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Boron Levels on Yield Characteristics of Sunflower

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Introduction

- ✓ Sunflower (*Helianthus annuus* L.) is an important source of renewable energy in Brazil. However, it requires more boron (B) for its development than other species.
- ✓ The B deficiency can lead floral abortion, reduced plant growth, malformation of achenes, and fall of achenes, resulting in decreased productivity.
- ✓ The aim of this study was to evaluate and discuss morphological and production characteristics due to B doses of cultivating sunflower Dow AgroSciences M734.

Material and methods

- ✓ The experiment was carried in Palmas, TO, Brazil.
- ✓ Data were collected between July and August 2015, in greenhouse conditions.
- ✓ A completely randomized design was used, in factorial arrangement, with six B doses (0; 2; 4.5; 9; 18 and 36 mg dm⁻³) and 4 replications and using borax as B source.
- ✓ The characteristics evaluated were: stem height (SH), stem curvature (SC), capitulum length (CL), number of achenes (NA), weight of 1,000 achenes (WA) and grain yield (GY).
- ✓ Data were compared by F test at 5% probability, and when significant, regression analysis were performed.

Results and discussion

- ✓ B doses did not affect (P>0.05) stem curvature and weight of 1,000 achenes.
- ✓ Stem height, capitulum length, number of achenes and weight of 1,000 achenes were affected (P<0.05) and were adjusted to a quadratic regression model.

SH = 120.43+0.1797X-0.0225X², R²=0.52, CV=7.26%;

CL=6.72+0.0387X-0.0025X², R²=0.80, CV=8.75%;

NA=253.33+12.43X-0.4385X², R²=0.87, CV=14.45%;

WA=494.43+23.73X-0.8957X², R²=0.86, CV=19.80%.

- ✓ The highest stem height (120.78 cm) was obtained with 3.99 mg B dm⁻³ while capitulum length was highest (6.86 g) with 7.74 mg B dm⁻³ and number of achenes was 341.41 with 14.17 mg B dm⁻³.
- ✓ Grain yield increased with B doses, since capitulum length and number of achenes also increased, therefore, maximum grain yield (645.12 kg ha⁻¹) was achieved with 13.25 mg B dm⁻³.

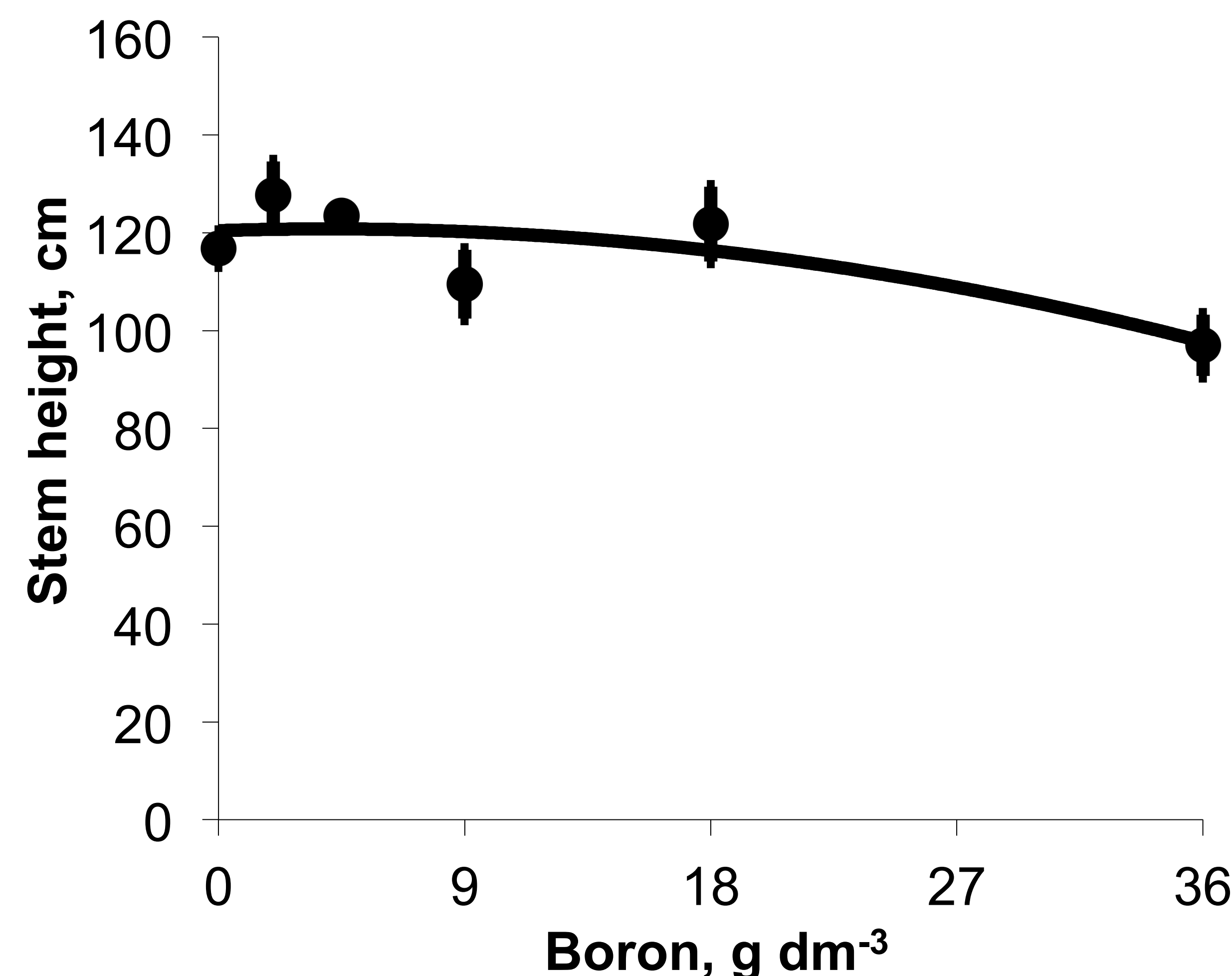


Figure 1. Stem height (cm) depending on the boron doses in sunflower, Palmas-TO.

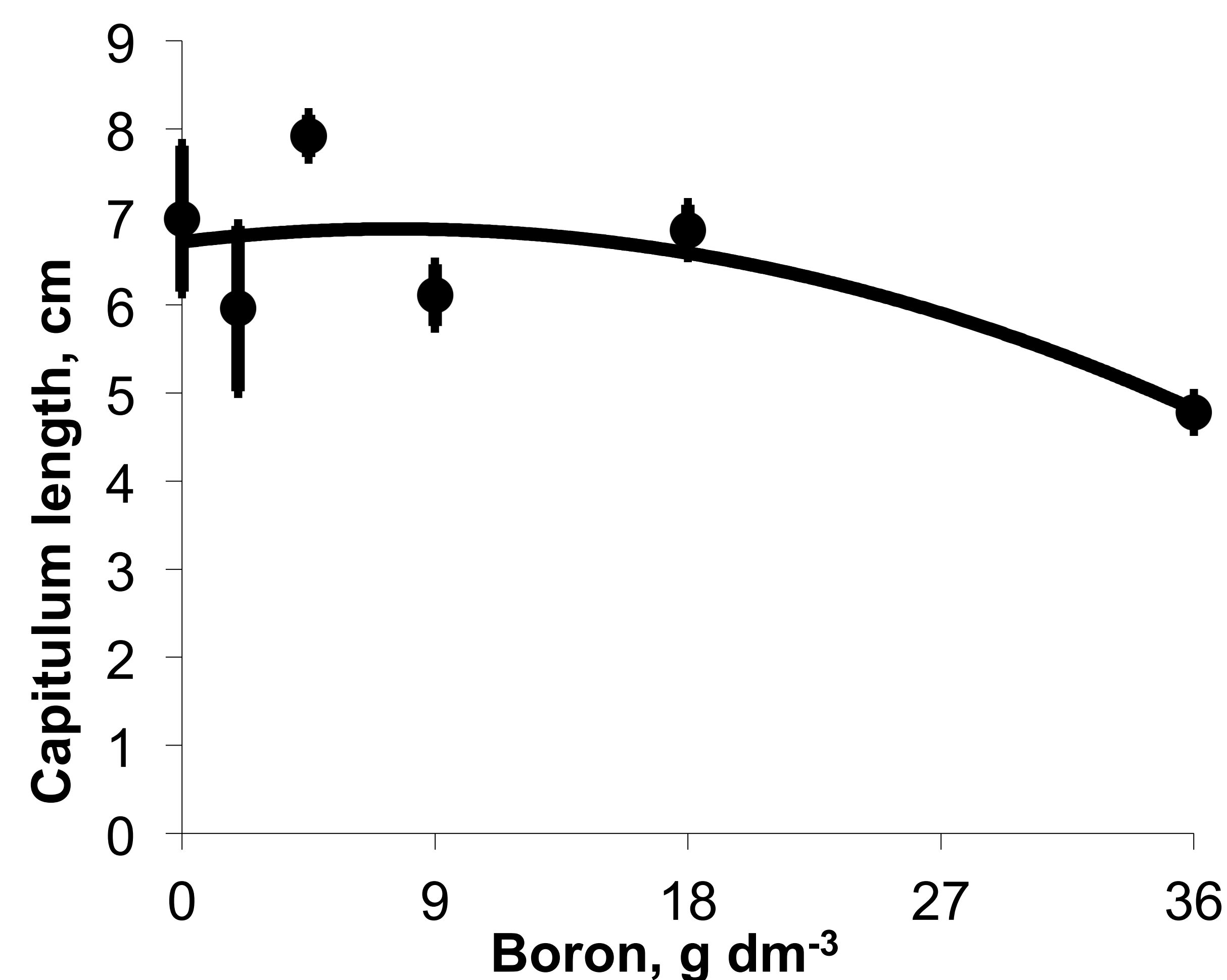


Figure 2. Capitulum length, depending on the boron doses in sunflower, Palmas-TO.

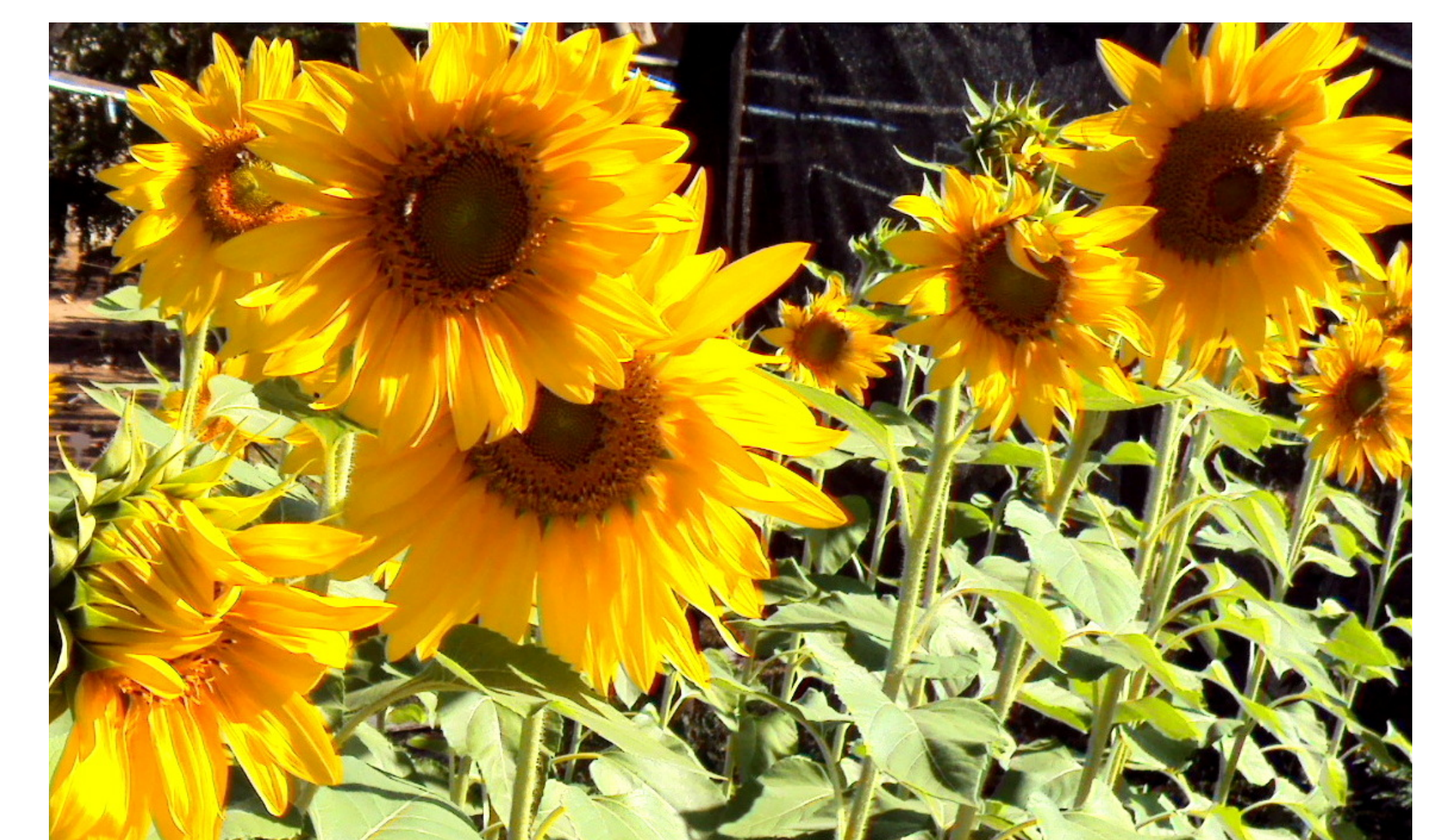
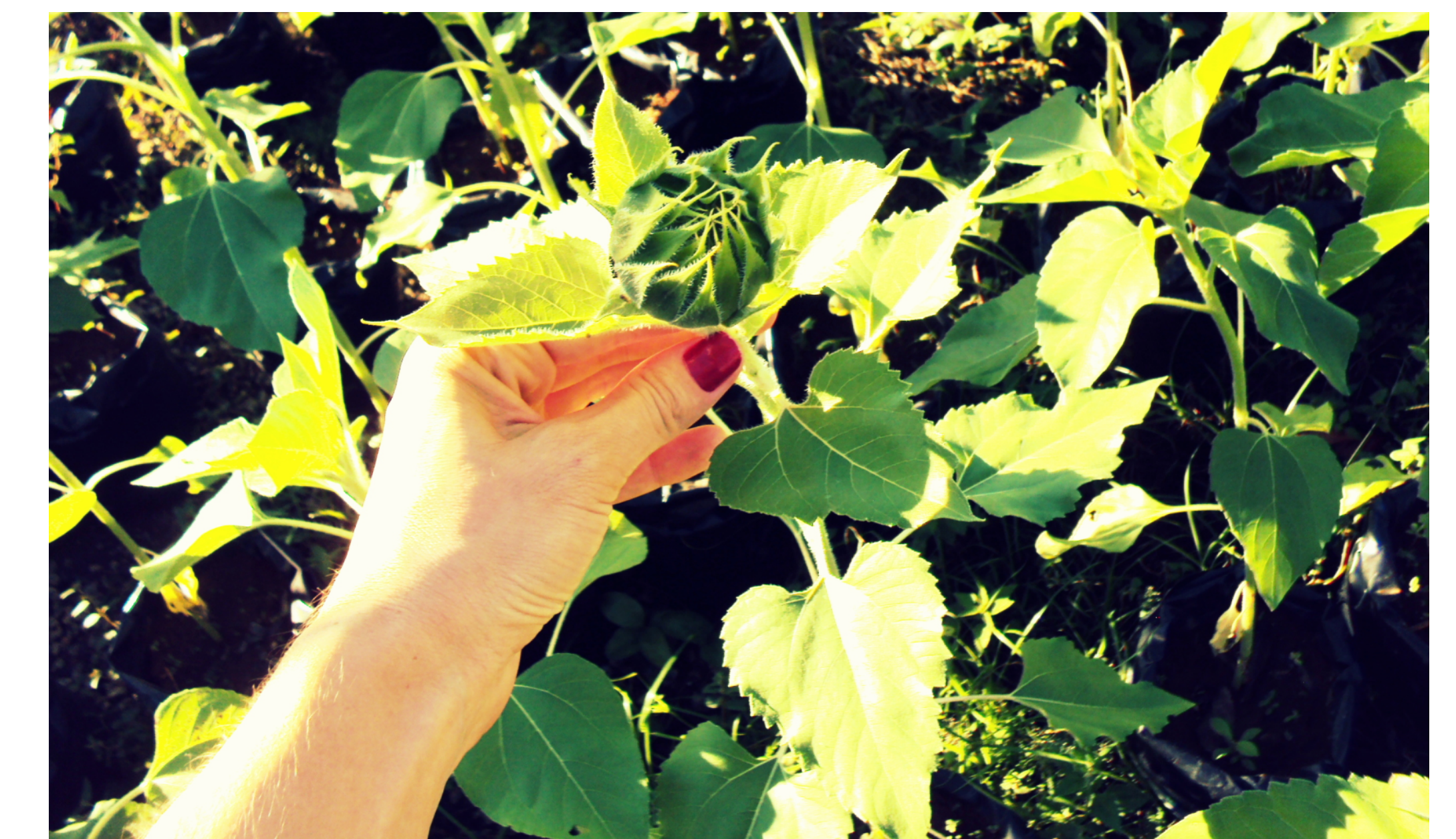


Figure 3. Stages of sunflower development.

Conclusion

- ✓ The results indicated that 13.25 mg B dm⁻³ is necessary to maximum sunflower production.

Acknowledgments

