Boron in sugarcane via soil application

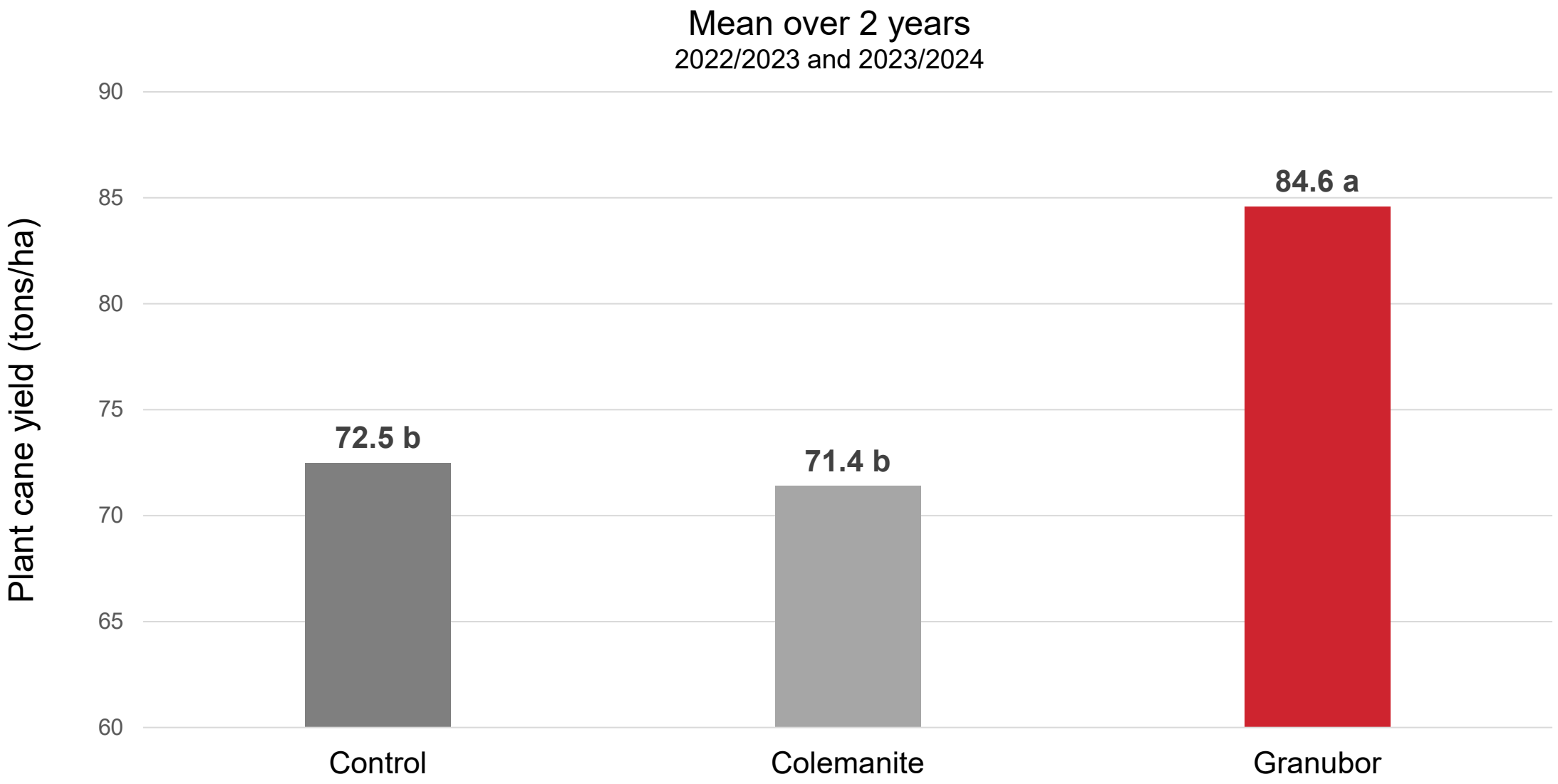
Study details

Research institution: ICAR Indian Sugarcane Research Institute
Researcher: Dr. V.P. Jaiswal, senior scientist
Date: 2023 and 2024
Location: Lucknow, India
Crop variety: CoLk 09204 (Midlate)
Soil:

- Textural class: Silt loam
- Bulk density: 1.54g cc^{-1}
- Moisture content: 15.6%
- pH: 7.59
- EC ds m^{-1}: 0.32
- Organic carbon (%): 0.42
- Boron in the soil: (mg/kg): 0.40

Fertilizer: *Granubor*® and colemanite
Trial design: Randomized complete block with three replications

Boron in sugarcane via soil application



Boron in sugarcane via soil application

Results

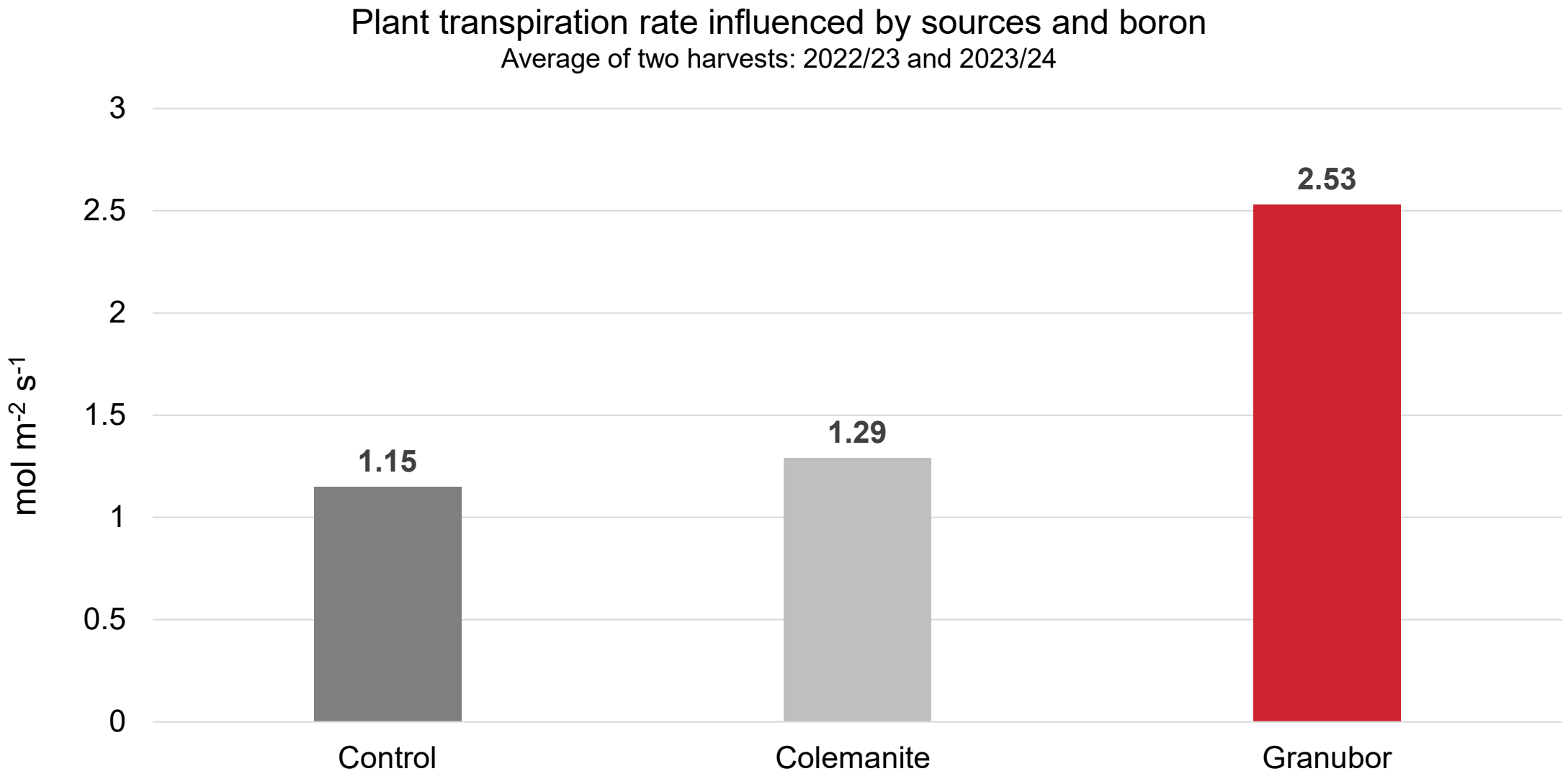
There was significant variation in cane yield across different treatments over the 2-year field trial.

The treatment with *Granubor* resulted in the highest average cane yield of 84.6 tons per hectare, outperforming both colemanite and the control treatments.

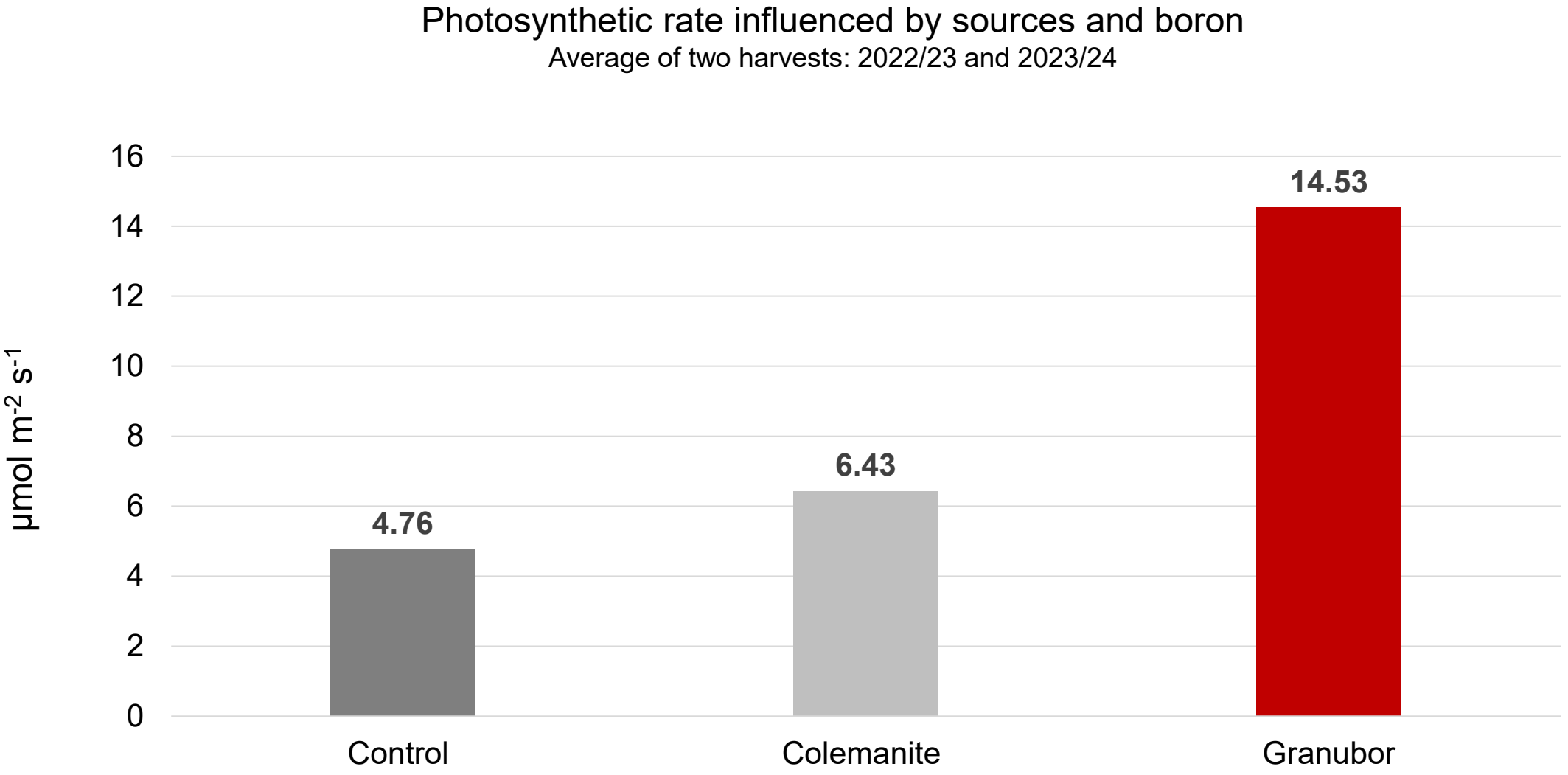
Specifically, *Granubor* significantly increased cane yield compared to colemanite and control, which yielded 71.4 and 72.5 tons per hectare, respectively.

This suggests that *Granubor* has a notable effect on enhancing cane yield. In contrast, the yields from colemanite and control are comparable to each other, with no significant difference between them.

Boron in sugarcane via soil application



Boron in sugarcane via soil application



Boron in sugarcane: Comments and conclusions

- *Granubor* provided a higher transpiration rate and a higher photosynthetic rate
- *Granubor* provided a 96% increase in the transpiration rate compared to colemanite
- *Granubor* provided a 126% increase in the photosynthetic rate compared to colemanite
- The observed physiological effects, favorable to *Granubor*, may be the result of the better structuring of cells in the sap-conducting vessel system
- Plants with greater transpiration and photosynthesis tend to have a higher conversion rate, resulting in greater productivity