

Agricultural applications of Phosphogypsum

Brazil

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VIRTUAL EVENT

International Conference on
**Management of Naturally
Occurring Radioactive
Material (NORM) in Industry**

19–30 October 2020

#NORM2020



**Workshop on Phosphates for sustainable development:
Fertilizers and phosphogypsum in the circular economy**

22 October 2020

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BRAZIL Land use - 2019



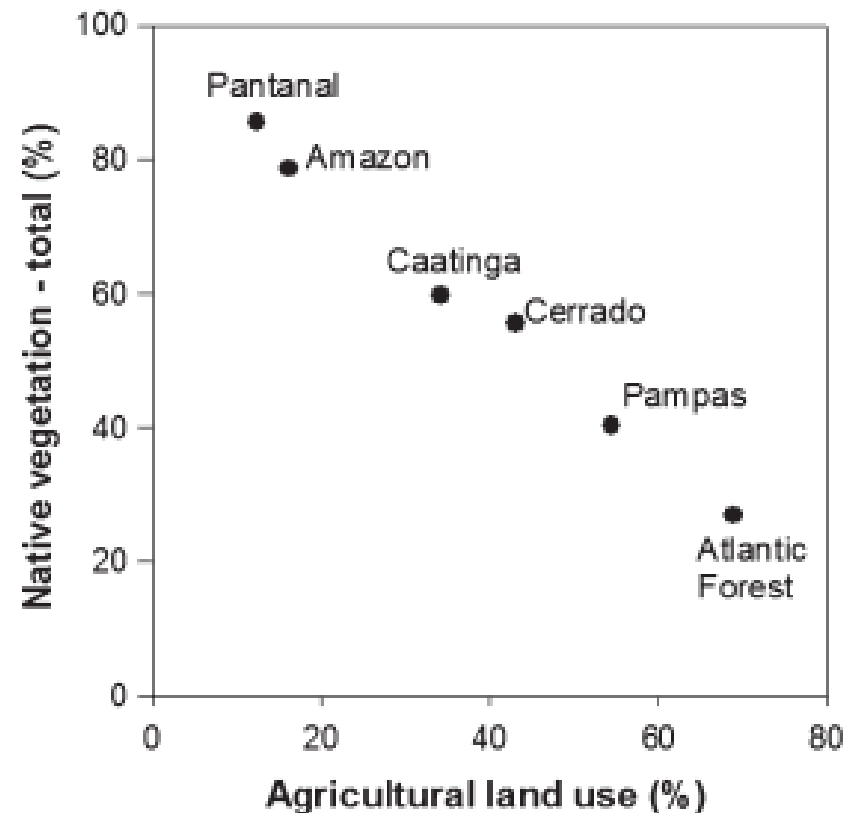
Agricultural Land Use in Brazilian Biomes

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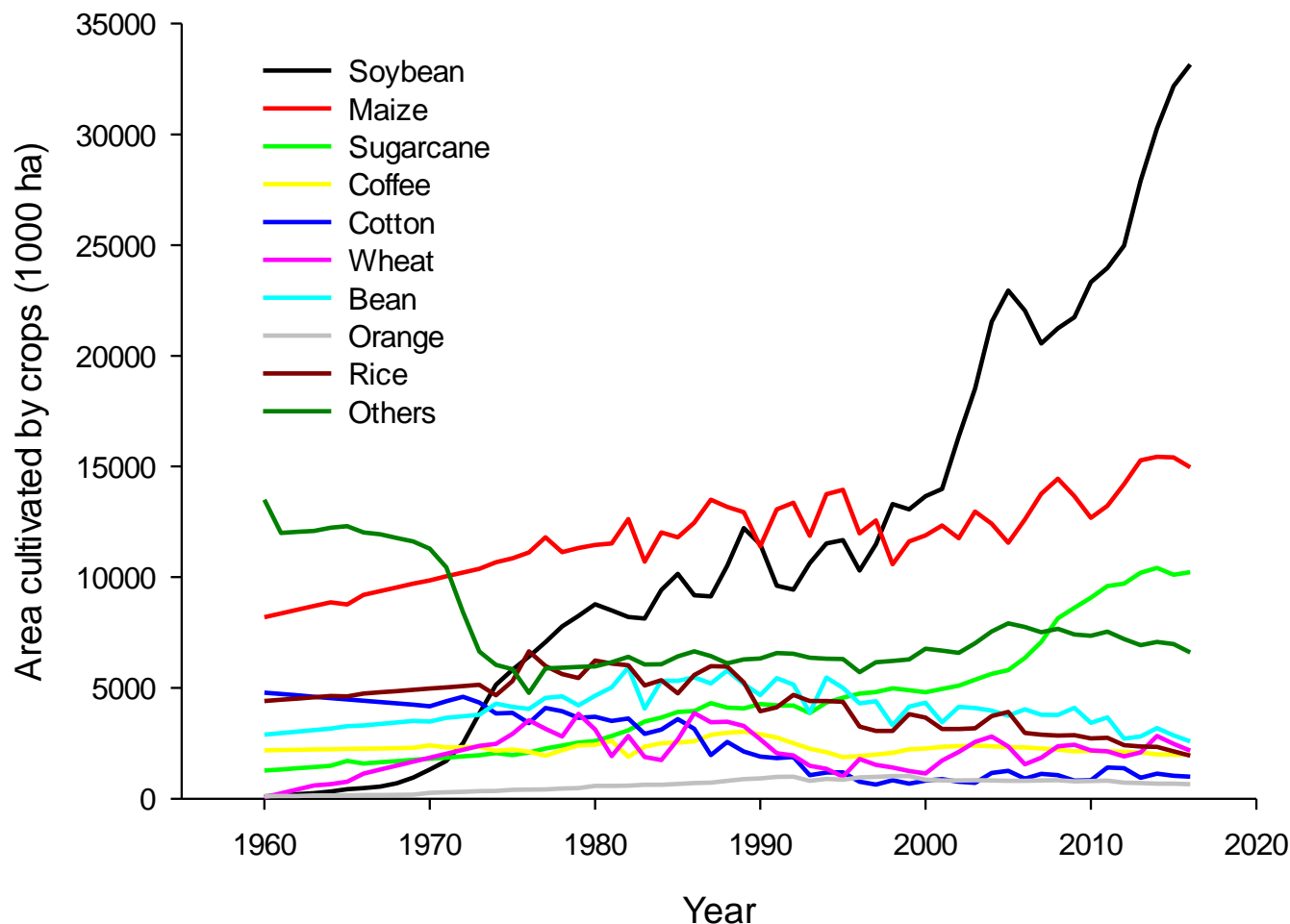
Cultivated area by crop in BRAZIL in the last decades

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PG use by crops

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Total production:

7-8 Mi t/year

Total use in agriculture:

8-10 Mi t/year

Main crops:

- Soybean
- Maize
- Sugarcane
- Coffee



Source: AgricOnline

Price: **limited \pm U\$50,00 for use (product + transport)**

LEGISLATION IN BRAZIL

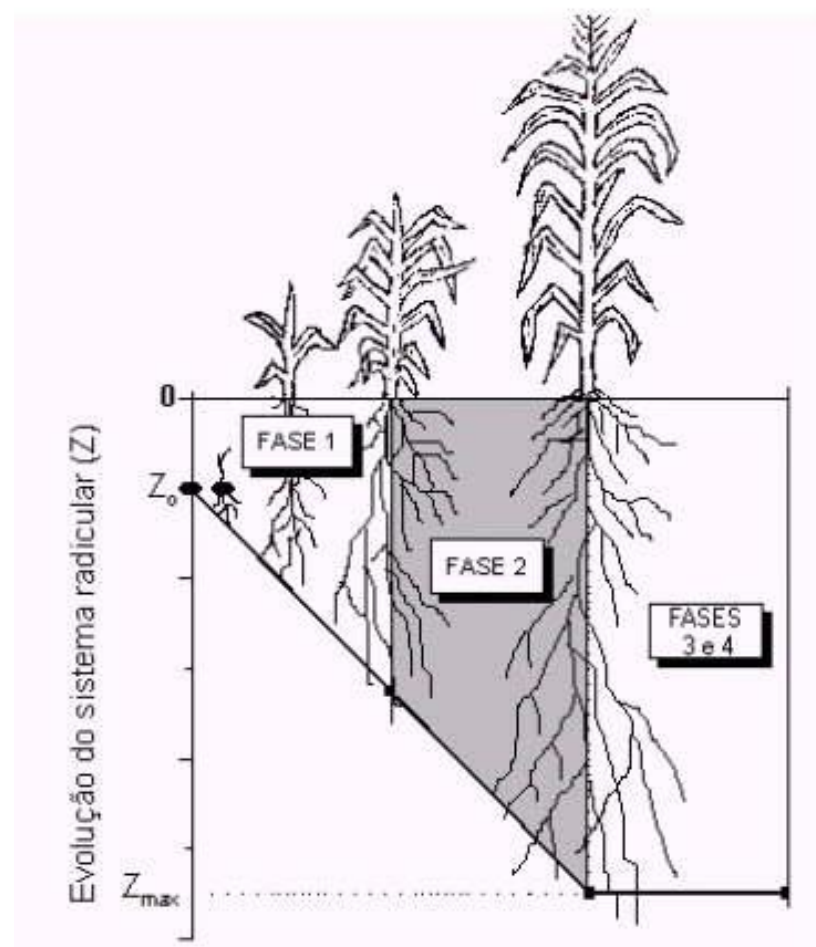
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- There is no restriction to use PG in agriculture (only rule is declaring levels of nutrientes)
- Logistics is the big issue for using more PG
- Recommendations are based on amendment effects in soil profile (Ca, S and inhibit Al)



Dynamics of Ca^{+2} and SO_4^{-2} in soil profile when PG is used:

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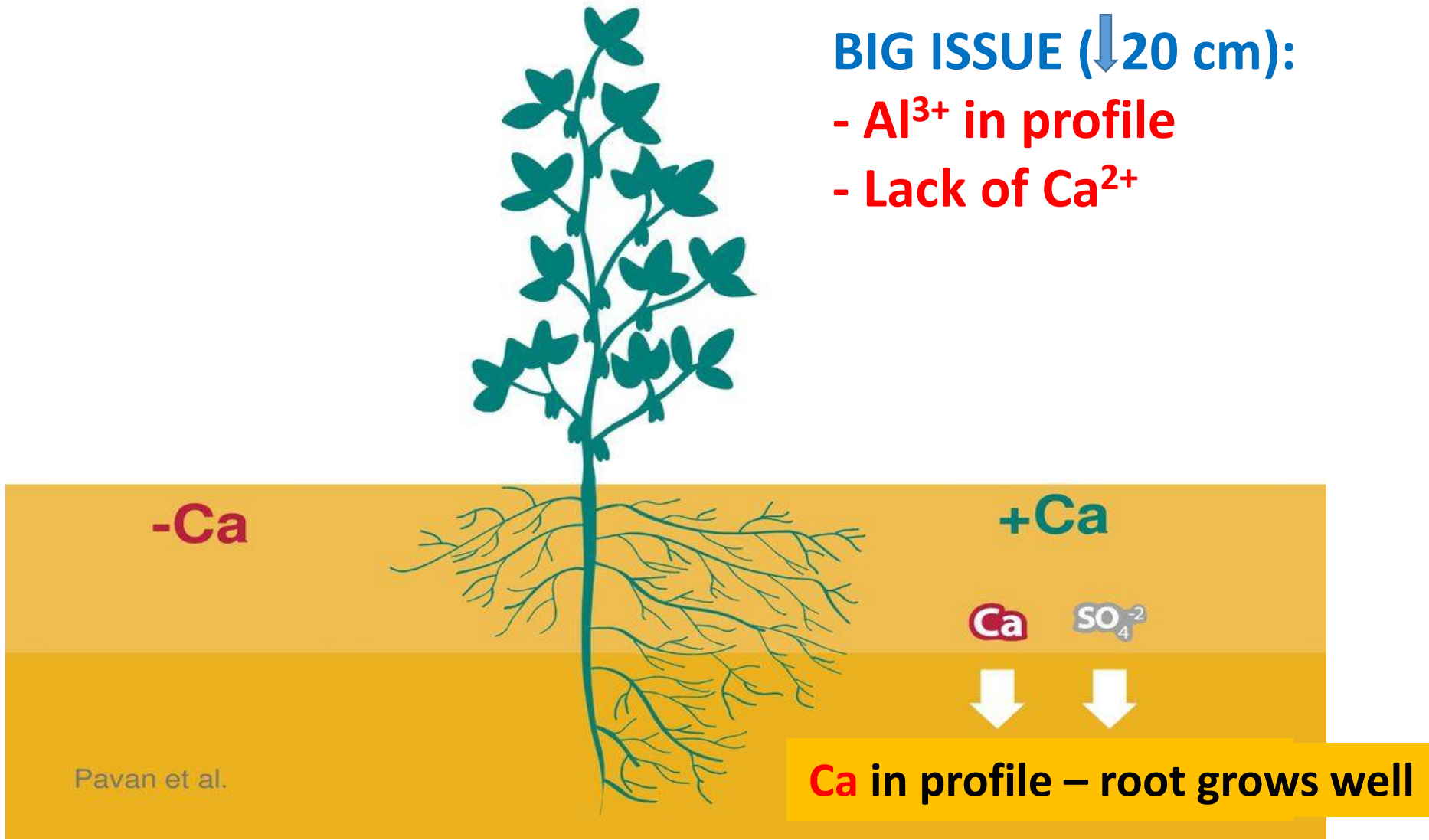
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BIG ISSUE (↓20 cm):

- Al^{3+} in profile
- Lack of Ca^{2+}



Pavan et al.

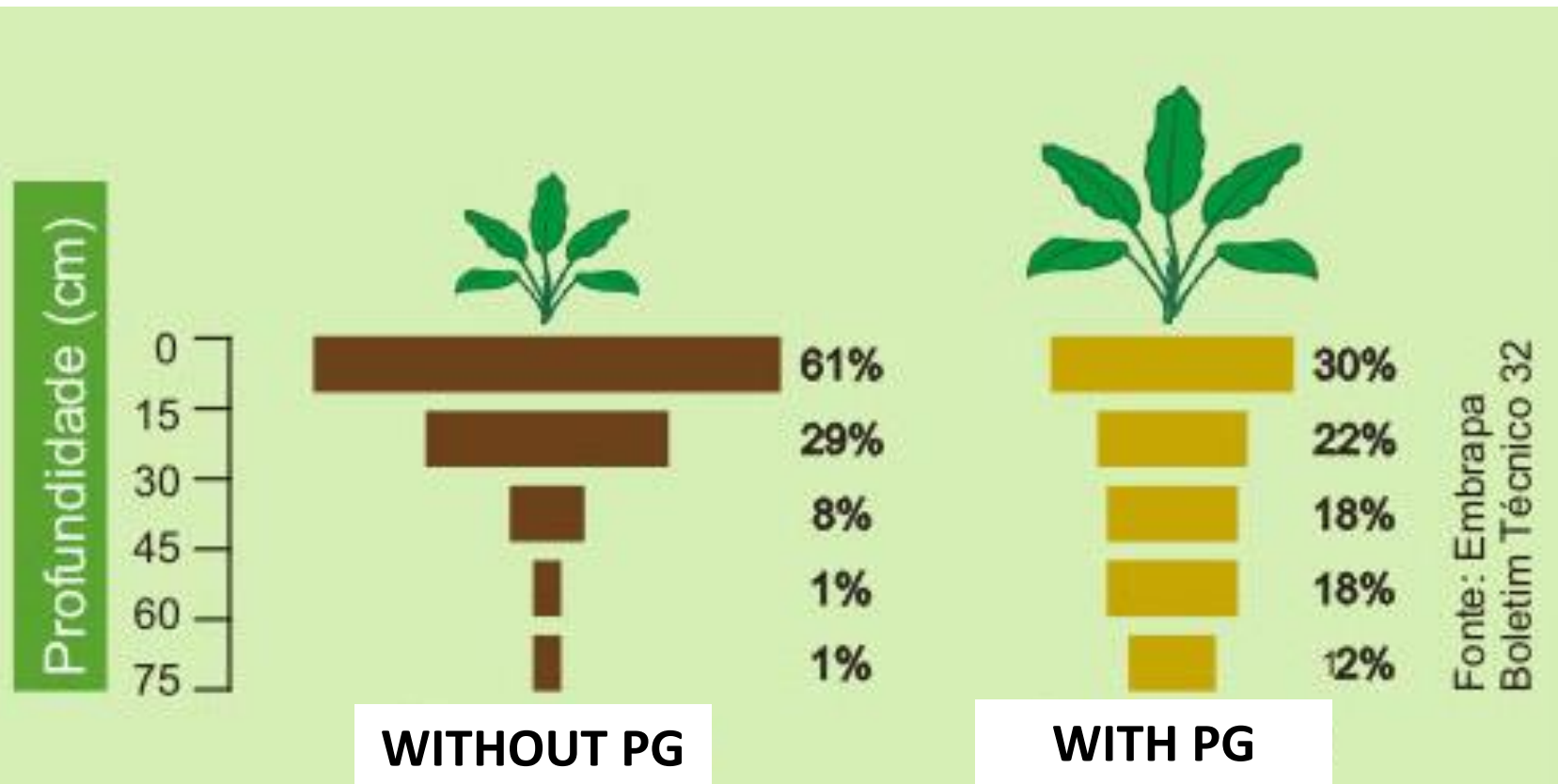
Dynamics of Ca^{+2} and SO_4^{-2} in soil profile when PG is used:

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Mean distribution of the plant root system with and without Phosphogypsum application.

Dynamics of Ca^{+2} and SO_4^{-2} in soil profile when PG is used:

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150 cm layer

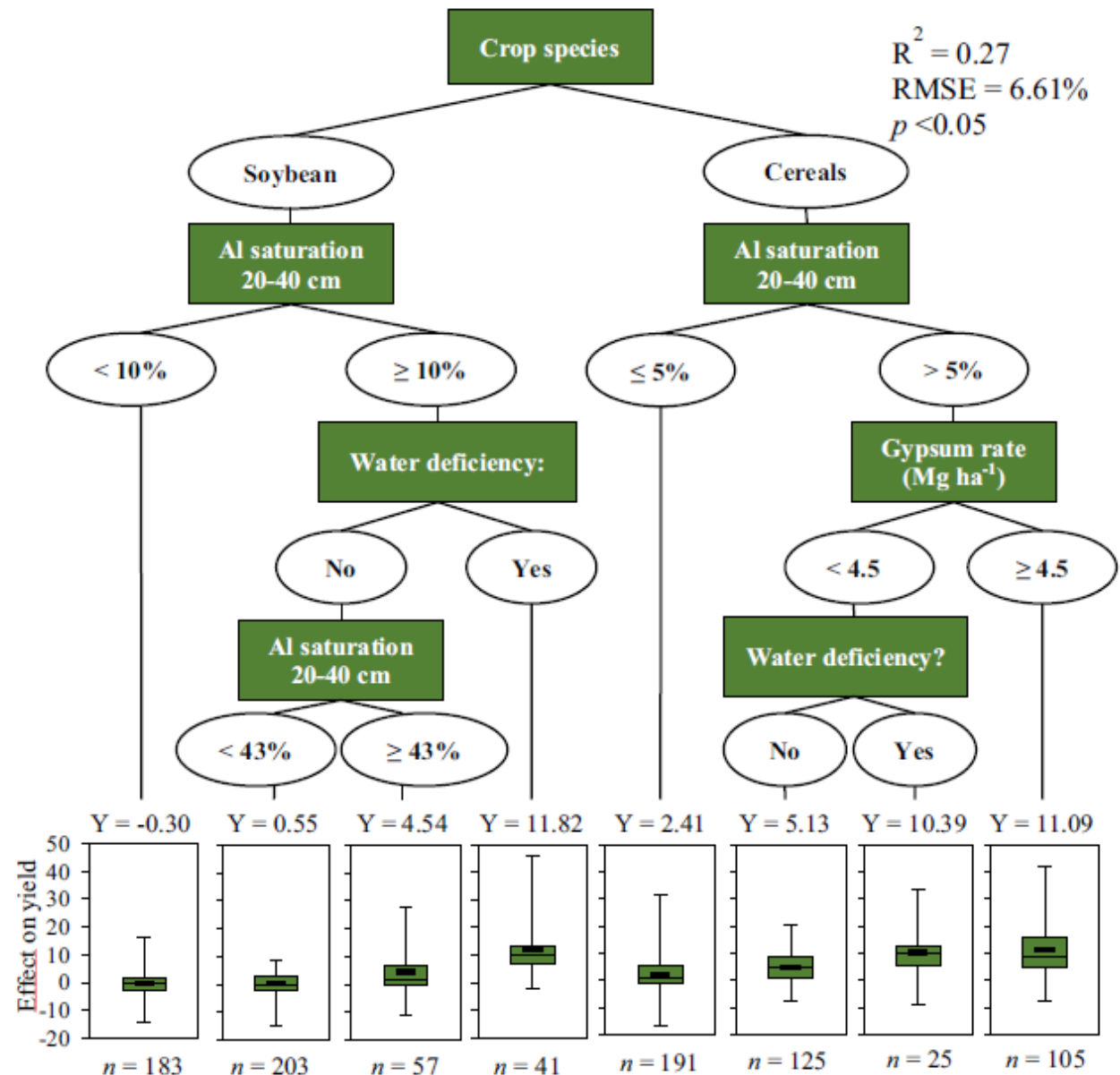
Deep and healthy root system

Phosphogypsum Soil/Crop Application - Decision Tree

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Source: de Castro Pias et al. (2020)

Thank you

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