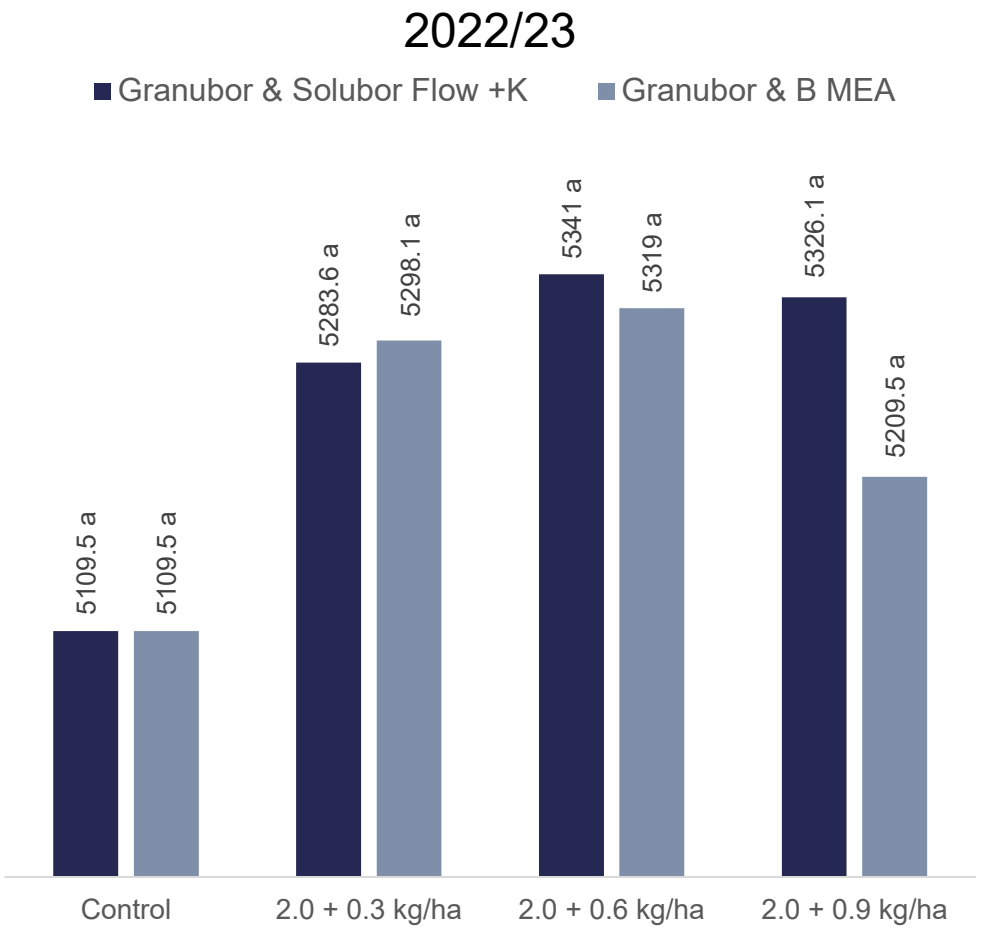
Boron in cotton

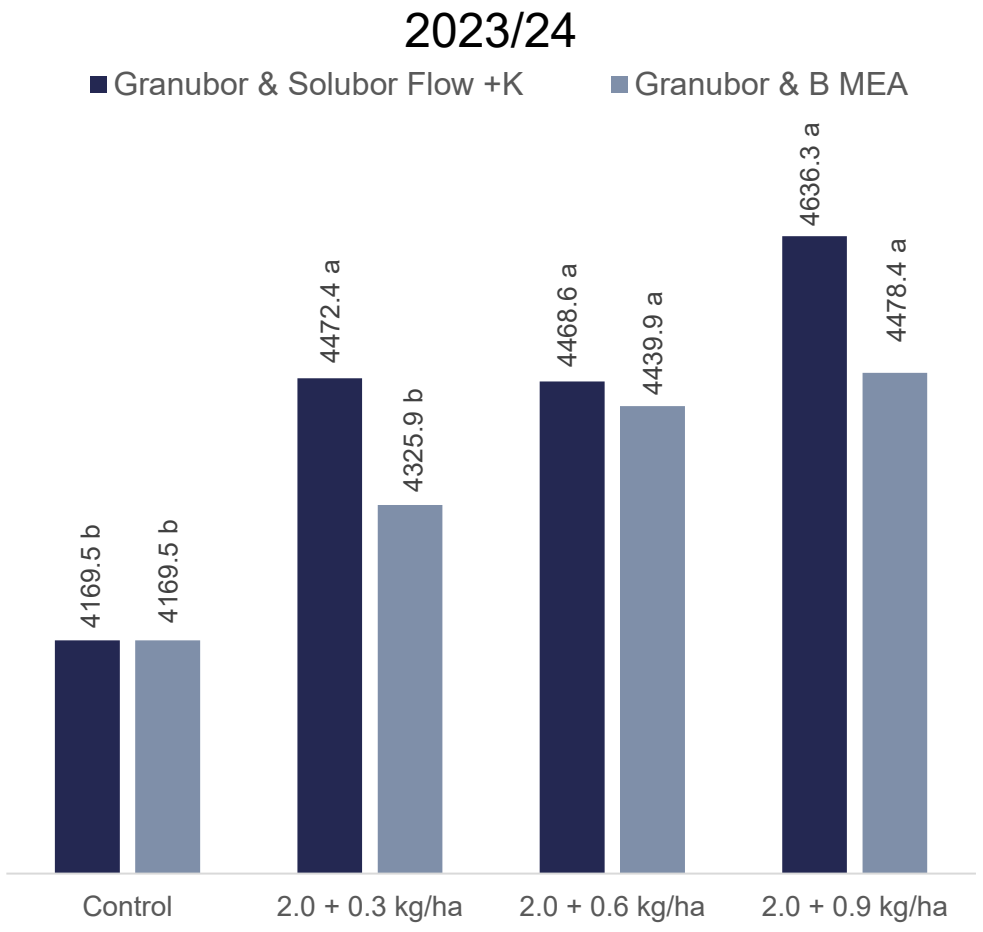
Study details

Research institution: NEMABIO, Agronomic Research
Researcher: Dr. Claudinei Kappes
Date: 2022-2024
Location: Sinop, MT – Brazil
Crop variety: TMG 44 B2RF – 11 seeds/meter
Soil: Dystrophic Red-Yellow Latosol (Oxisol)
Clay: 49.8%, Sand: 32.5%, Silt: 17.7%
Soil pH: 5.7 ($CaCl_2$)
Additional soil information: OM 24.3 g/dm^3; P 28.9 mg/dm^3; K 91.6 mg/dm^3; S 25 mg/dm^3; Ca 4.1 cmolc/dm^3; Mg 1.6 cmolc/dm^3; B 0.23 mg/dm^3; Cu 0.5 mg/dm^3; Mn 0.5 mg/dm^3; Zn 3.4 mg/dm^3; Fe 60 mg/dm^3
Fertilizers in two trials:
Granubor®, *Solubor*® Flow +K, and liquid 10% B (boric acid + monoethanolamine)
Granubor® and acidulated ulexite
Trial design: Randomized complete block with four repetitions
Metrics: Yield (kg/ha), B content in the leaves, and B content in the soil (after harvest).
Plant stand evaluation to ensure consistent stand in each replication

Granubor, *Solubor* Flow +K, and liquid

Yield (kg/ha)

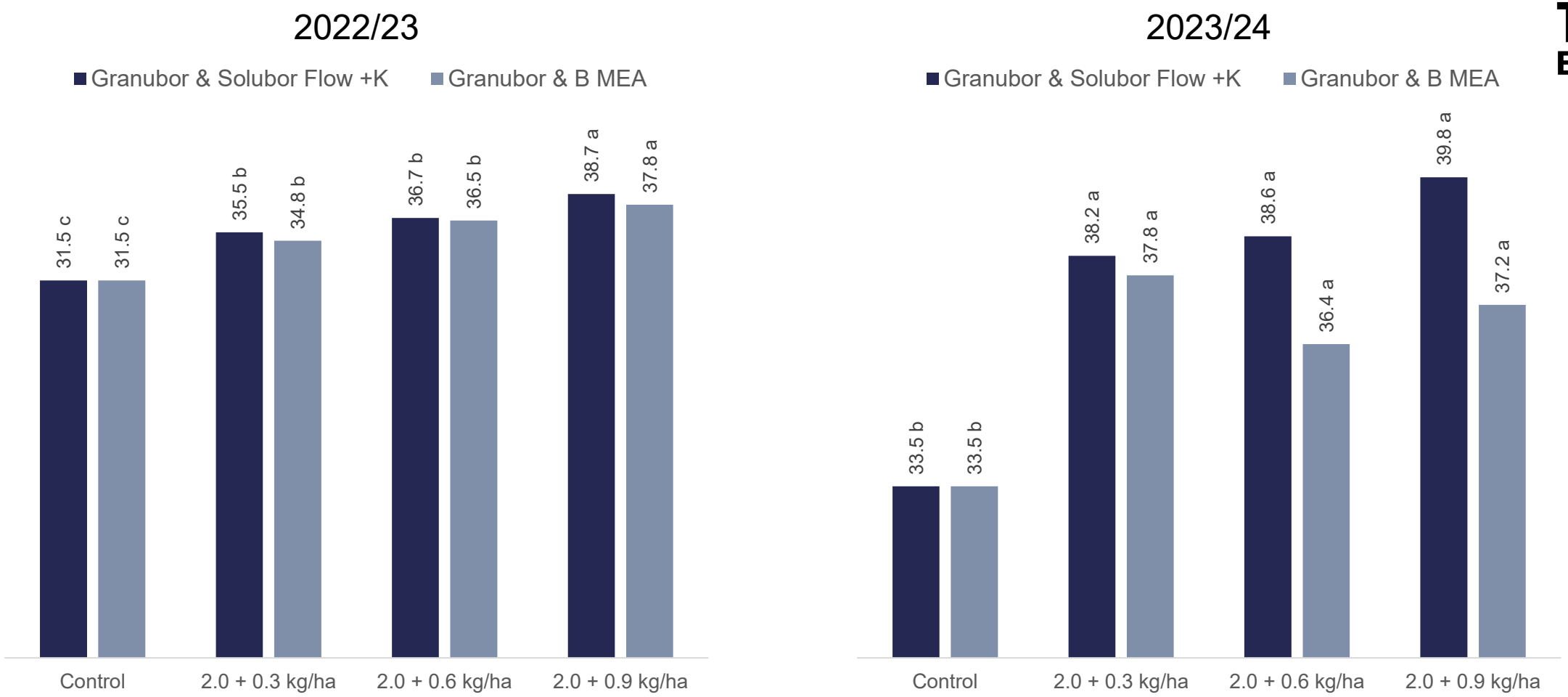




GRANUBOR®

SOLUBOR® FLOW +K

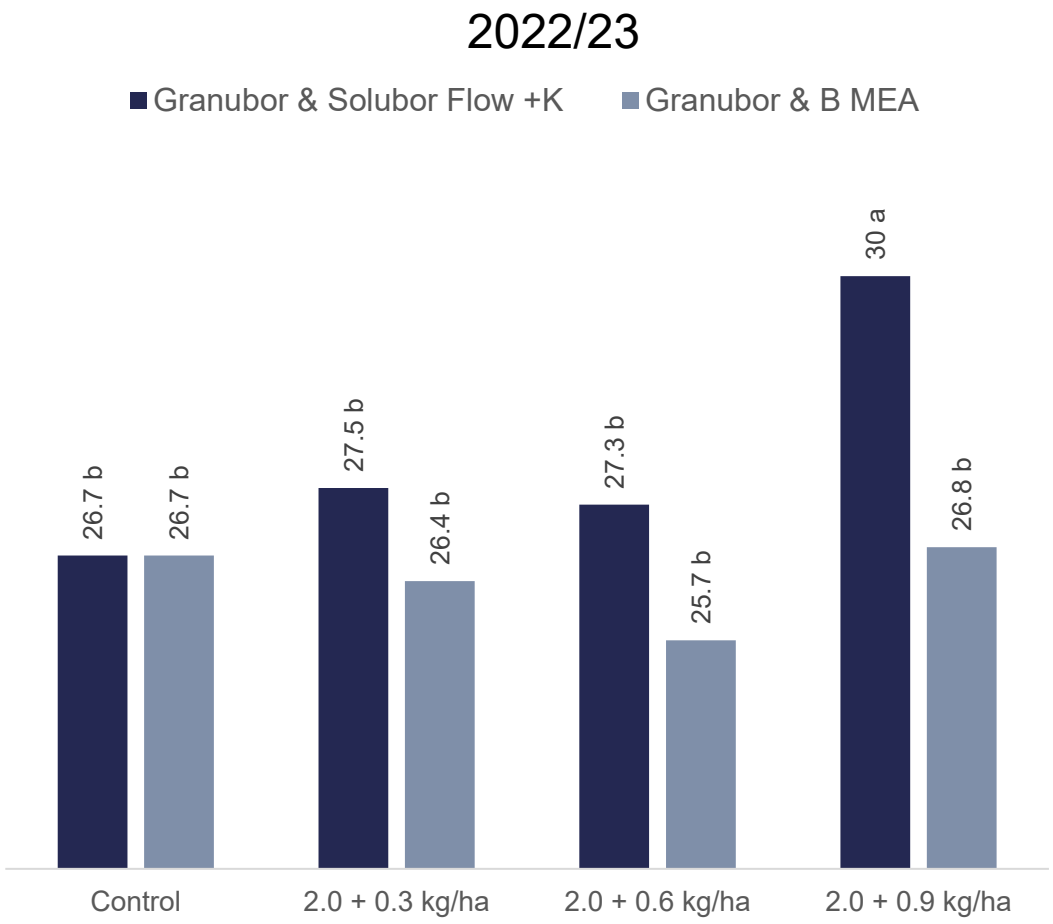
Granubor, *Solubor* Flow +K, and liquid
Boron foliar (ppm)

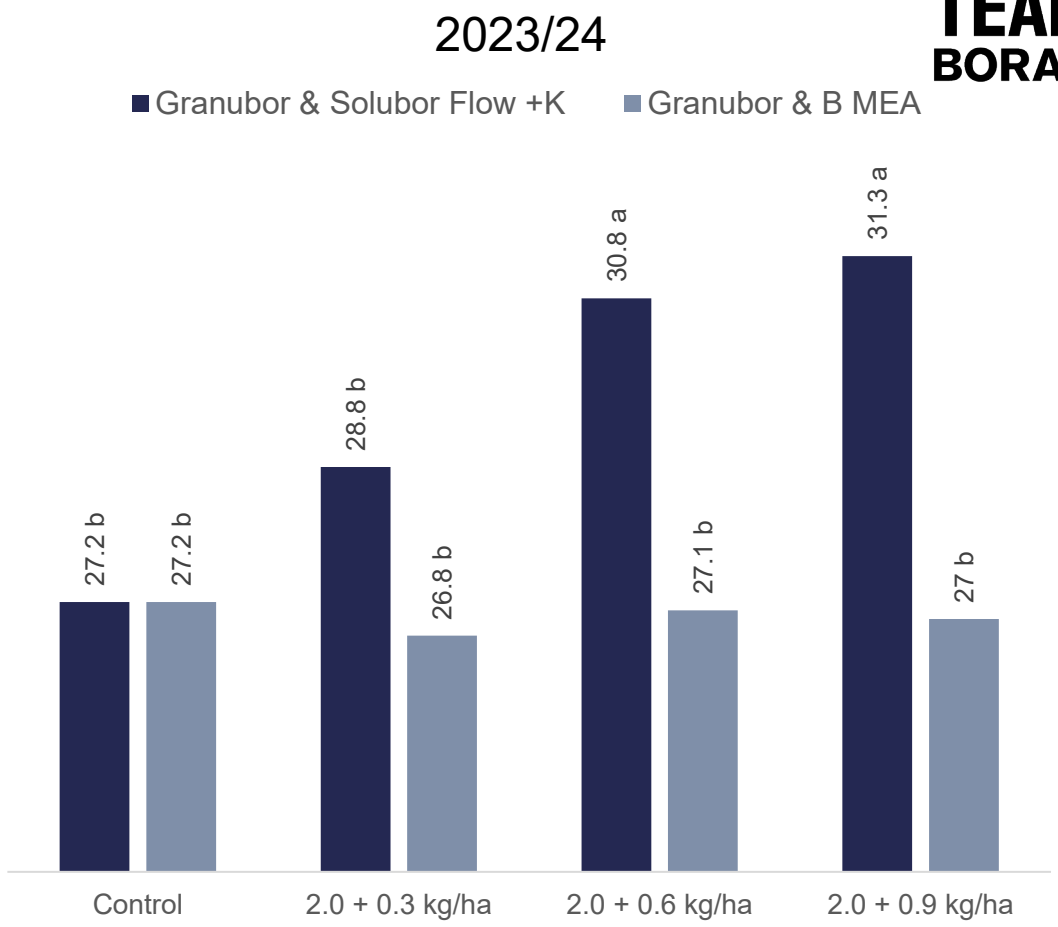


GRANUBOR®

SOLUBOR® FLOW +K

Granubor, *Solubor* Flow +K, and liquid Potassium foliar (g/kg)





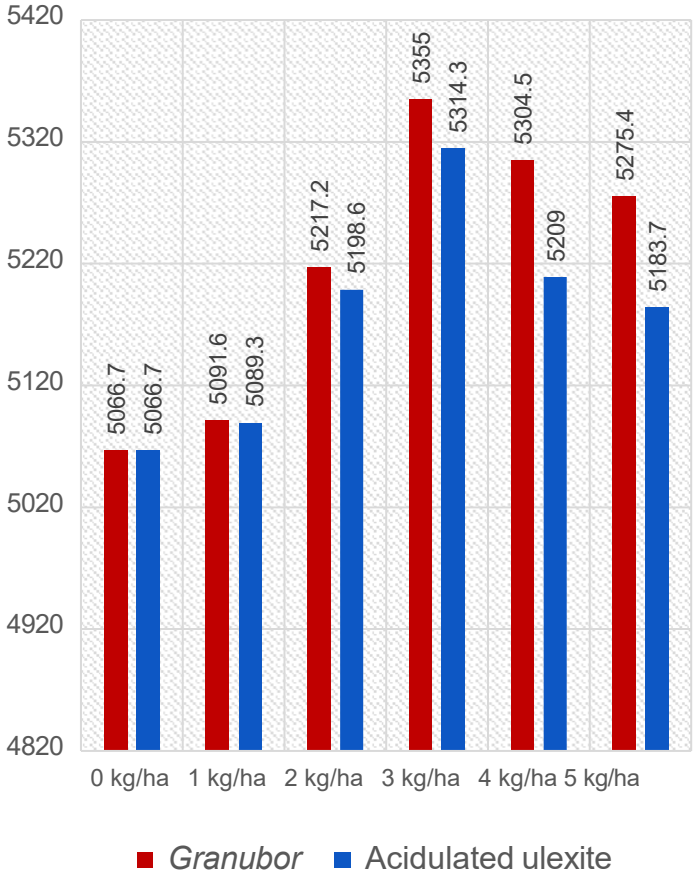
Granubor, *Solubor* Flow +K, and liquid

Given the soil and climate conditions of this study, the results obtained allowed us to conclude that:

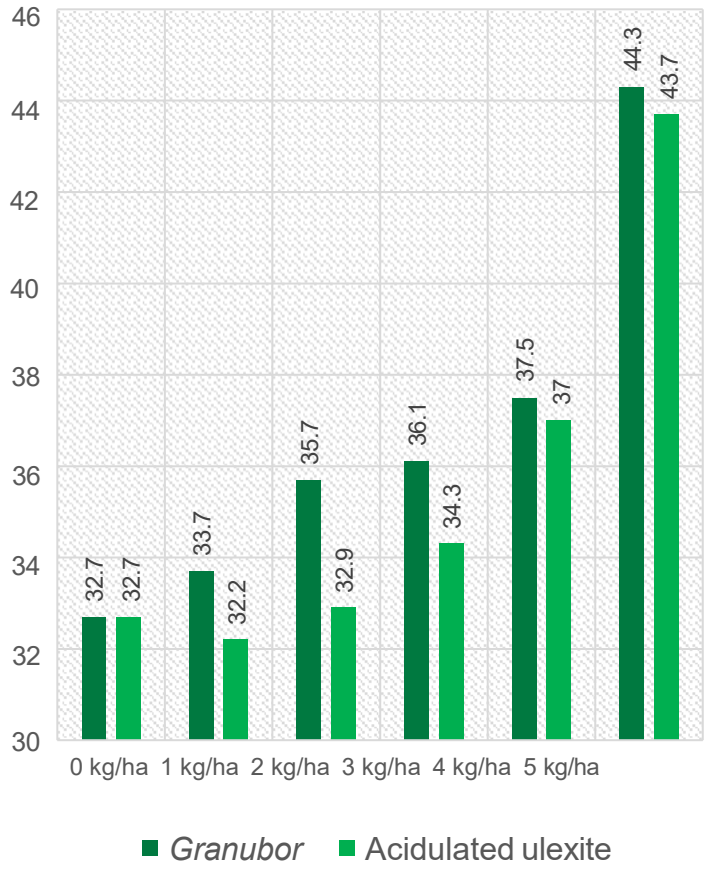
1. In the first year of the study, the application of *Solubor* Flow $^{+}$K at its highest dose (equivalent to 0.9 kg/ha B), divided into five times, provided higher potassium and boron levels during bloom and boll development
2. In the second year, all treatments that received reapplications of boron were efficient in increasing the number of bolls per plant and the boron levels in the leaf and soil
3. In the two consecutive years, the seed cotton yields obtained with the foliar applications of *Solubor* Flow $^{+}$K were statistically similar to those provided by boron MEA.

Granubor and acidulated ulexite

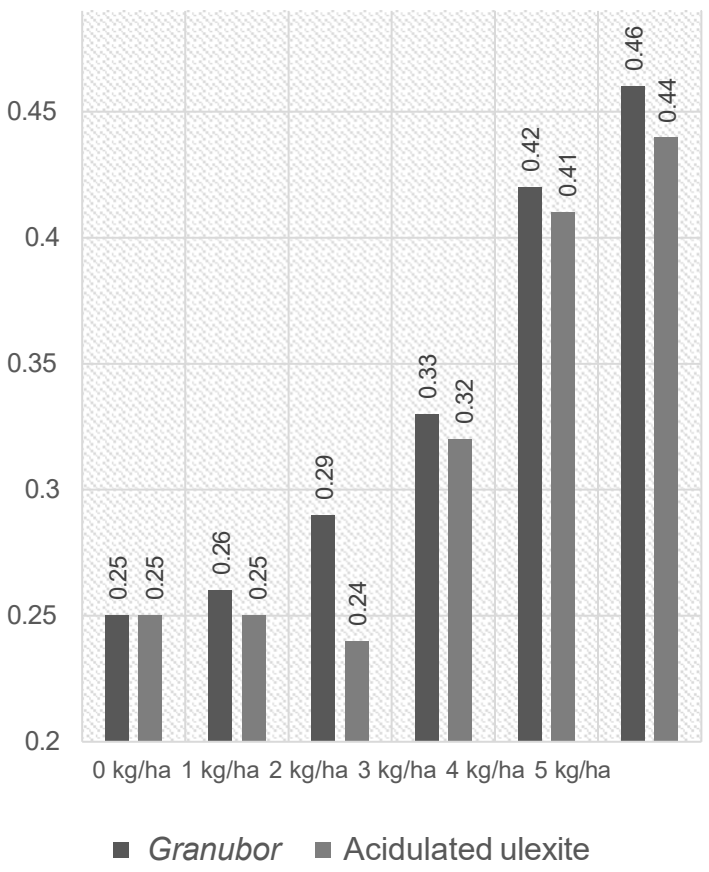
Cotton yield (kg/ha)



Cotton B foliar (mg/kg)

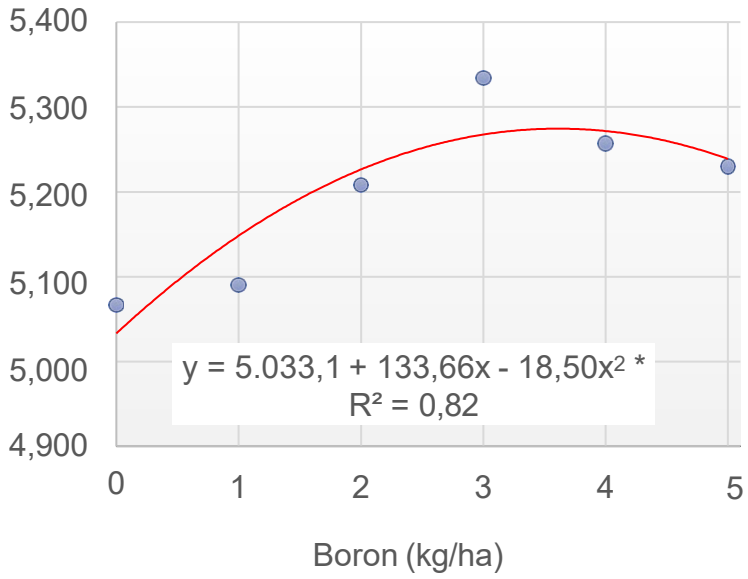


B soil (mg/dm³)

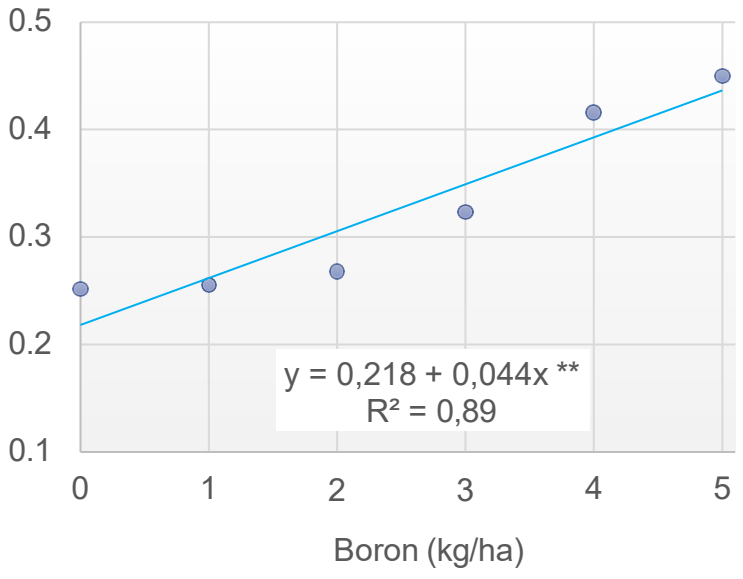


Granubor and acidulated ulexite

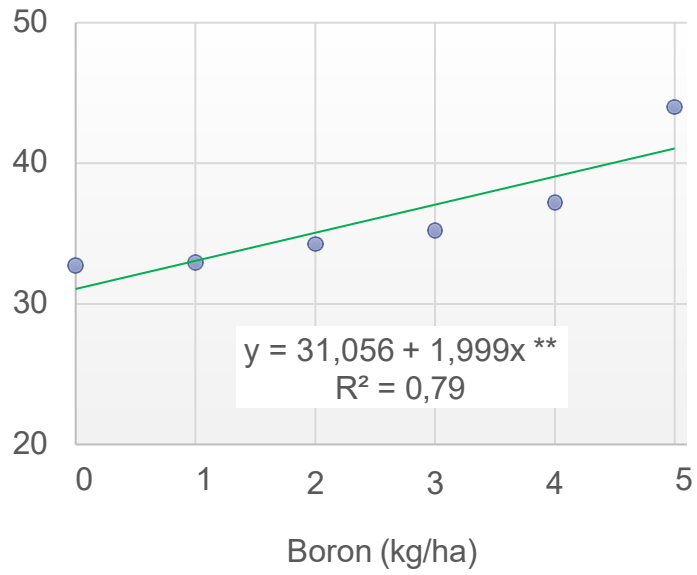
Cotton yield (kg/ha)

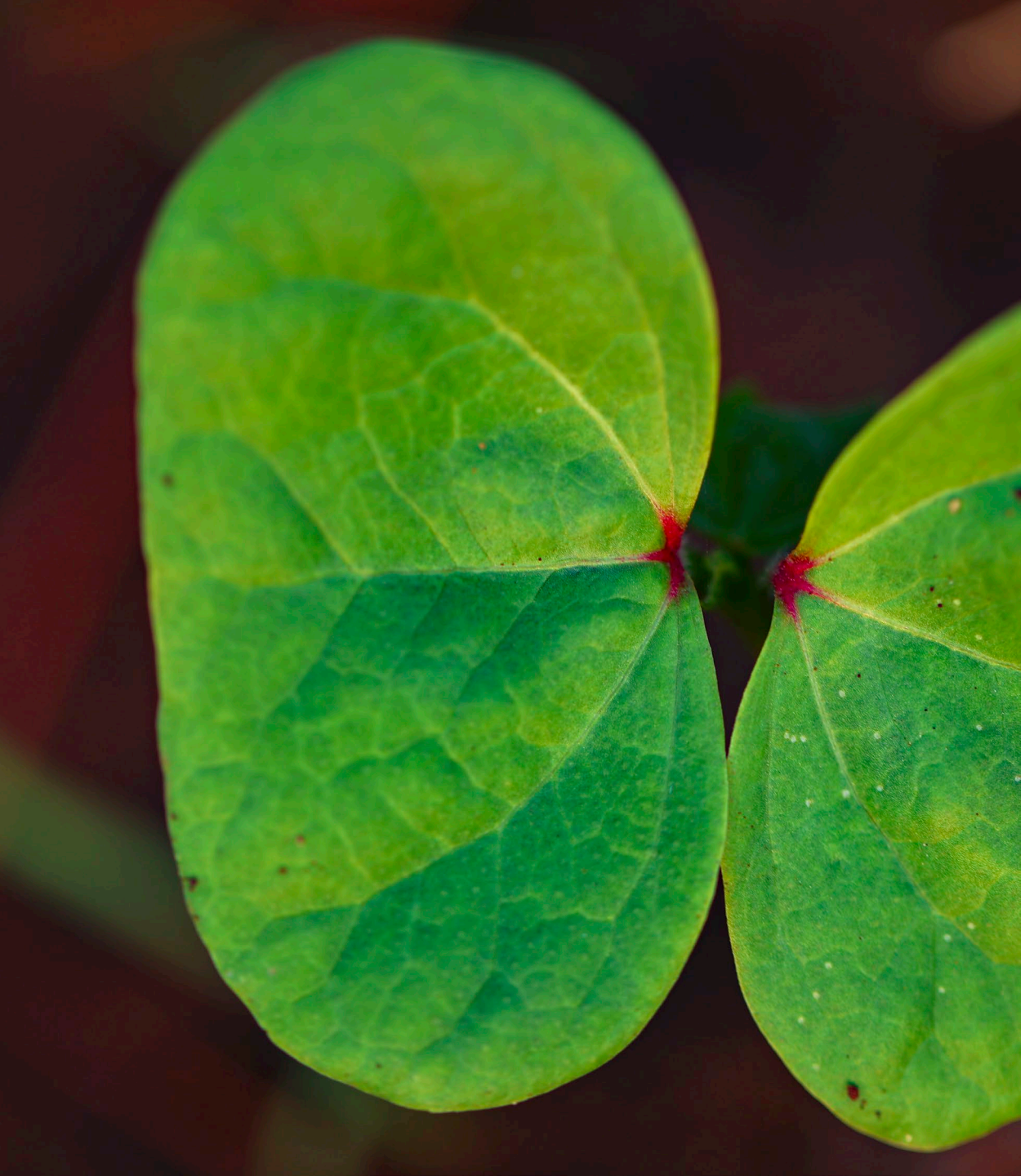


B in soil (mg/ dm³)



B in leaf (mg/kg)





Granubor and acidulated ulexite

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1. The application of 3.0 kg/ha of boron broadcast at the time of sowing in soil with low availability of the element, provided a higher yield of seed cotton, whose percentage increase was 5.28% in comparison to the control treatment (increase of 267.9 kg/ha).

2. Applications of increasing doses of boron linearly increased the content of the element in the leaf and soil, the lowest values were verified in the control, which did not receive an application of boron.