Technologies for Soybean Production in the Sandy Pampas Region, Argentina

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During the last decade, abundant technologies for soybean [*Glycine max* (L.) Merrill] production supports part of the expansion of this crop in the sandy pampas region of Argentina. These practices, among others, include nutrient management with rhizobia inoculation and fertilization, and late season disease control with foliar fungicides.

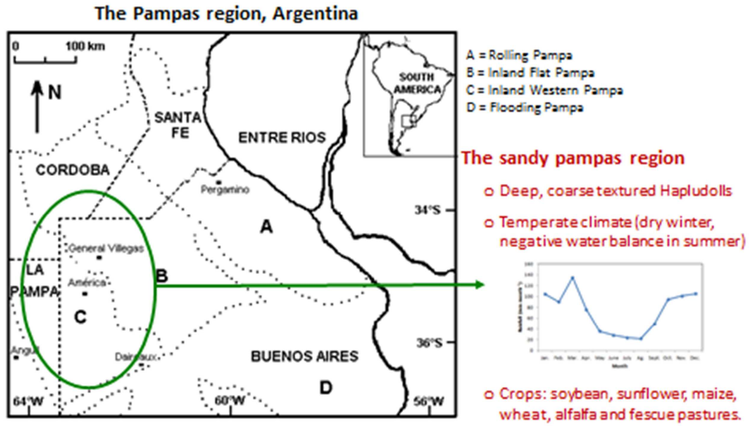
Although the benefits several of these technologies have been individually validated, the regional information about the contribution under uniform production conditions (i.e. soil type, planting date, genotype, previous crop, tillage, etc.) is limited.

Objective

- To quantify the single and the cumulative effects of frequently recommended soybean production practices for achieving high yields in the sandy pampas region of Argentina.

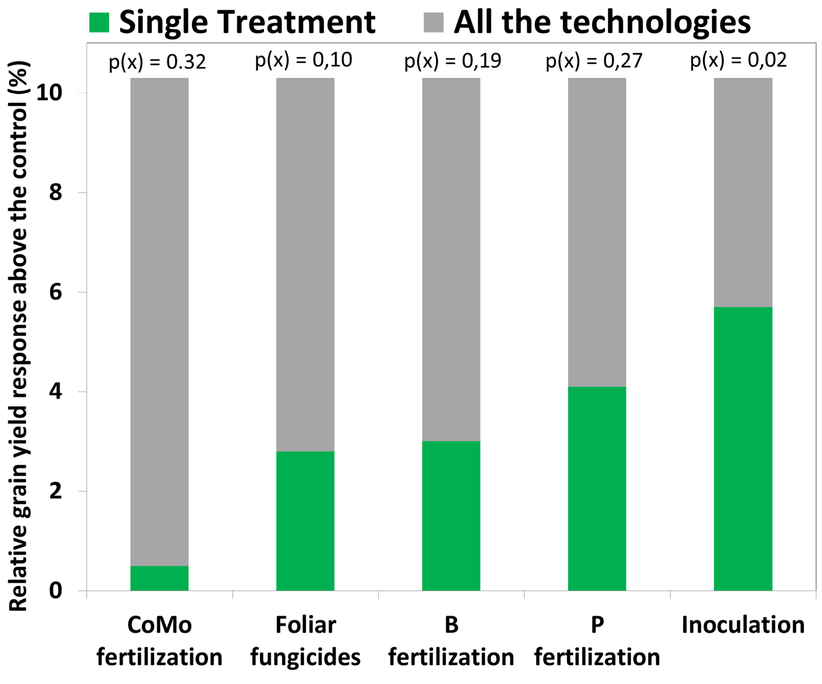
Materials and Methods

The study was performed during the 2011/12 and 2012/13 growing seasons in 5 production fields close to América (Buenos Aires province).



Treatments: five pairs of crop management treatments (rhizobia seed inoculation, Co + Mo seed application, P fertilization at planting, foliar B fertilization at R1 and foliar fungicides application at R3).

Results and Discussion



Although greater grain yield was observed in the 2012/13 season, the relative contribution of the studied technologies was similar among seasons.

In average, the use of better soybean production practices increases 10.3 % the grain yields compared with regular management practices.

Most of the benefits in grain yield were attributed to biological seed treatments with *Bradyrhizobium japonicum* combined with LCO signal molecules for plant growth (221 kg ha^{-1}, $p<0.02$) and the application of foliar fungicides at R3 (101 kg ha^{-1}, $p<0.10$).

A minor contribution was attributed to fertilization treatments with P at planting and with B at R1.

Conclusions

- Nitrogen and P nutrition through rhizobia inoculation and P fertilization showed consistent benefits among growing seasons while the responses to foliar B fertilization and to fungicides application varied between seasons.
- The use of selected improved technologies practices, integrated with decision tools (i.e. soil test), supports the development of high productive soybeans crops to sustain agricultural systems in the sandy pampas region of Argentina