



Perspectives on Cotton Seed Size in Cotton Varieties



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July 22, 2019



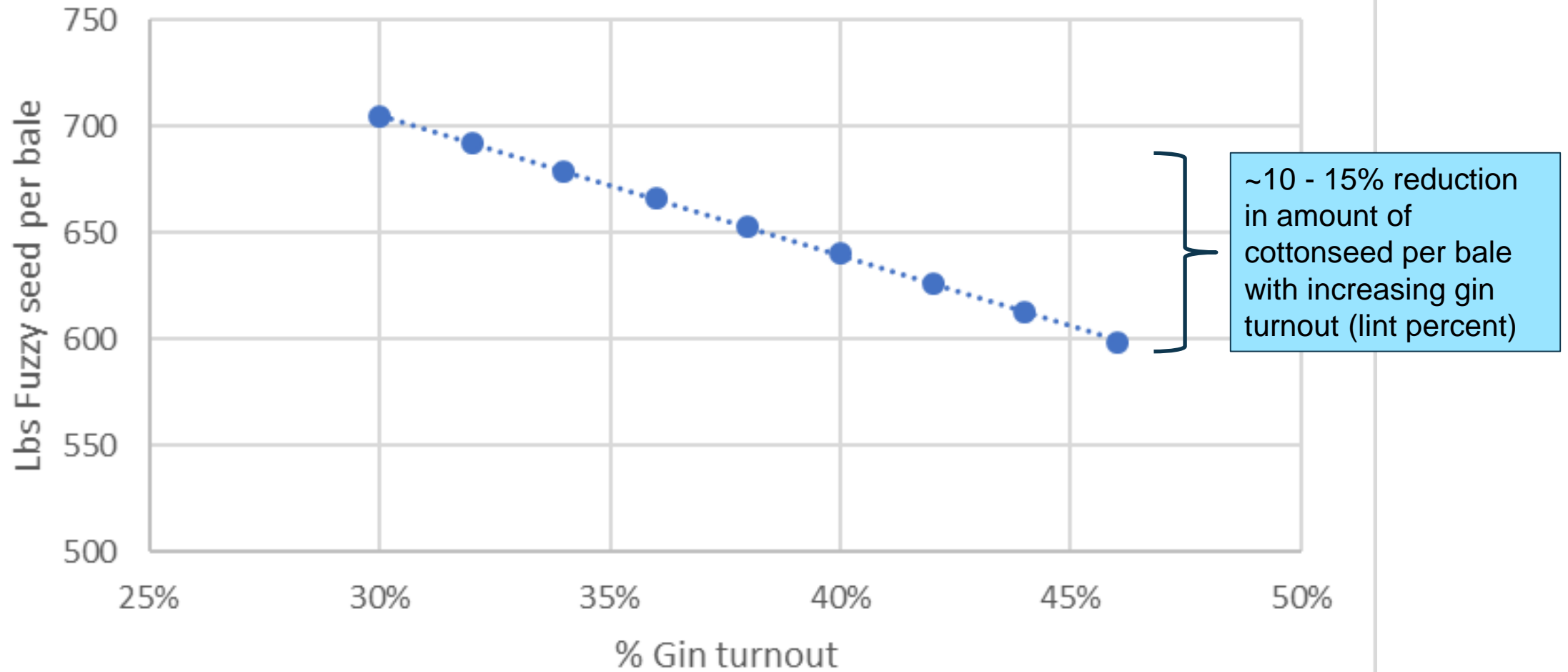


Outline

- // Where is the most value in the seedcotton going through the gin?
- // What are the yield components that are driving yield in cotton?
 - // Have these yield components changed?
- // How should the industry respond?
- // Trends from the NCVT
 - // Lint Percent
 - // Seed Index
- // Yield Components in Bourland OVT Data
 - // Seed per acre
 - // Lint percent
 - // Fiber / seed
 - // Fiber / seed surface area



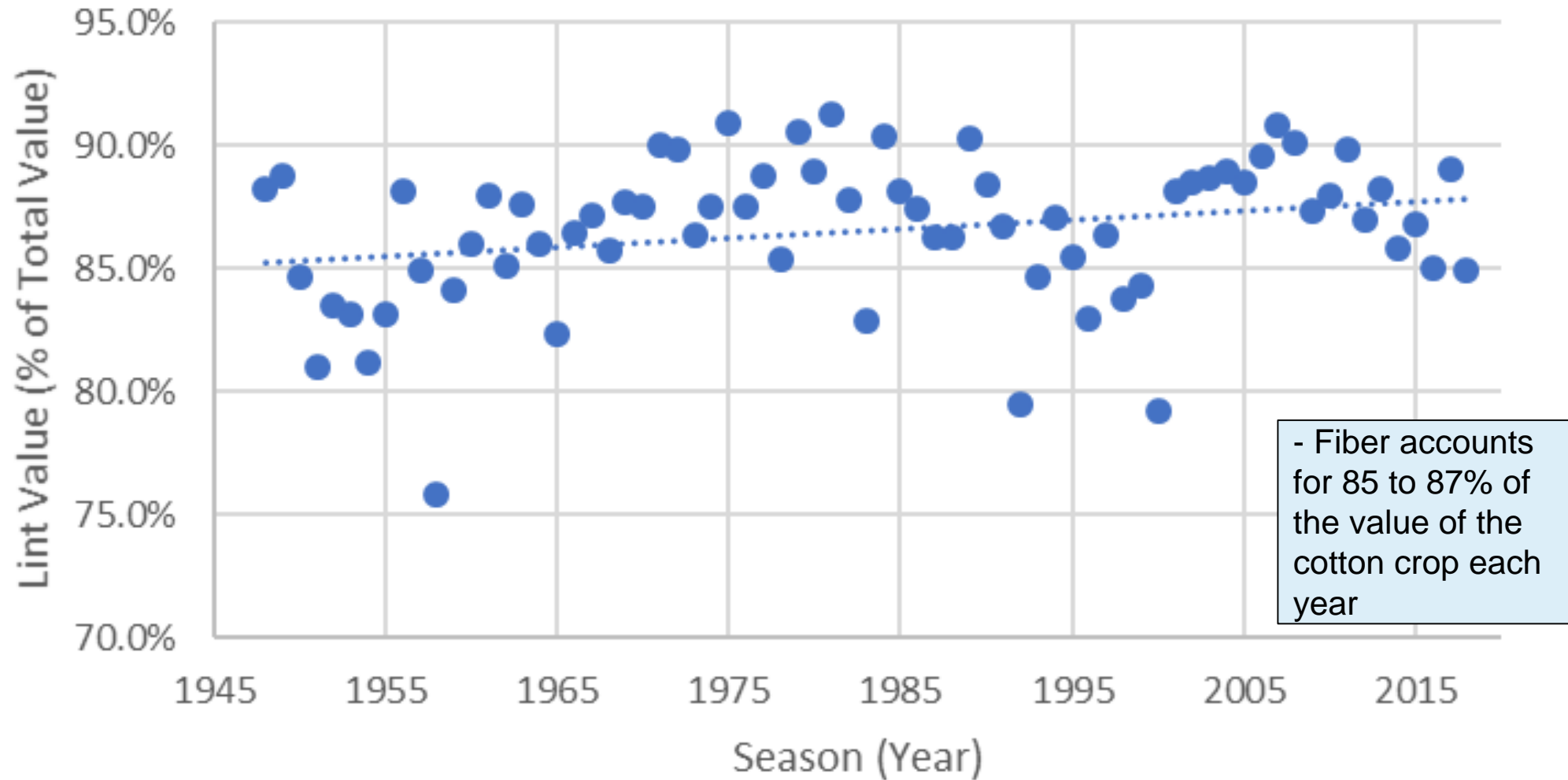
Estimated Pounds of Fuzzy Cottonseed per bale



Note: assuming a standard trash level across all turnout levels



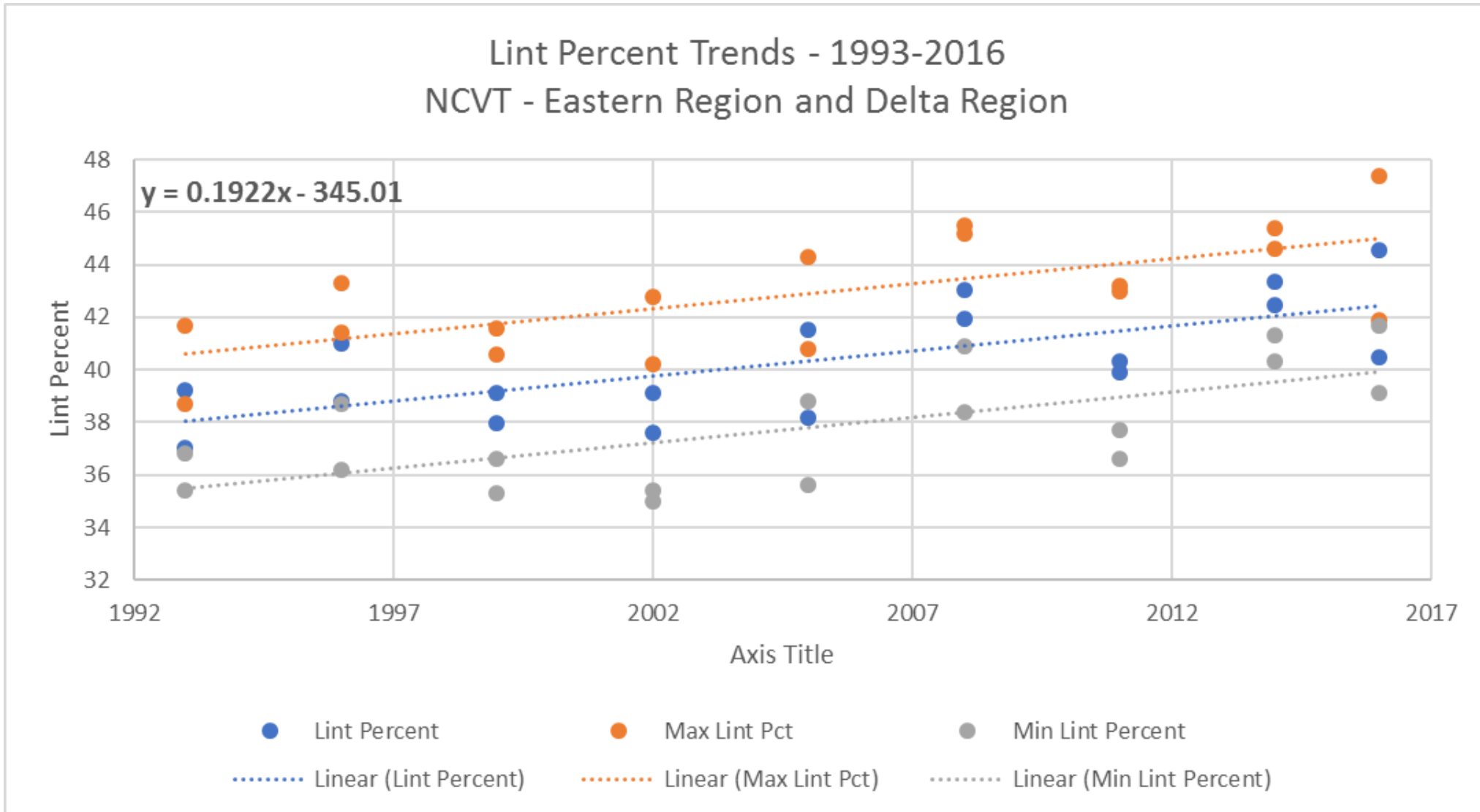
US Cotton Crop Lint Value (% of total value)



Source: <https://quickstats.nass.usda.gov> (Cotton & Cottonseed Production measured in \$ / year)



Lint percent trends – 1993-2016



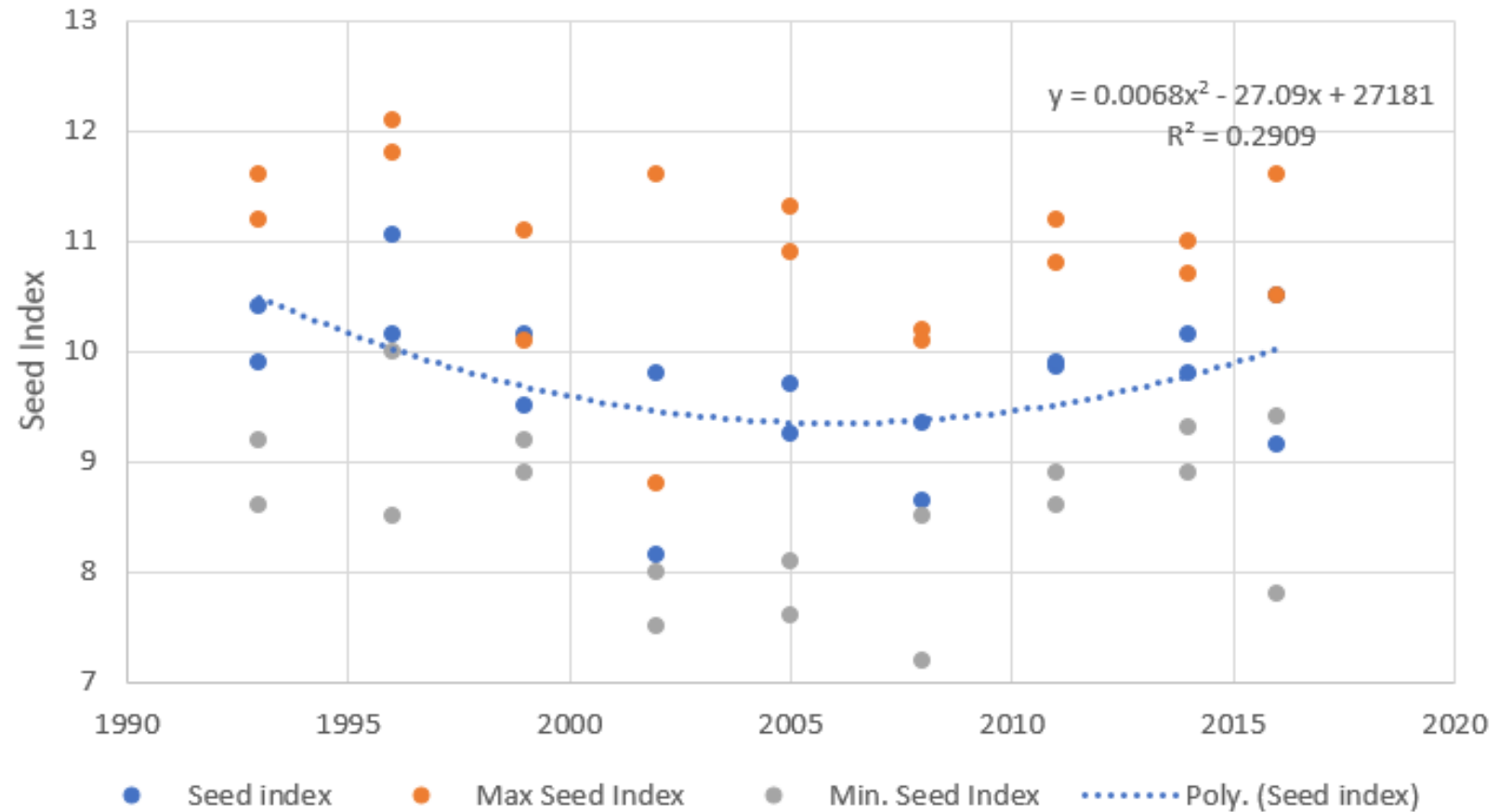
Source: <https://www.ars.usda.gov/southeast-area/stoneville-ms/crop-genetics-research/docs/national-cotton-variety-test/>



Seed index trends: 1993-2016

National Cotton Variety Test

Seed Index Trends 1993 - 2016
Eastern and Delta Regions - NCVT



Source: <https://www.ars.usda.gov/southeast-area/stoneville-ms/crop-genetics-research/docs/national-cotton-variety-test/>



Yield components vs. Lint Yield

University of AR OVT Data – 2017- 2018

// 2017 Summary across 5 locations

// Seed per acre

// # 1 yielding variety with #1 seed per acre

// Fiber Density

// #2 yielding variety with #1 fiber density

// 2018 Summary across 5 locations

// # 1 yielding variety

// # 3 in fiber density

// # 3 in # seeds per acre

// # 2 yield variety

// #1 in # seeds per acre

// **Analysis on the following yield components**

// Fiber Density & Fiber per seed

// # Seeds per Acre

// Seed Index

// Lint Index

// Lint Fraction

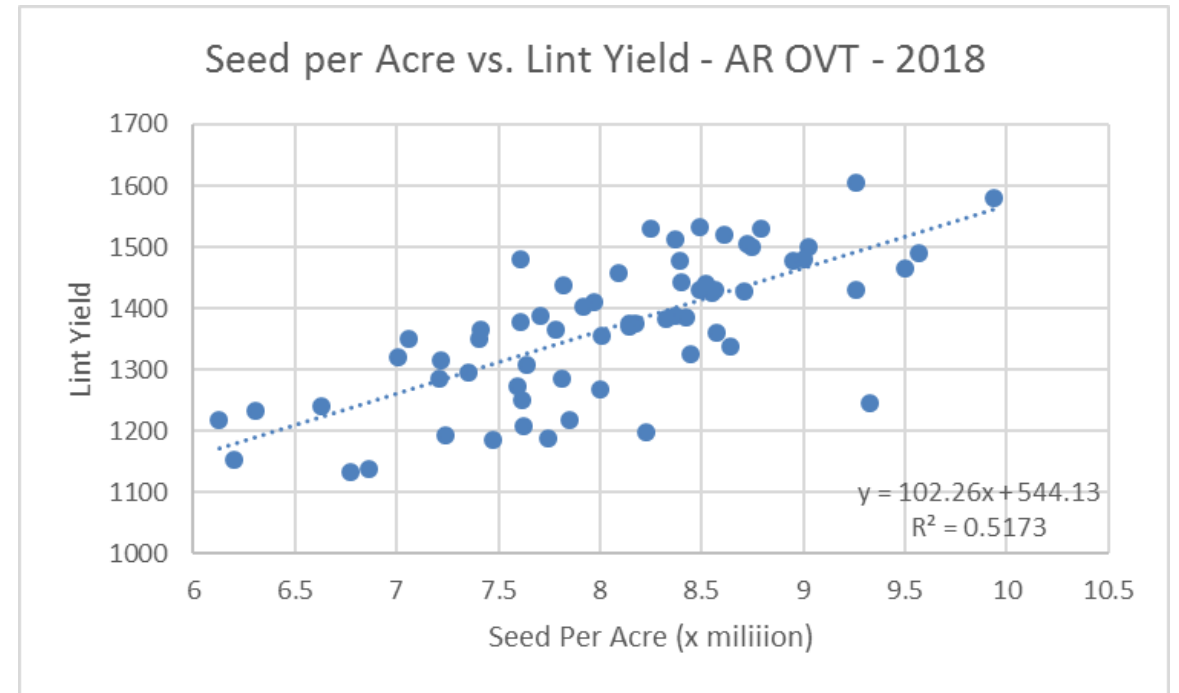
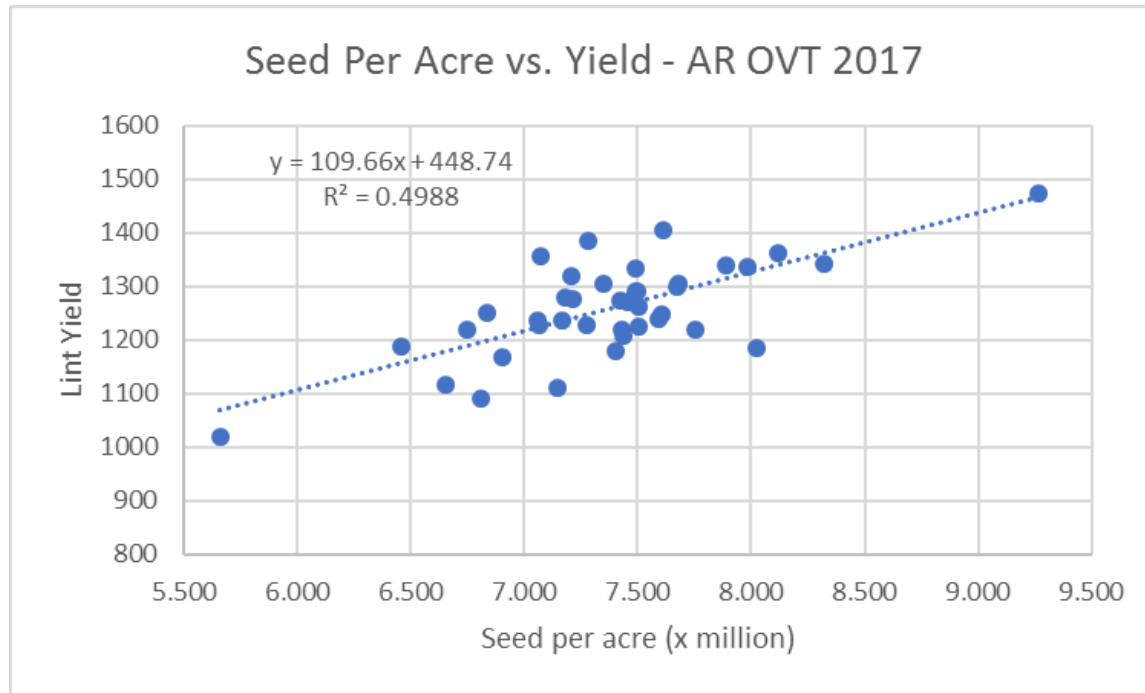
Data Sources:

- Bourland, et al., 2017. Arkansas Cotton Variety Test 2017. Arkansas Agricultural Exp. Station, Research Series 650.
- Bourland, et al., 2018. Arkansas Cotton Variety Test 2018. Arkansas Agricultural Exp. Station, Research Series 658.



Yield Components (# Seed per Acre) vs. Lint Yield

University of Arkansas - 2017



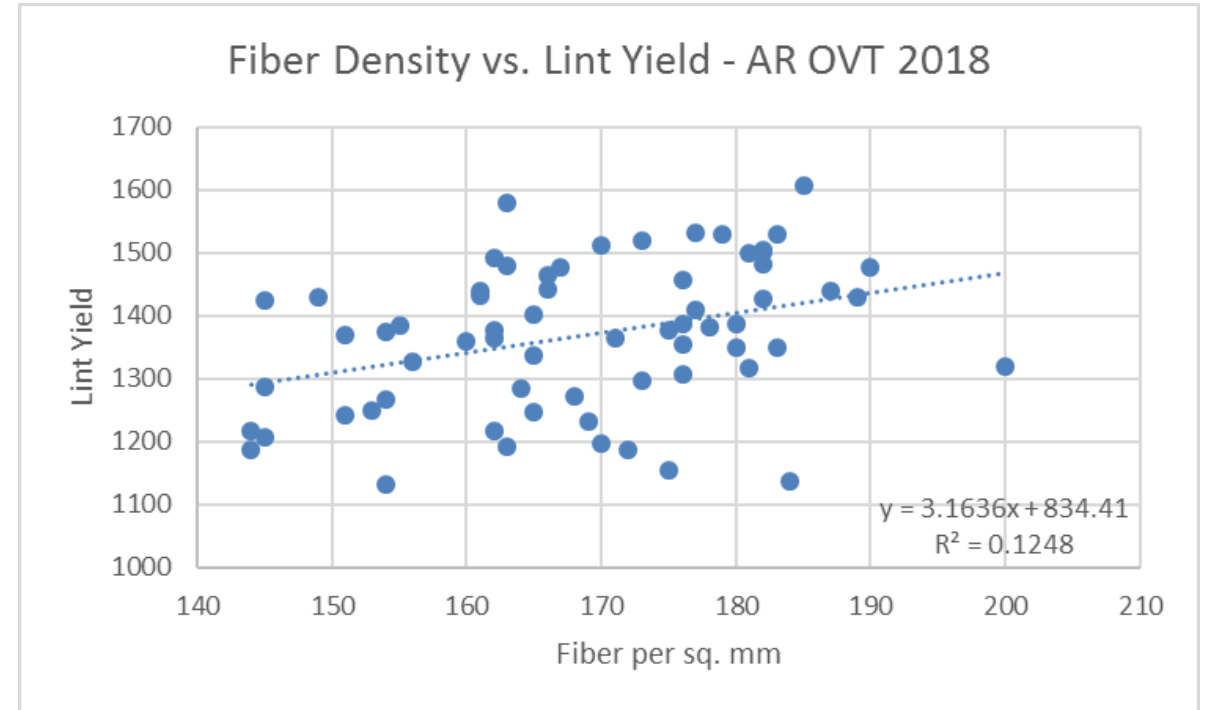
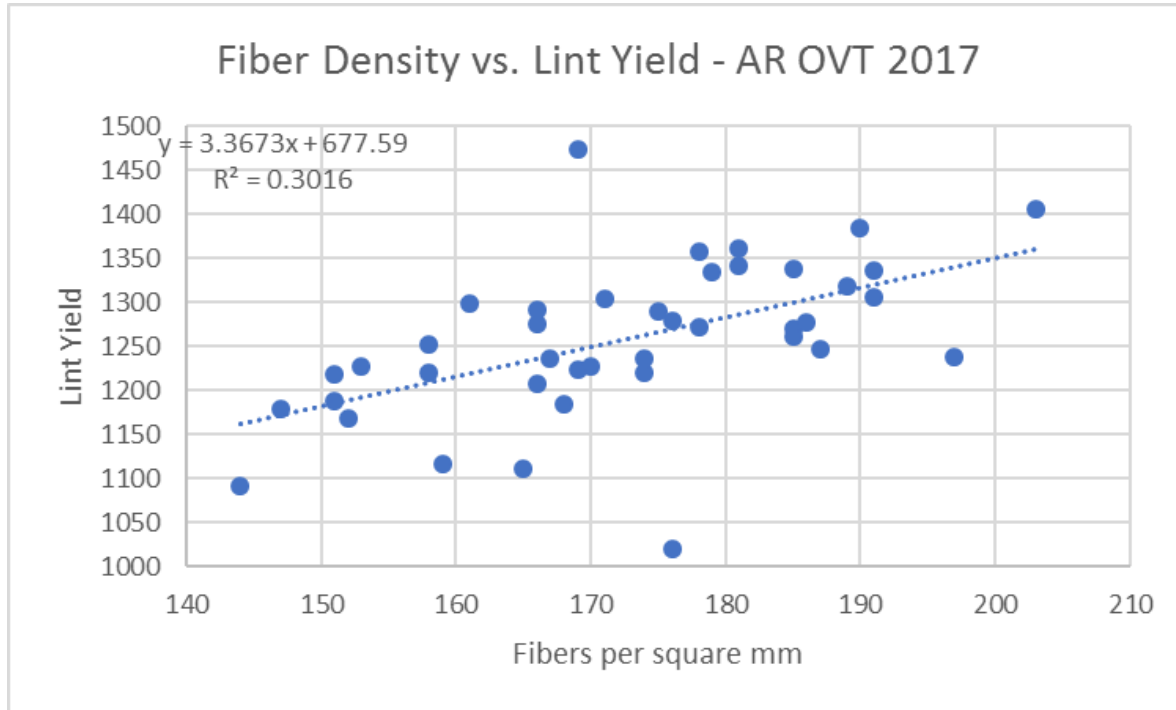
Data Sources:

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- Bourland, et al., 2018. Arkansas Cotton Variety Test 2018. Arkansas Agricultural Exp. Station, Research Series 658.



Yield Components (Fiber Density) vs. Lint Yield

University of Arkansas - 2017



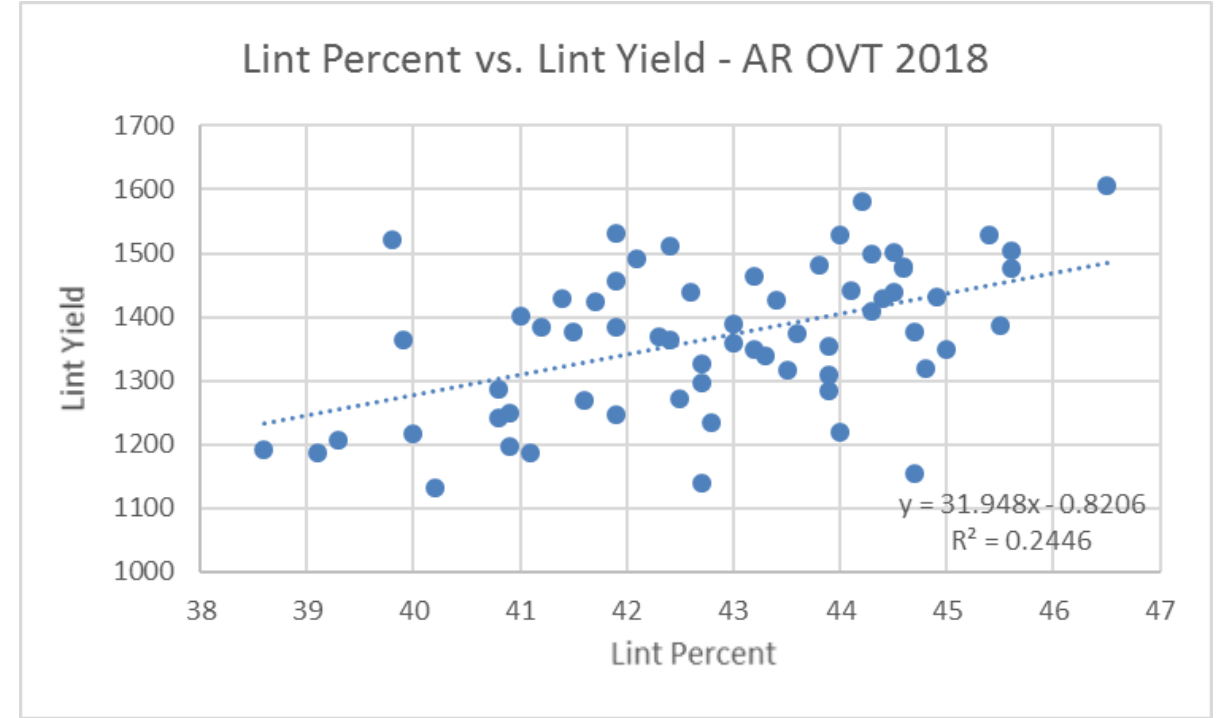
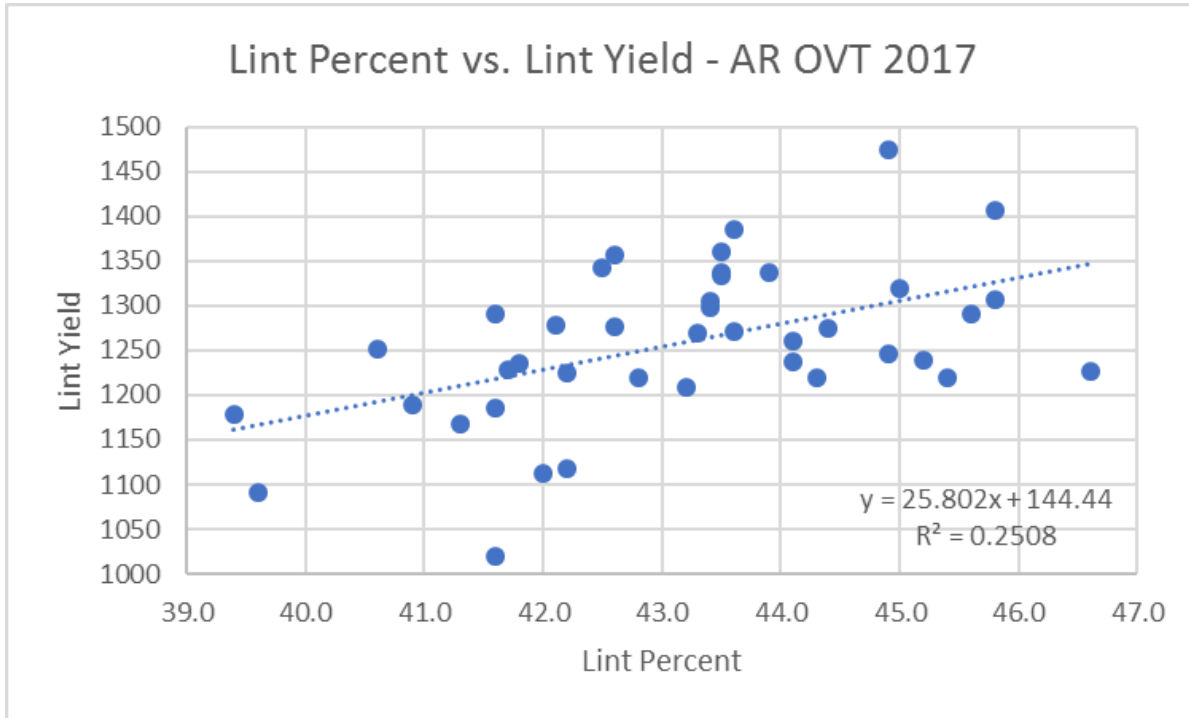
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Lint Percent vs. Lint Yield

AR OVT 2017 & 2018



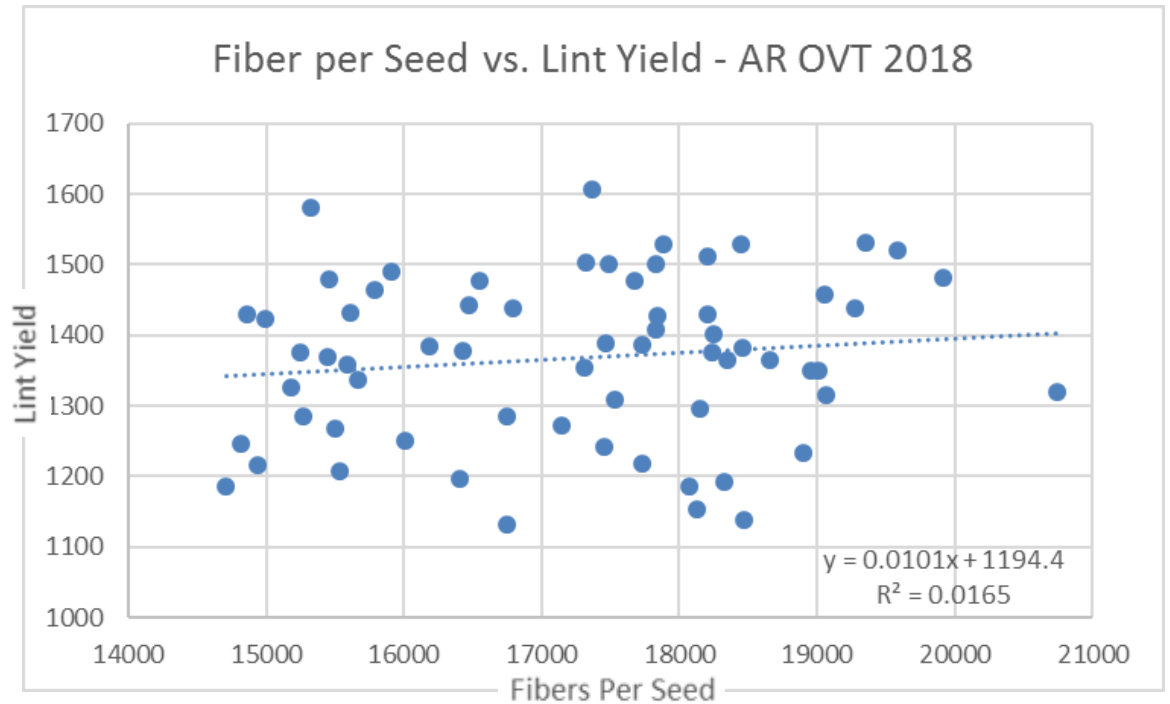
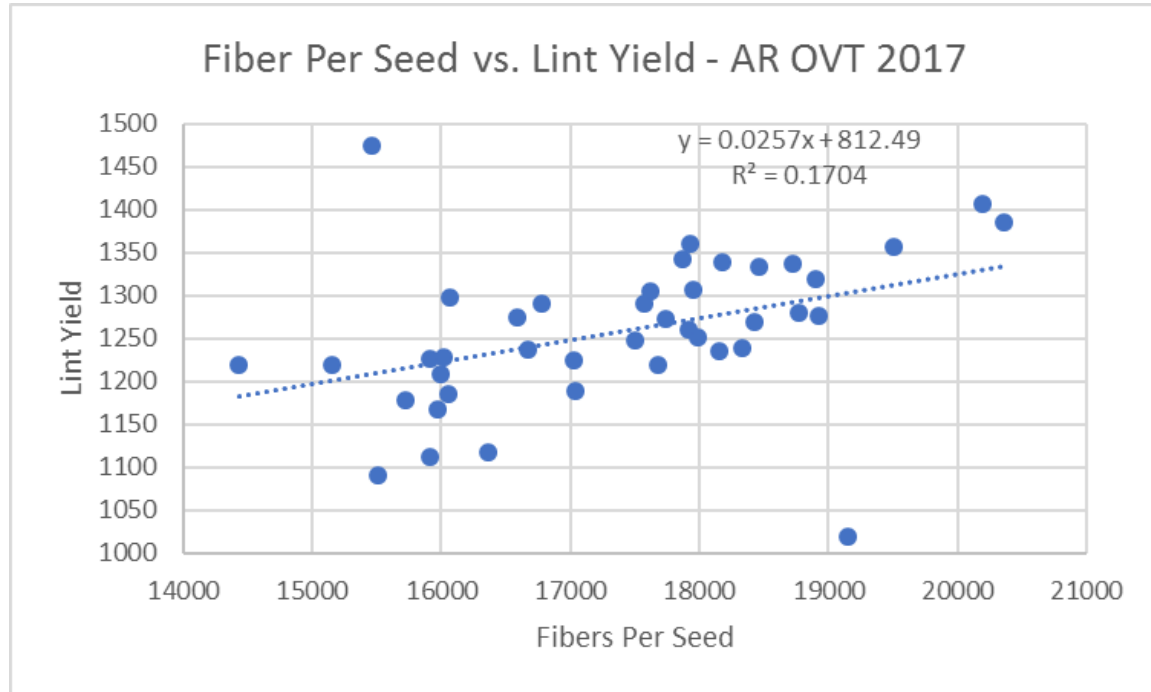
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Yield Components vs. Lint Yield

University of Arkansas - 2017



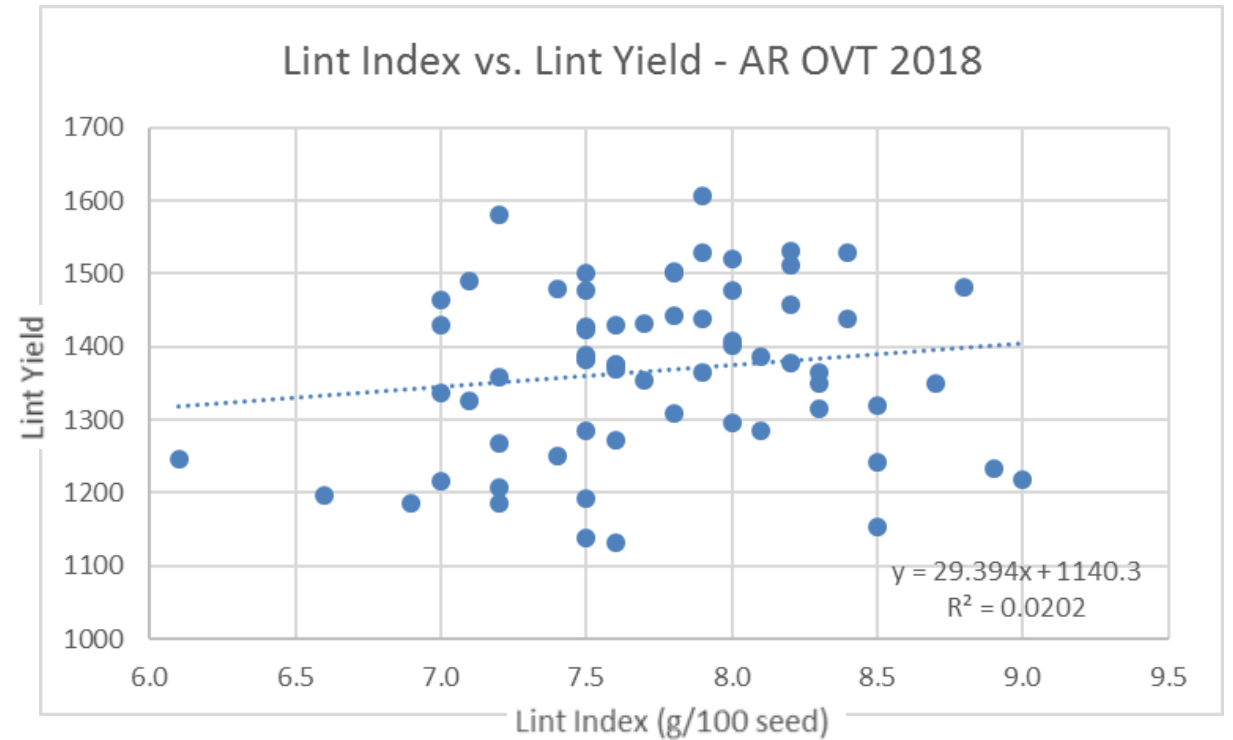
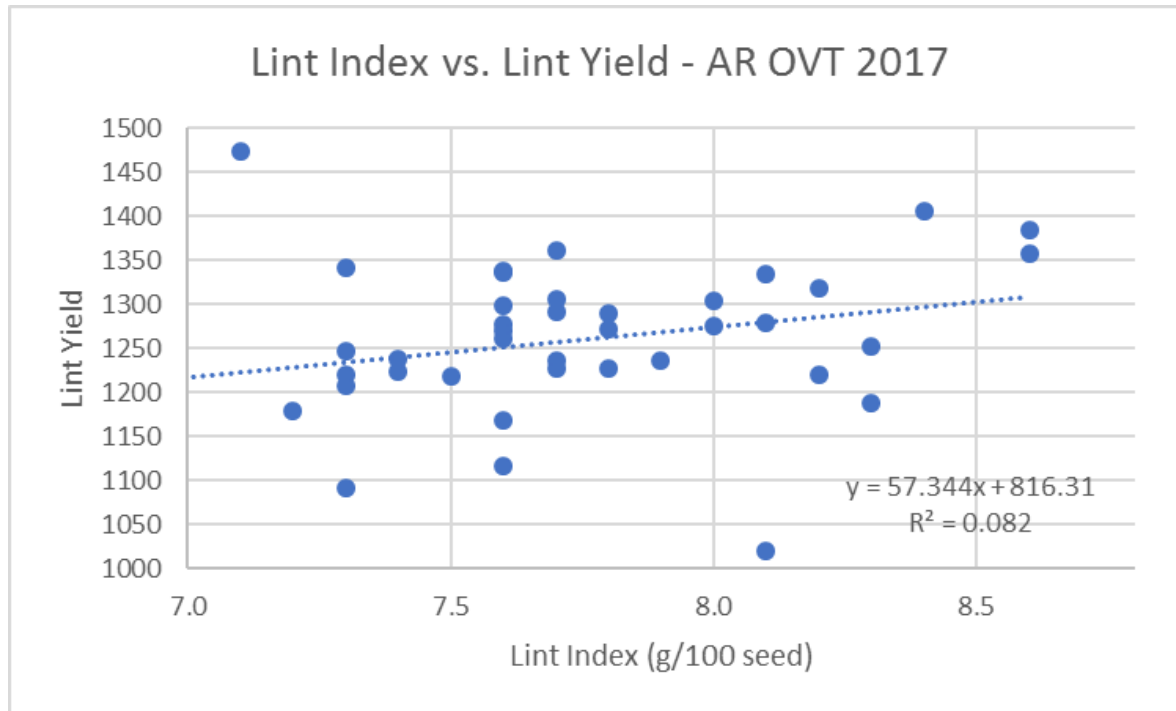
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Yield Components vs. Lint Yield

University of Arkansas - 2017



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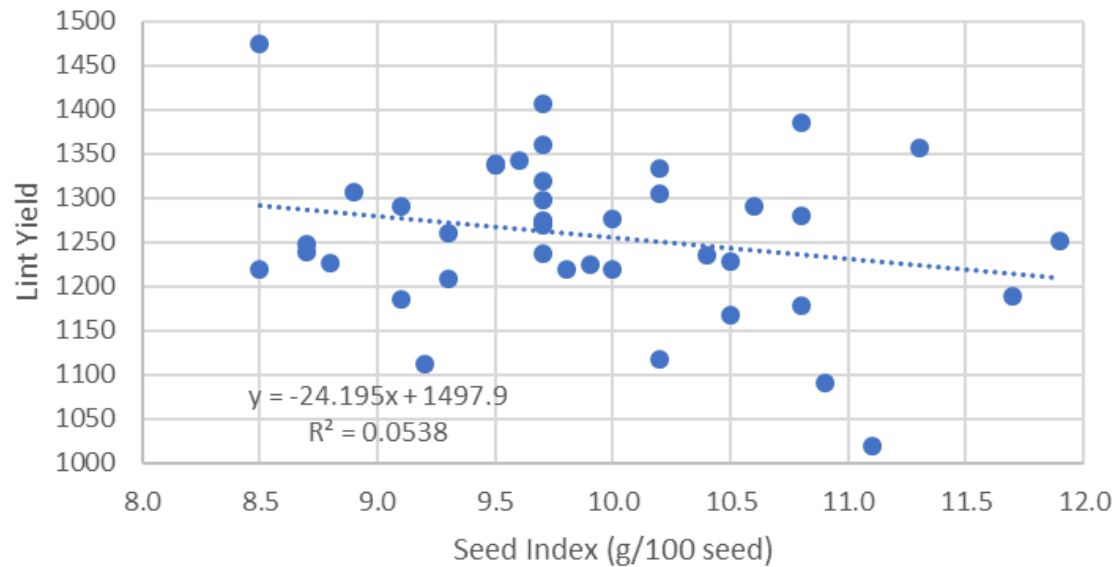
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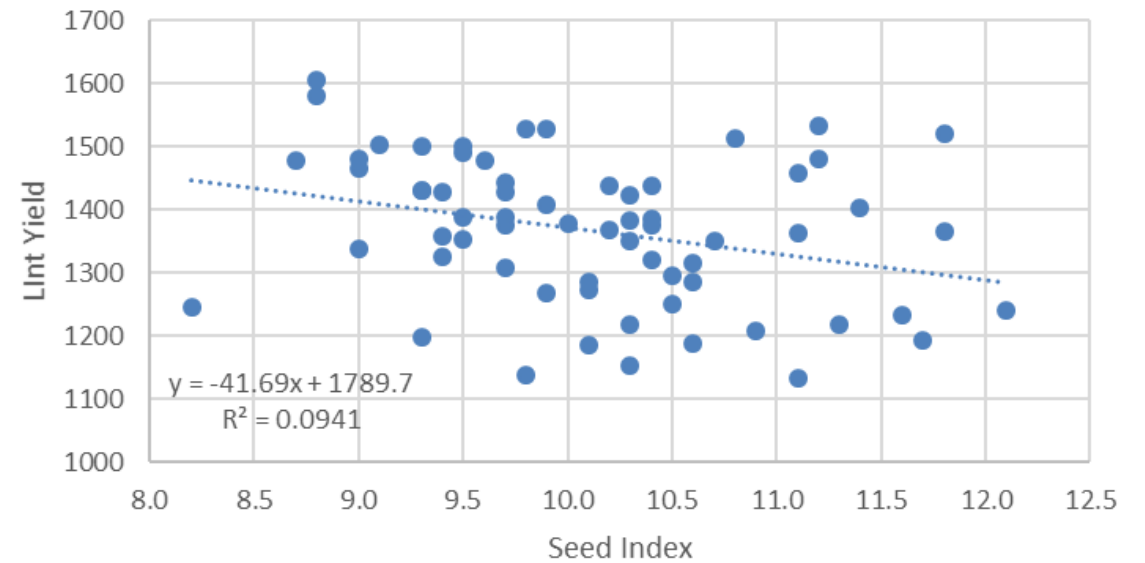
Yield Components (Seed Index) vs. Lint Yield

AR OVT – 2017& 2018

Seed Index vs. Lint Yield - AR OVT 2017



Seed Index Vs. Lint Yield - AR OVT 2018

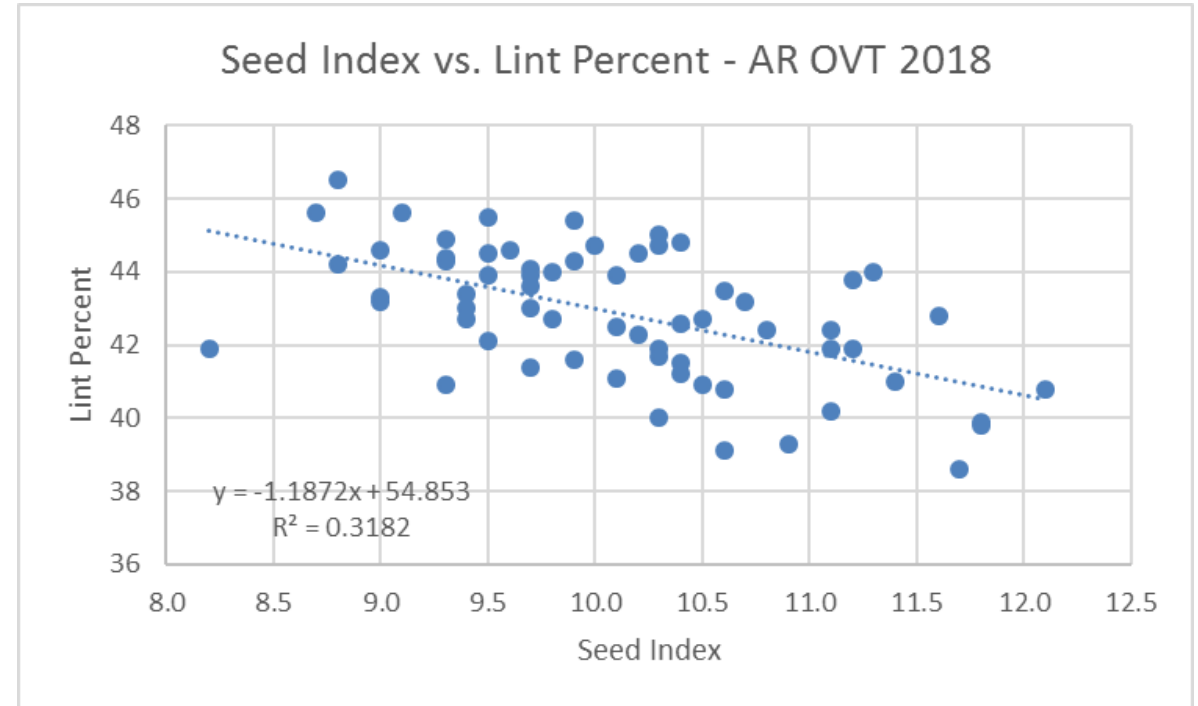
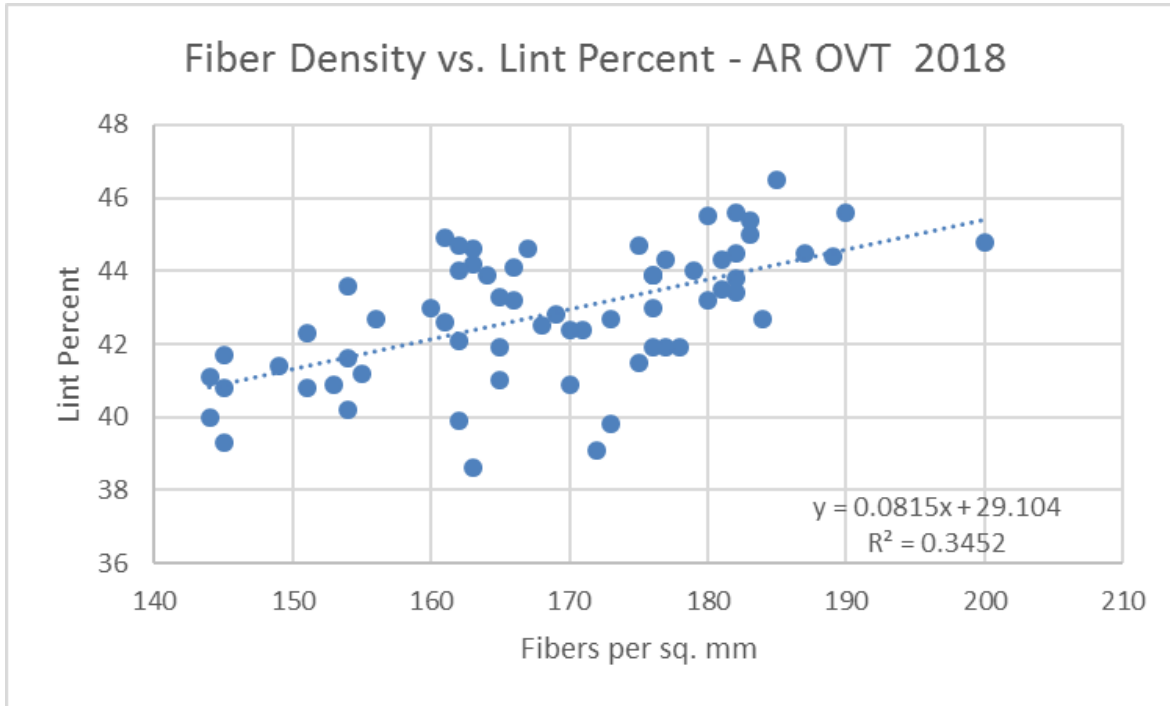


Data Sources:

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- Bourland, et al., 2018. Arkansas Cotton Variety Test 2018. Arkansas Agricultural Exp. Station, Research Series 658.



Fiber Density and Seed Index vs. Lint Percent



Data Source:

- Bourland, et al., 2018. Arkansas Cotton Variety Test 2018. Arkansas Agricultural Exp. Station, Research Series 658.



Summary Comments from Yield Components

AR OVT – 2017-2018

// **Highest R-squared for Yield components vs. Lint Yield**

// # Seed per acre

// R-squared = 0.498 to 0.517

// Highly significant both years

// Fiber Density (# fibers / sq. mm)

// R-squared = 0.125 to 0.302

// Significant both years

// Lint Percent

// R-squared = 0.245 to 0.251

// Significant both years

// Challenge: to Select “High Yield” Components with seed size (index) in good range for environment

// **Lower R-squared for Yield Components vs. Lint Yield**

// Fibers per Seed

// R-squared = 0.02 to 0.17

// Significant one of two years

// Seed Index

// R-squared = 0.05 to 0.09

// Significant one of two years

// Lint Index

// R-squared = 0.02 to 0.08

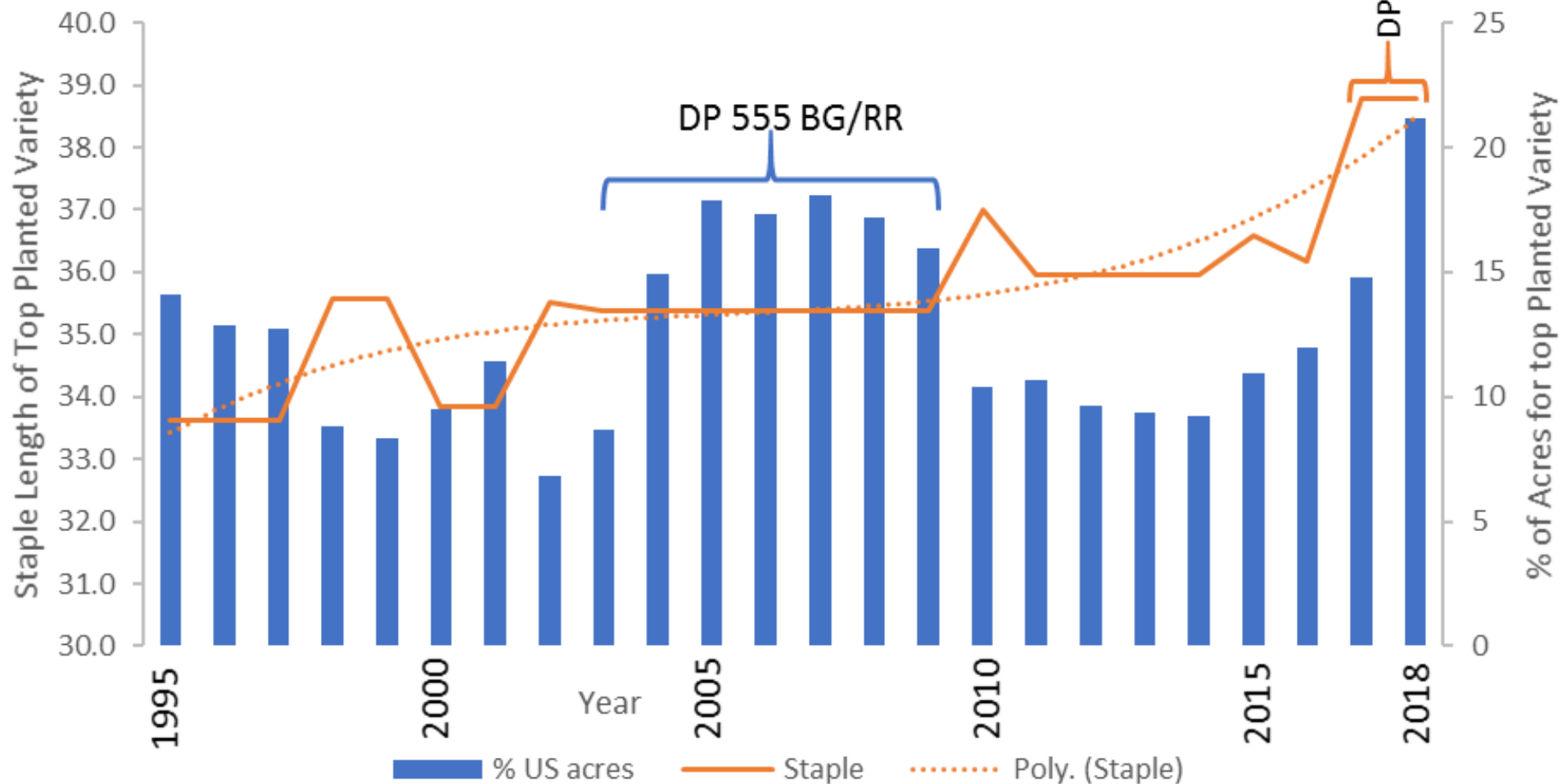
// No significant relationship



Deltapine[®] variety perspective



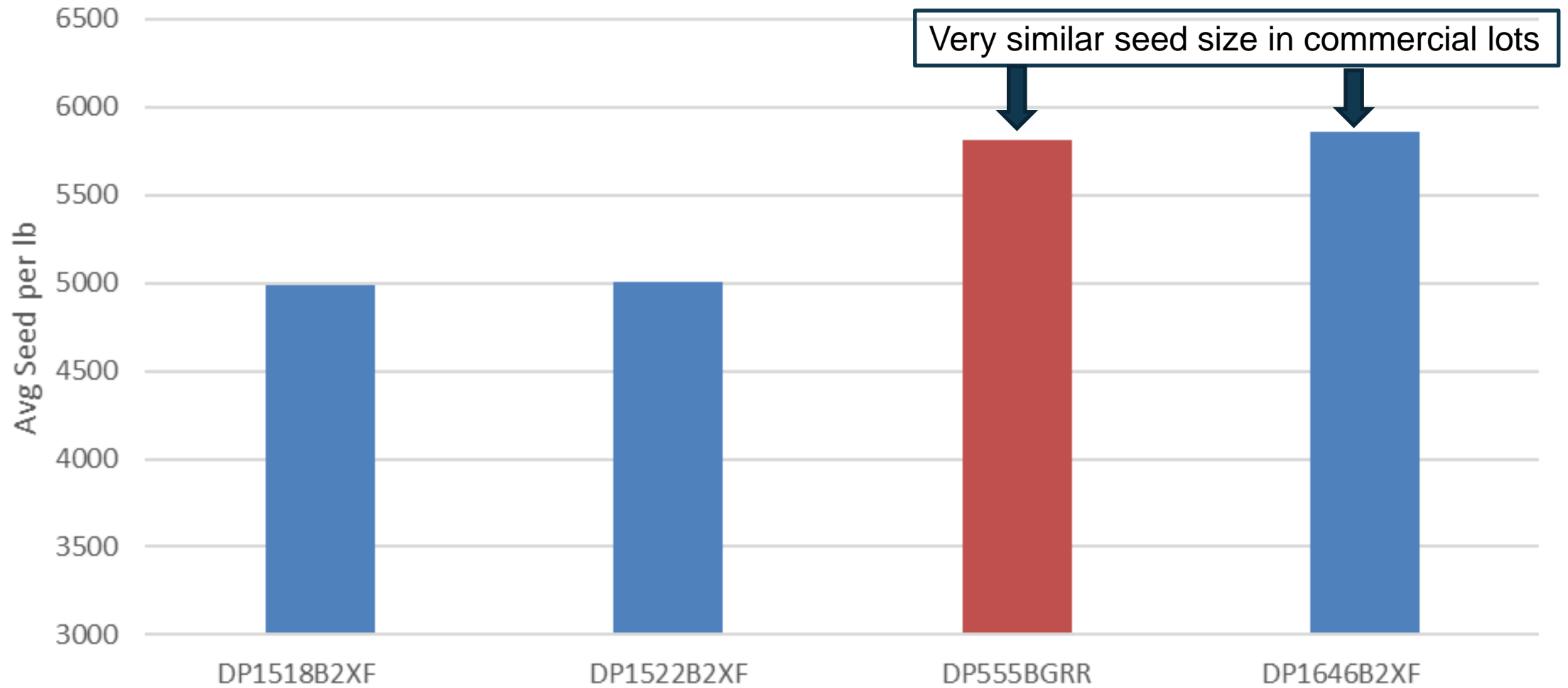
% Acres Planted and Staple Length of Top Planted Varieties in US - 1994 to 2018 (USDA-AMS Varieties Planted Report)



Polynomial function (cubic) fits fiber length trend



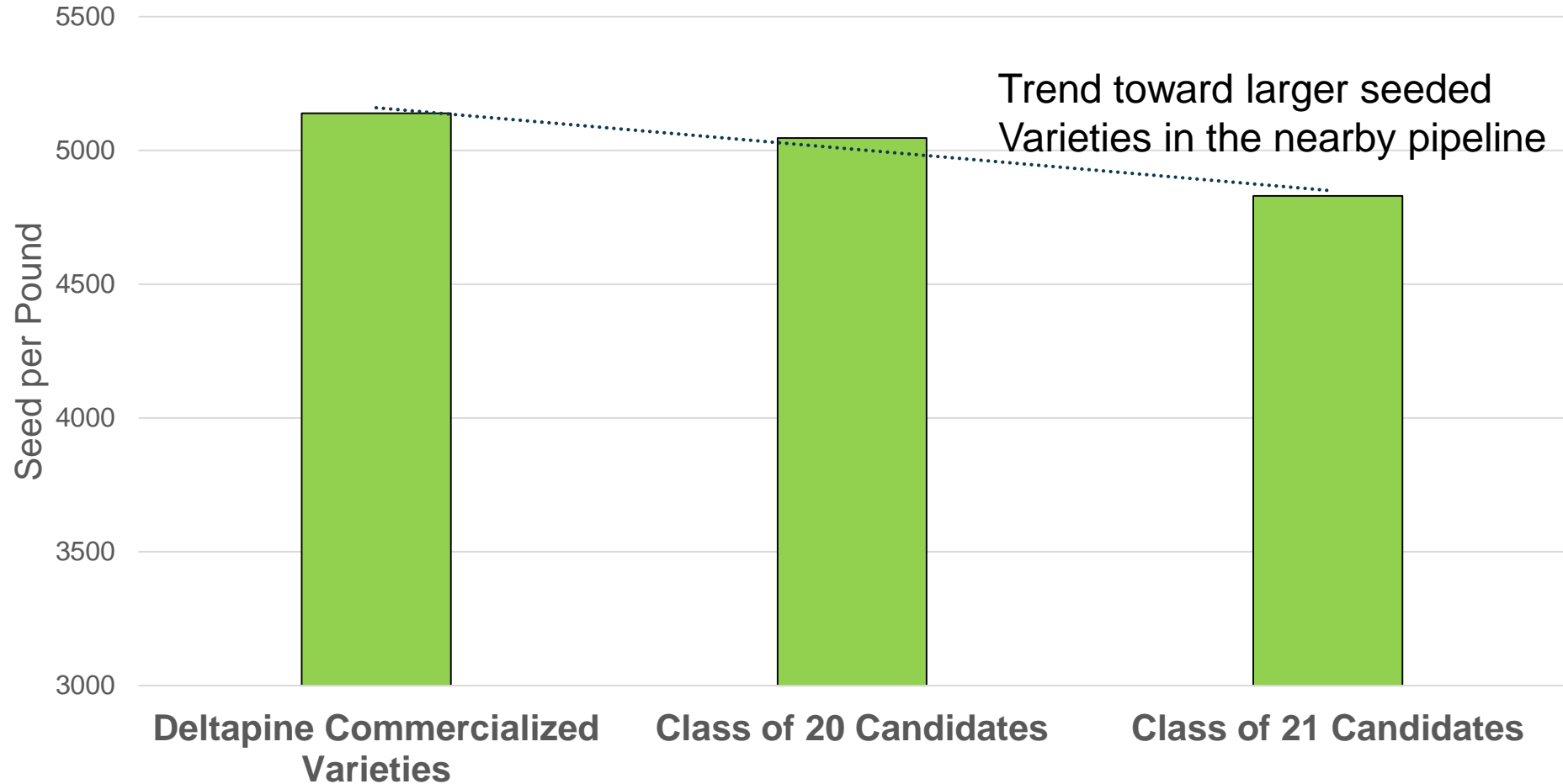
Average Seed per pound (Commercial lots)



Source: Internal Bayer data of all commercial lots during life cycle of variety



Seed Size Trends in Deltapine Commercialized Varieties vs. Pre-commercial lines



Note: Plot seed lots, only AZ origin lots



Summary Comments -

// **Fiber Value is ~ 7x Seed Value in most years**

// Cotton fiber is 85 to 87% of the harvested value (seed + fiber) based on the trend analysis over the past 70 years.

// **Seed size and lint yield components** should be considered independently in this discussion

// Within-boll yield components should be utilized to drive yield (fiber per seed or fiber per seed surface area) and maintain or increase seed size

// **Do we have a new paradigm?**

// Continued fiber yield increases from genetic gain and management improvements (assuming seed yield stays flat) could require growers to pay for ginning above seed value

// Since fiber is 6 to 7 times greater value than fuzzy seed, the fiber yield increases will more than pay for the ginning costs

// Minimum seed size for emergence should maintain a seed that can be ginned similar to current standards.



Thank You!



Q&A






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ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. It is a violation of federal and state law to use any pesticide product other than in accordance with its labeling. NOT ALL formulations of dicamba, glyphosate or glufosinate are approved for in-crop use with cotton with XtendFlex® Technology. ONLY USE FORMULATIONS THAT ARE SPECIFICALLY LABELED FOR SUCH USES AND APPROVED FOR SUCH USE IN THE STATE OF APPLICATION. Contact the U.S. EPA and your state pesticide regulatory agency with any questions about the approval status of dicamba herbicide products for in-crop use with Roundup Ready 2 Xtend® soybeans or cotton with XtendFlex® Technology.

B.t. products may not yet be registered in all states. Check with your seed brand representative for the registration status in your state.

Cotton with XtendFlex® Technology contains genes that confer tolerance to glyphosate, glufosinate and dicamba. Glyphosate will kill crops that are not tolerant to glyphosate. **Dicamba** will kill crops that are not tolerant to dicamba. **Glufosinate** will kill crops that are not tolerant to glufosinate. Contact your seed brand dealer or refer to the Monsanto Technology Use Guide for recommended weed control programs.

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