

## **AMMONIA EMISSION IN TROPICAL CROPPING SYSTEMS**

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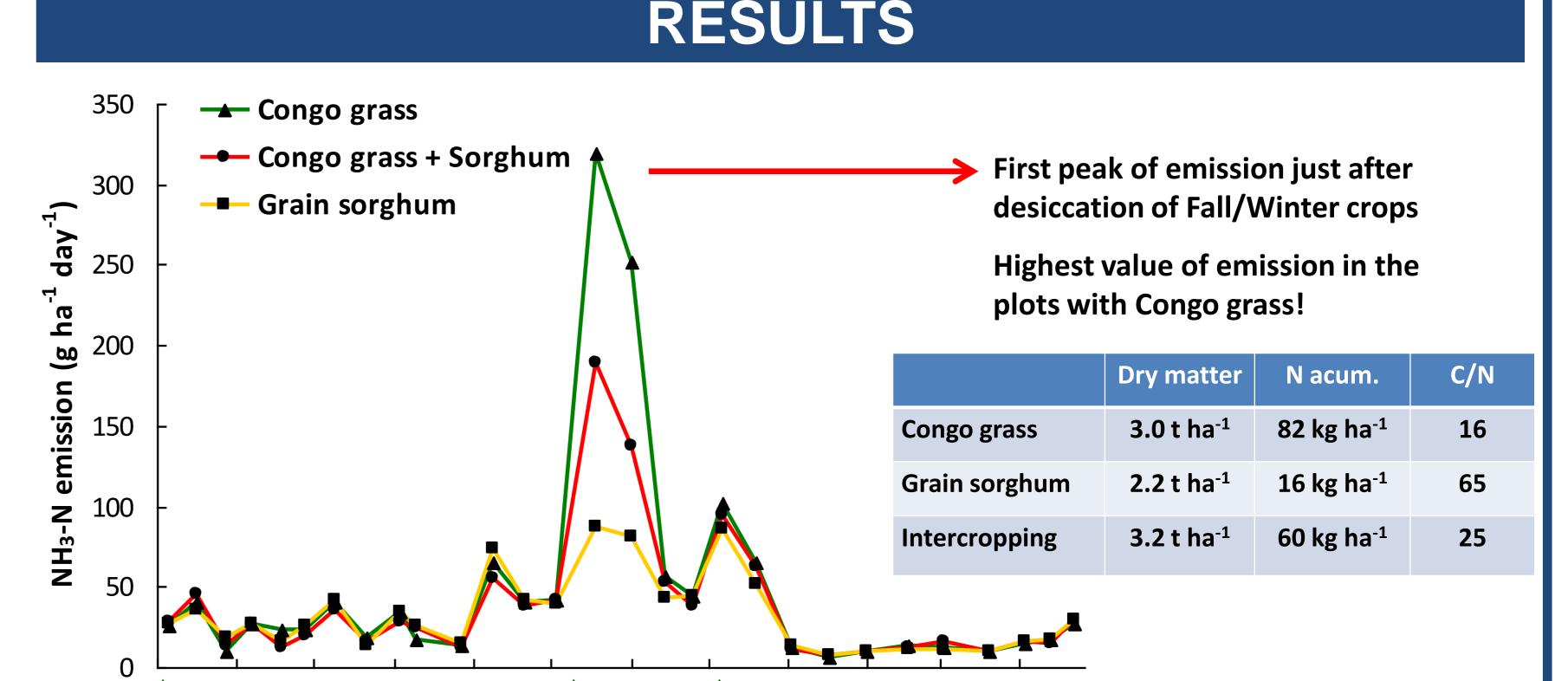


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## INTRODUCTION

- ✓ Nitrogen (N) as NH<sub>3</sub> might be emmited from plant leaves and straw in decomposition.
- There is no much information about the magnitude of this process, mainly in tropical conditions.
- Obtaining such information would contribute to a better understanding of the dynamics of N.

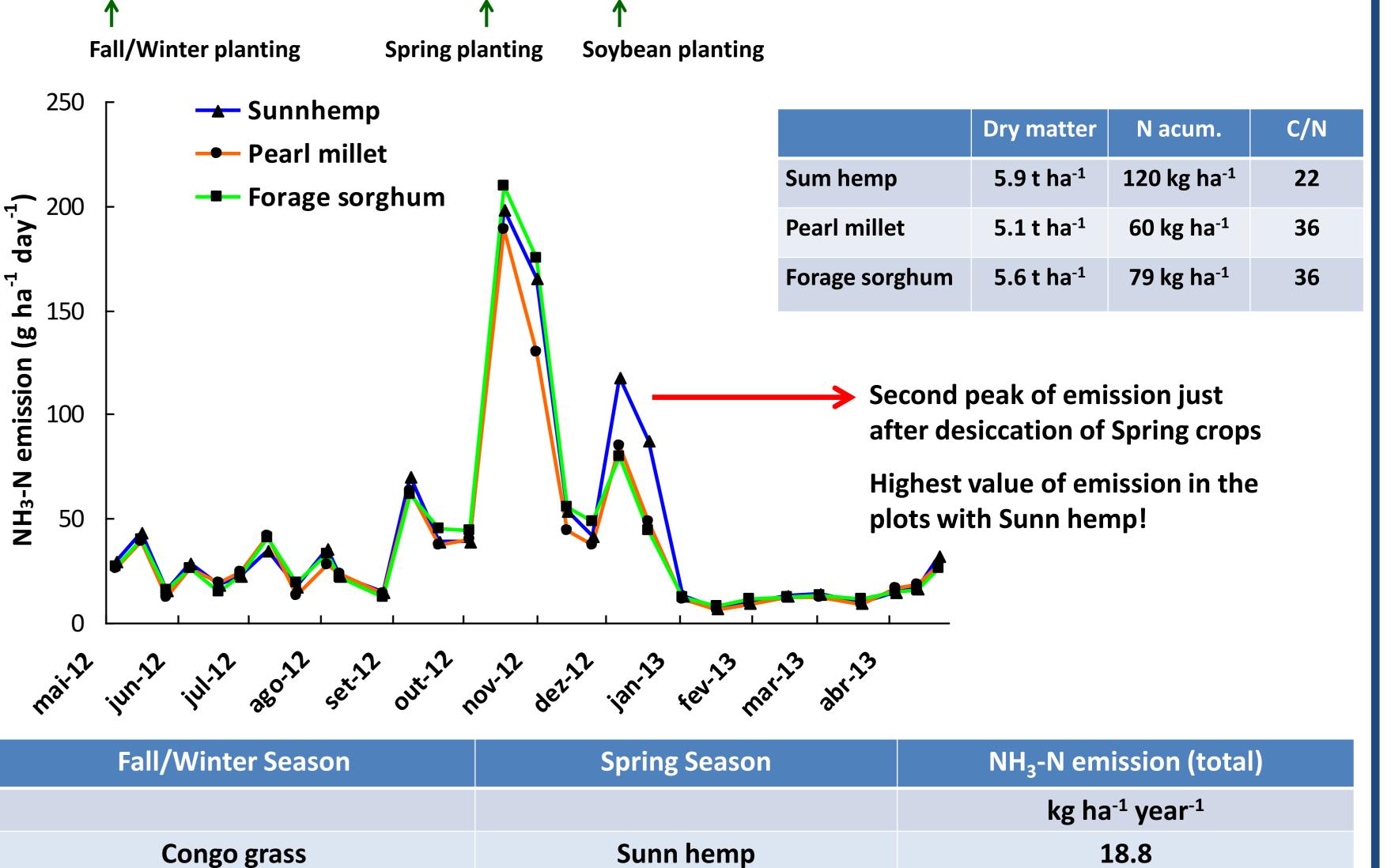
➢ We aimed to quantify the NH₃-N emission from leaves and straw of a cropping system under long-term no-till in Brazil.



## MATERIAL AND METHODS

- ✓ Location: Botucatu, SP, Brazil
- ✓ Experiment has been conducted since 2006
- ✓ Treatments: nine crop rotations under no-till (three crops per year and there is no N supplied)

| Fall/Winter                             | Spring                              | Summer              |
|---|-------------------------------------|---------------------|
| (Apr/May – Sep)                         | (Sep/Oct – Nov/Dec)                 | (Nov/Dec – Mar/Apr) |
| Congo grass<br>(Brachiaria ruziziensis) | Sunn hemp<br>(Crotalaria juncea)    |                     |
| Grain sorghum                           | Pearl millet                        | Soybean             |
| (Sorghum bicolor)                       | ( <i>Pennisetum glaucum</i> )       | (in all plots)      |
| Congo Grass +<br>Grain sorghum          | Forage sorghum<br>(Sorghum bicolor) |                     |





 Measument: NH<sub>3</sub>-N emission from plant leaves and straw (continuously throughout a year – May 2012 to April 2013)

 $\checkmark$  NH<sub>3</sub>-N sampler

- ✓ Foam soaked with a solution of glycerin and phosphoric acid and surrounded by a layer of tape
- Placed 2 cm above the canopy and switched every 12 days



| Congo grass                  | Forage sorghum | 18.3 |
|------------------------------|----------------|------|
| Congo grass + Forage sorghum | Sunn hemp      | 14.8 |
| Congo grass + Forage sorghum | Pearl millet   | 13.4 |
| Congo grass + Forage sorghum | Forage sorghum | 12.8 |
| Grain sorghum                | Sunn hemp      | 11.9 |
| Grain sorghum                | Pearl millet   | 10.4 |
| Grain sorghum                | Forage sorghum | 12.3 |

**Pearl millet** 

## CONCLUSION

- ✓ In tropical cropping systems, the NH<sub>3</sub>-N loss by straw and plant leaves may reach 18.8 kg ha<sup>-1</sup> year<sup>-1</sup>, even without N fertilizer supplied.
- ✓ The senescence (in this case induced by herbicide action) is the phase of the plant cycle with the greatest potential of NH<sub>3</sub> emission.
- ✓ The magnitude of the NH<sub>3</sub>-N emission seems to be directly related to the N content and to the quantity of N accumulated in the vegetal tissue.



Congo grass





15.6