



STARS



Strip Testing At Regional Sites

A Summary of Soybean Planting Population Trials Conducted in Michigan in 2009 and 2010

1/26/11 Data Update

STARS - Overview

The STARS program (strip testing at regional sites) provides Michigan soybean producers with a statistically sound method for evaluating the yield and income benefits of new products and/or management practices. Producers across Michigan identify new products or practices of interest and conduct field scale research trials using a common protocol. The data is collected, subjected to statistical scrutiny, summarized across locations and years and shared with soybean producers. The STARS program must adhere to the following guidelines to be successful:

- ⇒ Use an independent third party evaluator (MSU Extension)
- ⇒ Be producer focused/driven/friendly
- ⇒ Use similar protocol across the state and all trials
- ⇒ Perform statistical analysis and interpret the data
- ⇒ Share group data while keeping individual data confidential

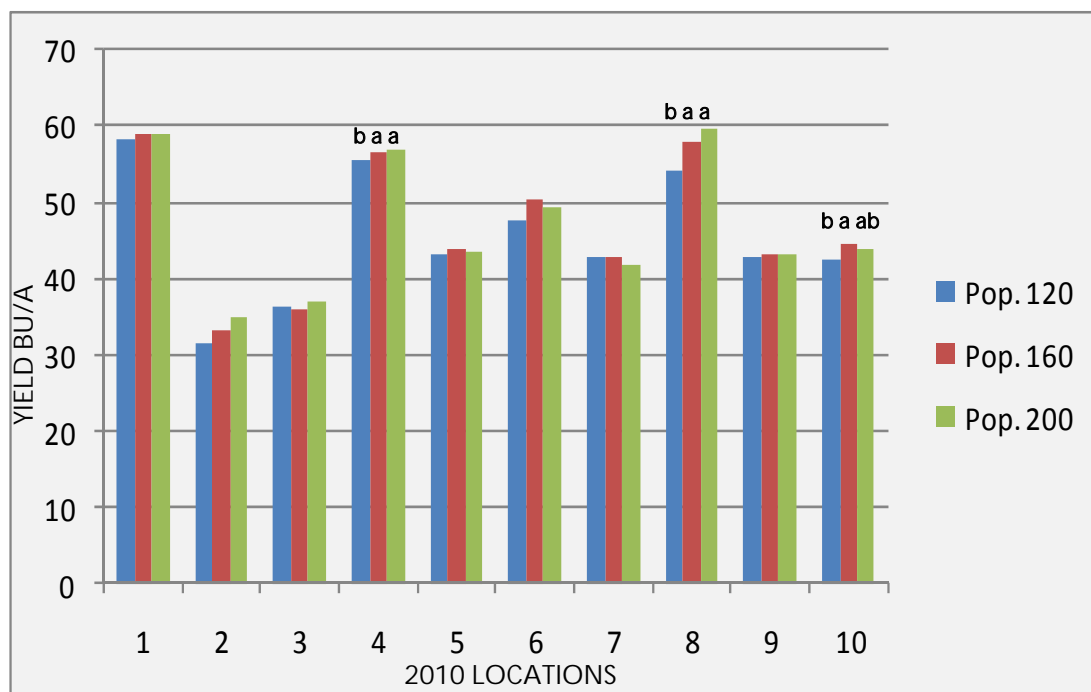


2010 STARS Planting Population Trials

As soybean seed costs increase, there is a growing concern for population research needs. Unlike corn, in soybean we don't normally see a consistent correlation between increased stands and yield. This along with increasing seed costs raises the question of ideal soybean populations to attain an economic yield level.

In the 2010 STARS planting population trials, planting populations of 120,000, 160,000, and 200,000 were evaluated for yield. Yield data from four replications of each population at each site were statistically analyzed for significance. With this initial effort, we were not able to evaluate other agronomics such as row space, tillage, date of planting, etc. As the number of locations increase in future research, further data evaluation may be possible.

Figure 1. 2010 Individual Planting Population Trial Results



The yields for the 160,000 population were significantly higher than the yields for the 120,000 population at three locations and yields for the 200,000 populations were significantly greater than the 120,000 population at two locations. The yields for the 160,000 and the 200,000 population were not significantly different.

STATISTICAL DATA INFORMATION

Coefficient of Variation (C.V.):

- ⇒ Expresses the percent variation in the trial not attributable to the treatments
- ⇒ Any individual plot data with a C.V. over 10% is not included in the summary data

Least Significance Difference (LSD_{0.05}):

- ⇒ This is normally expressed at the 0.95% level which means with 95% accuracy, when applied to the yield data, one can be assured the difference is attributable to the treatment.
- ⇒ With a LSD of 2.0 bu/ac and the treatment yields 55.0 bu/ac with the control yield of 54.0 bu/ac, statistically there is no yield difference due to the treatment.
- ⇒ Different letters (a, b, c, etc.) identify statistically different yields. When the same letter is used for two or more treatment yields, the difference between them is not statistically significant.

For additional information on the 2009 sites, visit www.michigansoybean.org.



STATEWIDE Planting Population Data Summary

Figure 2. 2010 Planting Population Trial Results (10 locations)

2010 DATA

C.V.= 3.8%

LSD_{0.05} = 0.8 bu/ac

Figure 2 indicates that the 160,000 and 200,000 planting populations were significantly different than the 120,000 planting population when the 2010 locations were combined.

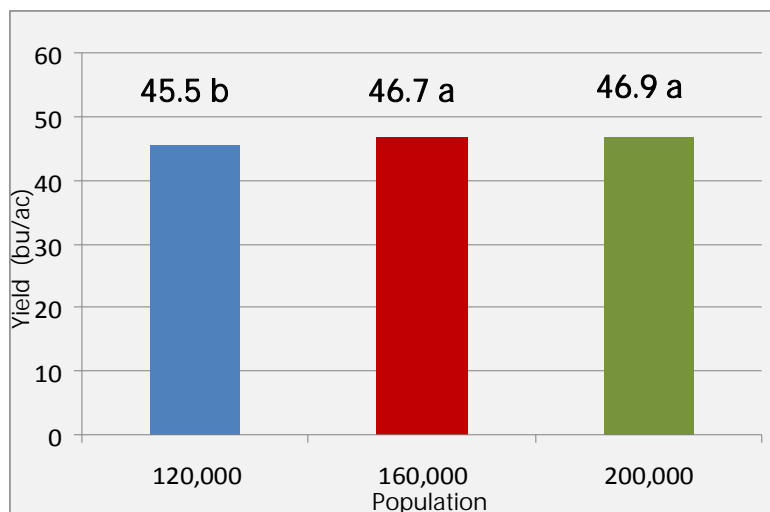
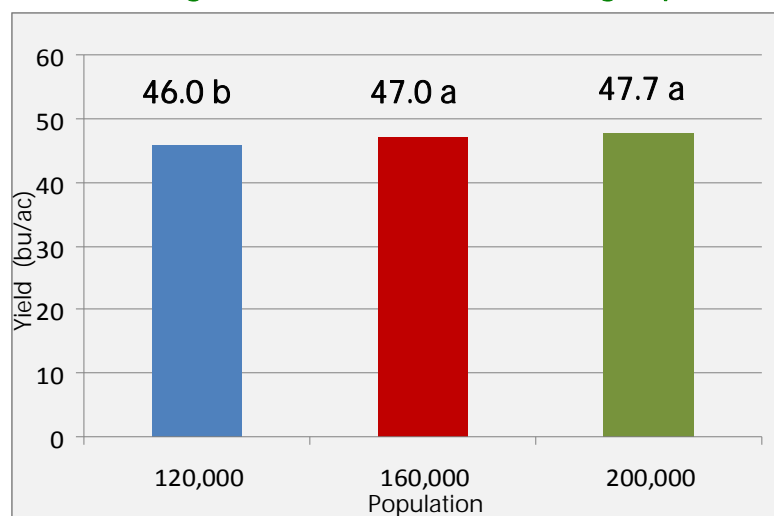


Figure 3. 2009 & 2010 Planting Population Trial Results (16 locations)



2009 & 2010 DATA

C.V.= 4.7%

LSD_{0.05} = 0.8 bu/ac

Figure 3 indicates that the yields for the 160,000 and the 200,000 populations were significantly higher than the 120,000 population yield when averaged across all locations and years. The yield for the 200,000 population was not significantly higher than the 160,000 population.

Table 1. Planting Population Effects on Soybean Yields and Income (16 locations in 2009 & 2010)

	120,000	160,000	200,000
Average yield (bu/acre)	46.0	47.0	47.7
Gross income (\$/acre)	\$528	\$538	\$546
Seed cost (\$/acre)	\$43	\$57	\$71
Gross minus seed (\$/acre)	\$485	\$481	\$475

Assumptions: Soybean market price = \$11.45 per bushel (USDA balance sheet)

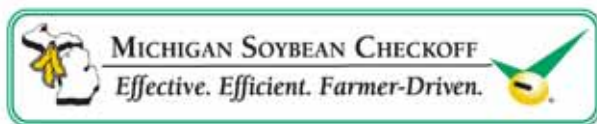
Soybean seed cost = \$50 per 140,000 seeds



2010 STARS Planting Population Trial Locations

Even though plant populations appear to have the most interest from growers, it is difficult to get cooperators for our STARS trials. The 2010 cooperators devoted considerable time and effort to provide this data for which we are thankful. More locations are being sought for 2011 which will provide better data. If we get enough locations in 2011, we can identify the most profitable planting population for different row spacings and planting equipment.

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Extension

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