

Evaluation of Three Cultivars of Glandless Cotton in New Mexico.



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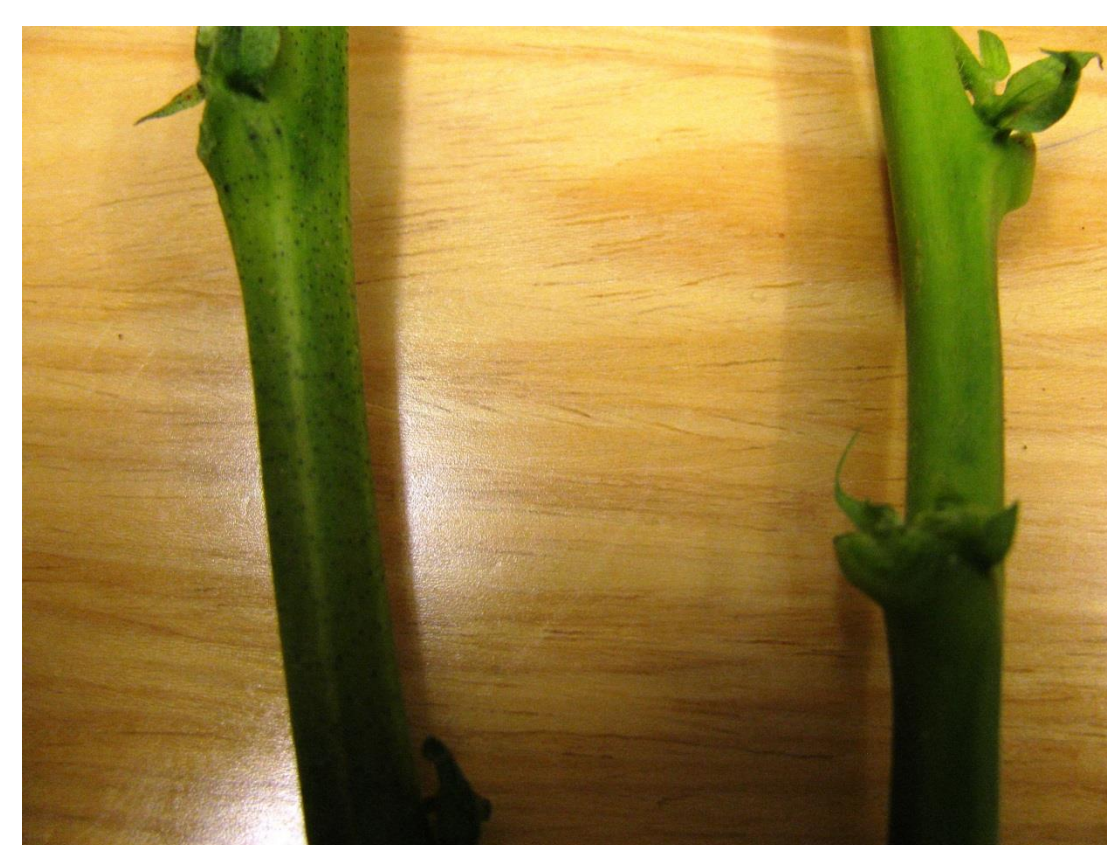
Introduction

Seeds from the glandless cotton, in contrast to those from conventional cotton, have negligible quantities of gossypol, a phenolic aldehyde that is toxic to organisms with a simple stomach. Glandless cottonseed has the potential to be used for developing food and feed products that have been limited in conventional cottonseed which is generally fed to ruminants in regulated quantities.

However, due to greatly reduced gossypol content in the glandless cotton plant tissues, these plants are more susceptible to chewing and sucking insects (Benedict et al., 1977; Jenkins et al., 1966). Some instances of vertebrate pest damage to the opened bolls have also been reported. Consequently, the glandless cotton cultivars are more challenging to produce especially in environments with greater pest pressure. Most cotton growing areas of New Mexico generally have low pest pressure, and may provide an ideal environment for growing glandless cotton.

Objectives

To evaluate and compare the growth and yield of three glandless cotton cultivars for their adaptability to the environment of New Mexico.



Stems of conventional cotton (left) and glandless cotton (right)

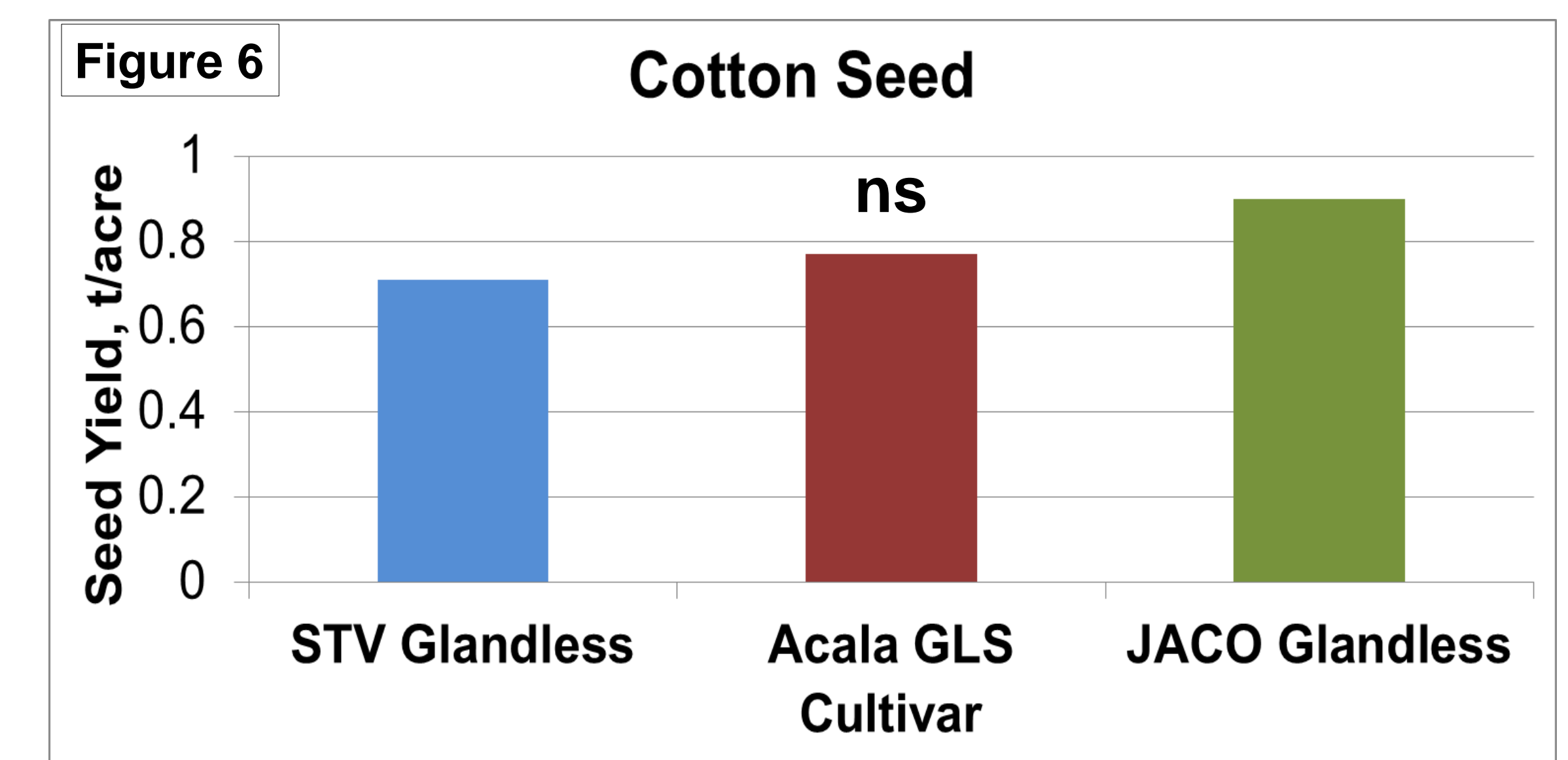
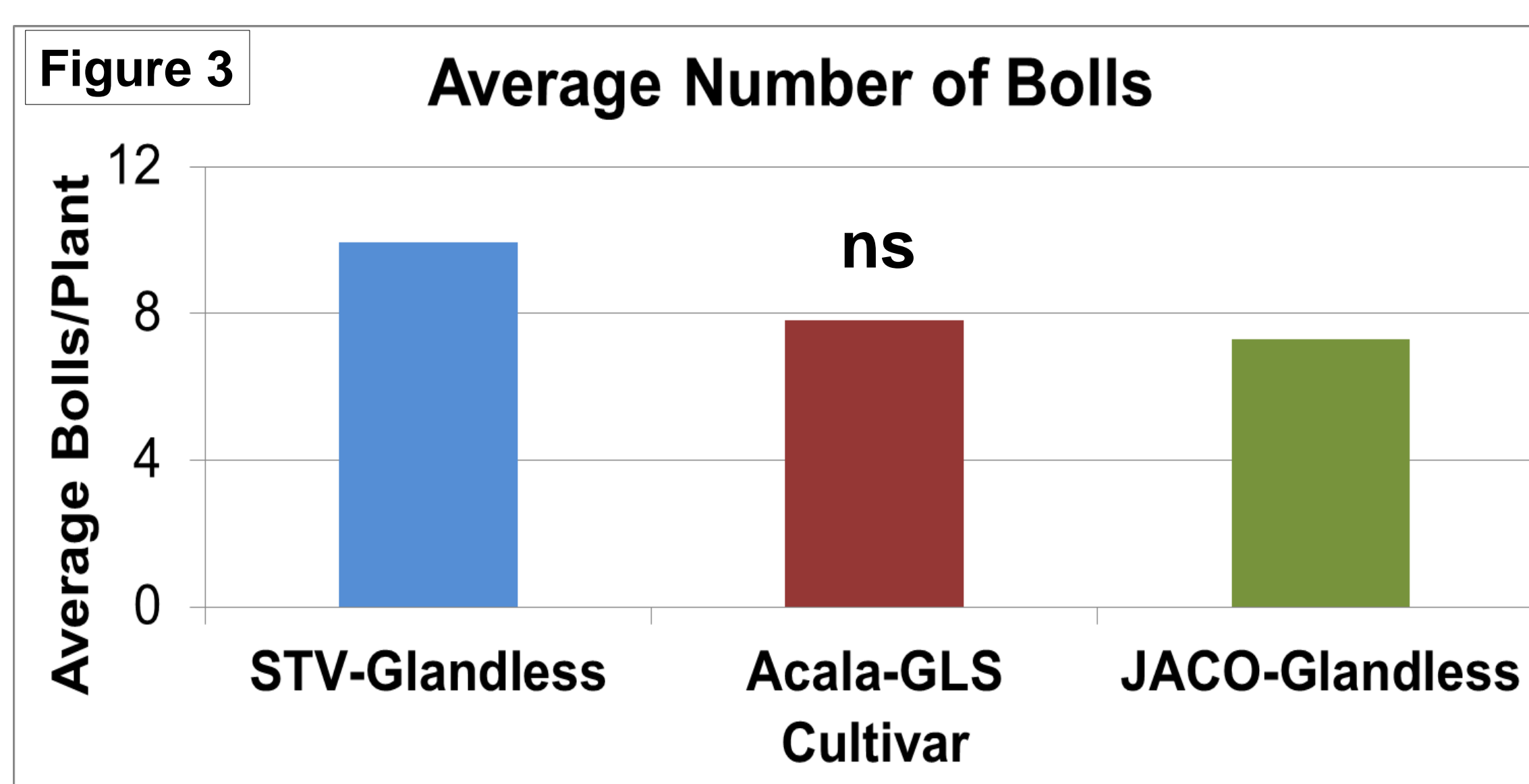
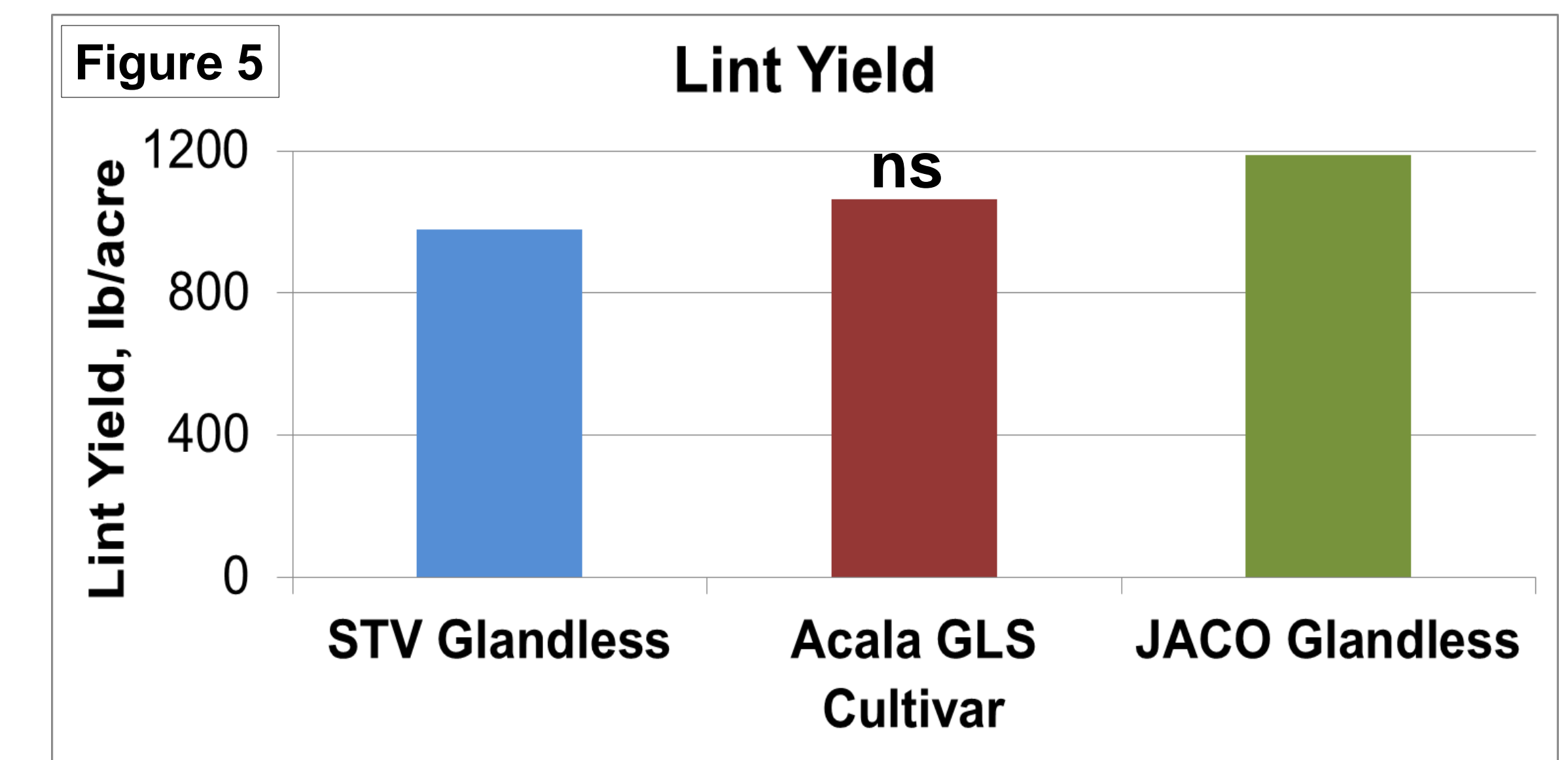
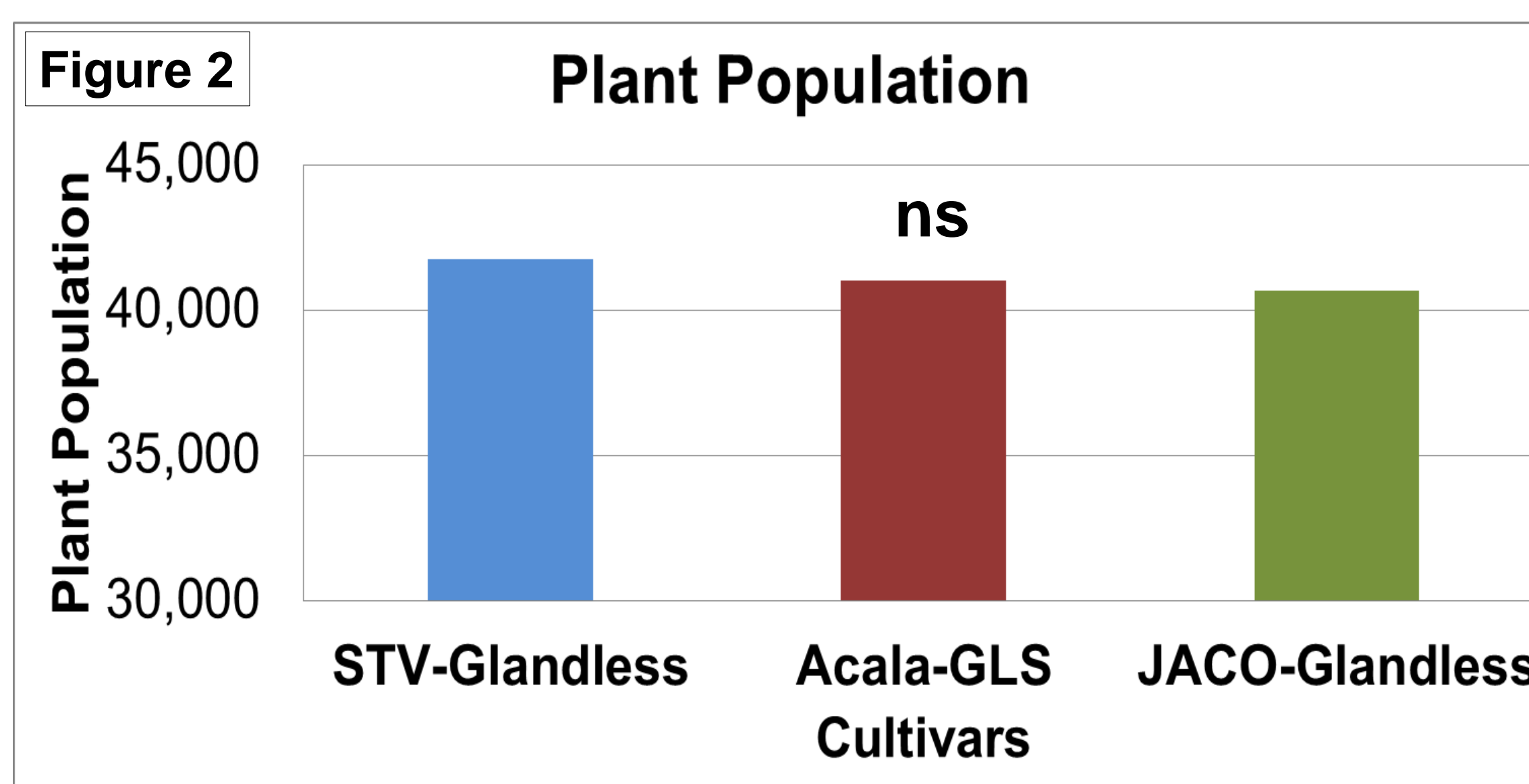
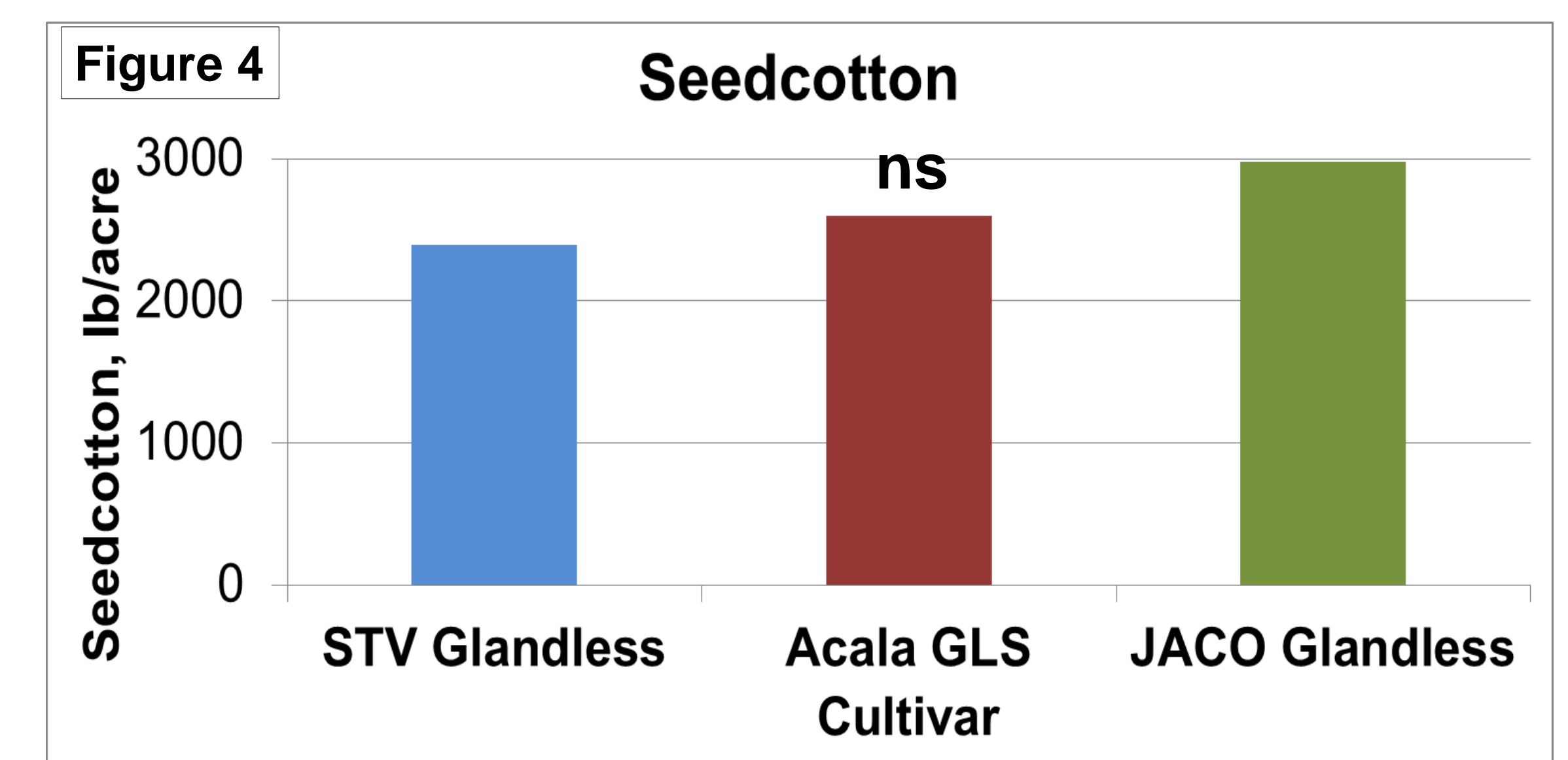
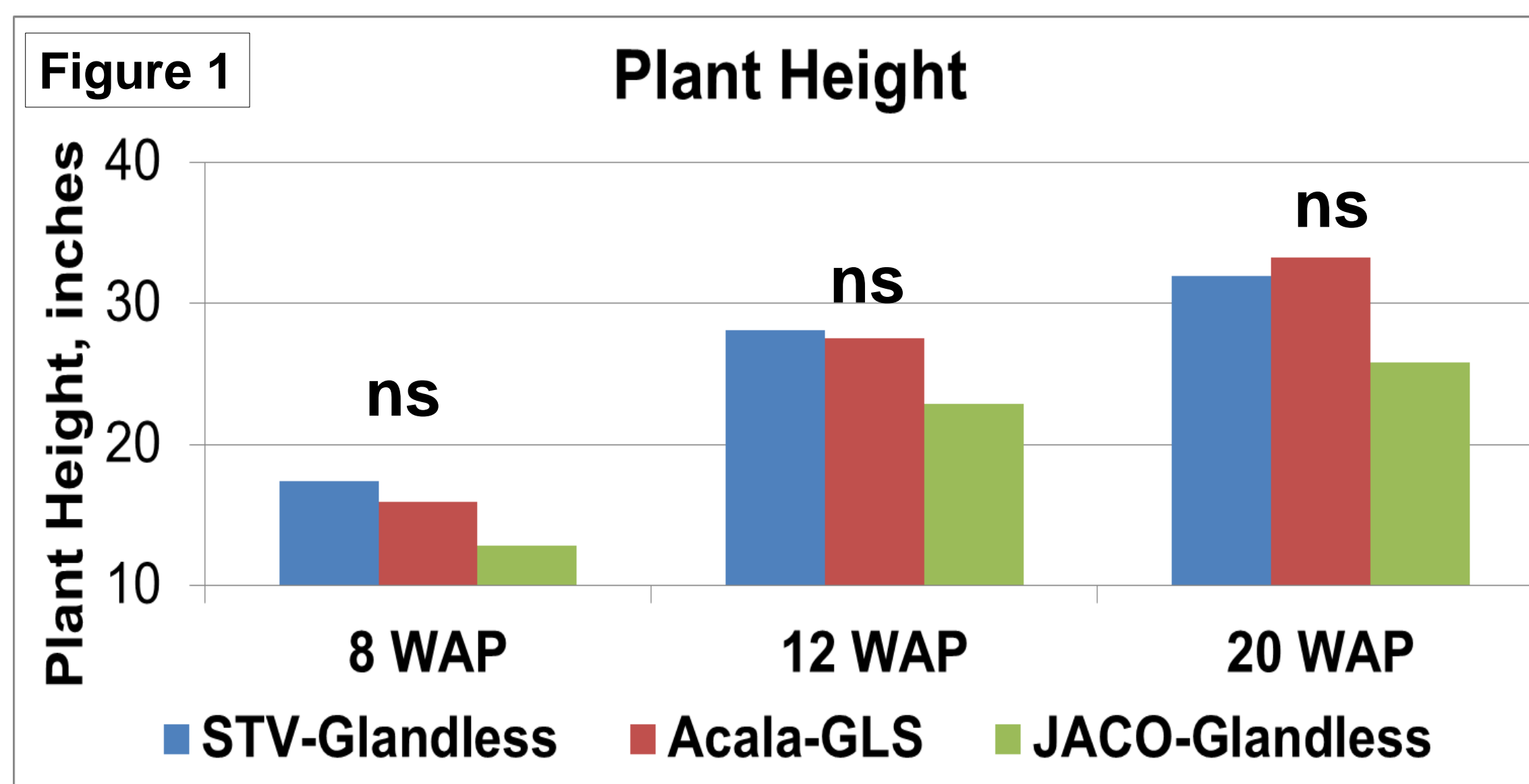
Glandless cotton field in Las Cruces, NM

Methods

Agronomic Evaluation

- Trials involved three glandless cultivars (Acala-GLS, STV-Glandless and JACO Glandless).
- Site: NMSU Leyendecker Plant Science Center in Las Cruces.
- Row Spacing: 40 inches spaced beds.
- Irrigation: Furrow irrigated.
- Cultural practices: According to those prescribed by New Mexico State University.
- Planting dates: April 2011
- Harvest: Cotton was picked in November, 2012.
- Experimental design: Randomized complete block design with four replicates.
- Data collection: 25 matured bolls were collected from each plot (2 bolls/plant) for seed/lint ratio and fiber quality determination. Quantitative field yield was assessed on each plot by harvesting 2 rows, 20 feet long.

Results



- The three cultivars of glandless cotton evaluated were not significantly different in plant height at 8, 12 and 20 weeks after planting. However, the trend shows the JACO-Glandless to be a relatively shorter cotton cultivar than the rest (Figure 1).
- Plant population and average number of bolls between the three cultivars were not significantly different (Figures 2-3). All the glandless cultivars tested were all well established, with no noticeable signs of pests or diseases attacking the seedlings.
- Seedcotton, lint and cotton seed yields were not significantly different among the glandless cultivars tested (Figures 4-6). Lint yield for STV-Glandless was 979 lb/acre; for Acala-GLS was 1063 lb/acre and for the JACO-Glandless, it was 1189 lb/acre. Seed yield was 0.71 t/acre for STV-Glandless, 0.77 t/acre for Acala-GLS and 0.90 t/acre for the JACO-Glandless.



STV Glandless at Harvest



Acala-GLS at Harvest



JACO-Glandless at Harvest

Conclusions

- First year of study indicates that the three glandless cultivars that were tested appear promising within the New Mexico environment.
- More years of trials are needed to evaluate the agronomic performance of these glandless cultivars and possibly fine-tune the cultural practices that will make them more productive in New Mexico.

References

- Benedict, J.H., Leigh, T.F., Tingey, W. and Hyer, A.H. (1977) Glandless Acala cotton: more susceptible to insects. *Calif. Agric.* 31 (4):14-15.
- Jenkins, J.N., Maxwell, F.G. and Lefever, H.N. (1966) The comparative preference of insects for glanded and glandless cotton. *J. Econ. Entomo.* 59: 352-356.