | 0   | 50  | 25 | 50  | 25  | 25         |
| <i>Sclerocystis sinuosa</i>         | 0                   | 25  | 25  | 25 | 25  | 50  | 25         |
| <i>Acaulospora scrobiculata</i>     | 25                  | 25  | 25  | 0  | 25  | 0   | 17         |
| <i>Gigaspora sp.</i>                | 0                   | 25  | 25  | 25 | 25  | 0   | 17         |
| <i>Glomus sp2.</i>                  | 50                  | 0   | 0   | 25 | 0   | 0   | 13         |
| <i>Acaulospora foveata</i>          | 0                   | 25  | 0   | 0  | 25  | 0   | 8          |
| <i>Acaulospora denticulata</i>      | 0                   | 25  | 0   | 0  | 0   | 0   | 4          |
| <i>Acaulospora laevis</i>           | 0                   | 0   | 0   | 25 | 0   | 0   | 4          |
| <i>Glomus sp3.</i>                  | 0                   | 0   | 0   | 0  | 0   | 25  | 4          |
| <i>Racocetra fulgida</i>            | 0                   | 0   | 0   | 25 | 0   | 0   | 4          |

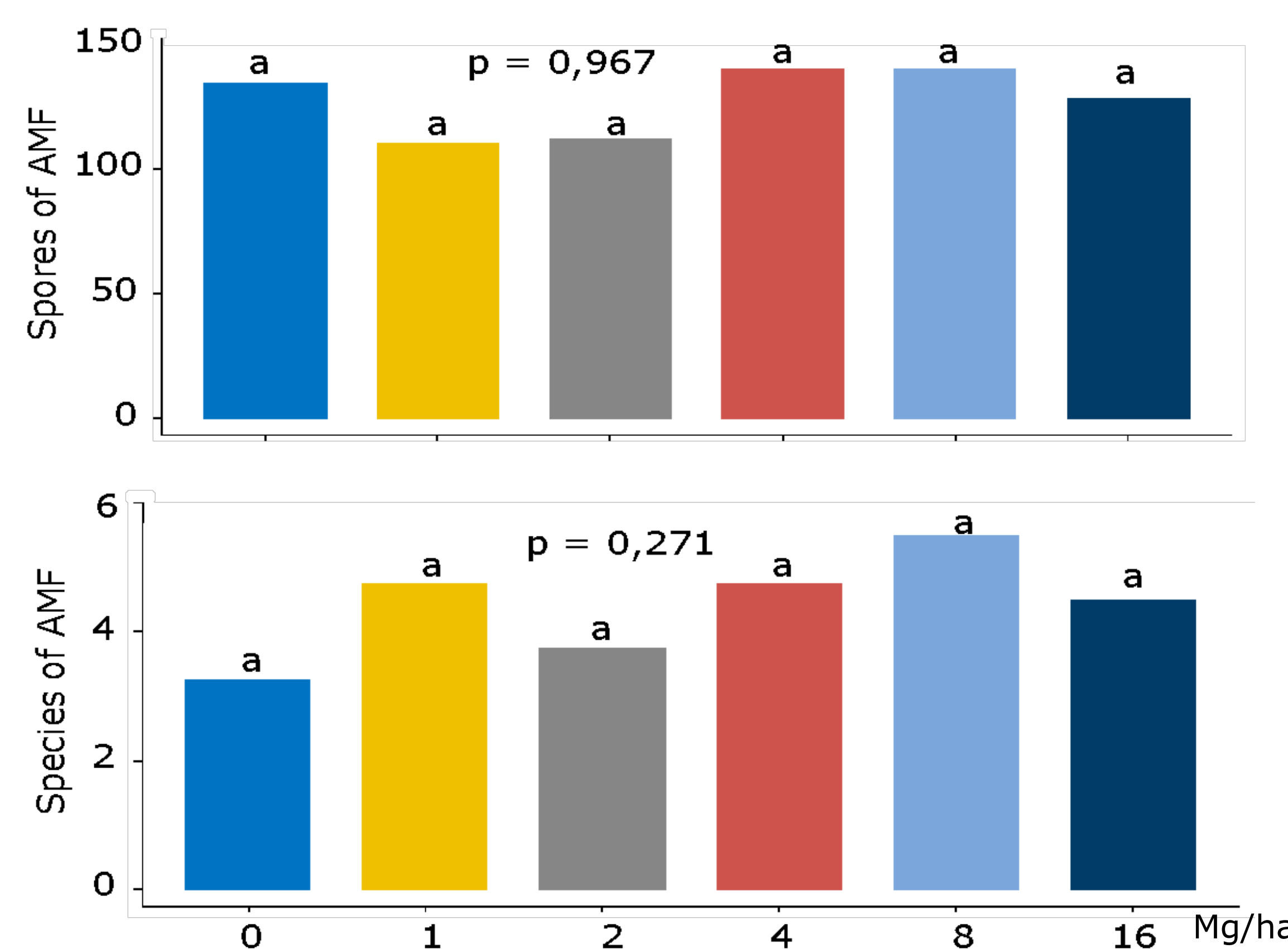


Figure 3. Number of species and spores in each treatment at hop experiment with bokashi-type's doses fertilizer. The p value represents F test significance of ANOVA. Equal letters on the bars indicate equality by Tukey's test at 5%.



Figure 2. AMF's species in hop experiment with bokashi-type.

## CONCLUSION

The data currently collected indicates that the application of bokashi-type fertilizer in the hop crop is not significantly influencing its rhizospheric AMF community.

## REFERENCES

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