



Perspectives on Cotton Seed Size in Cotton Varieties



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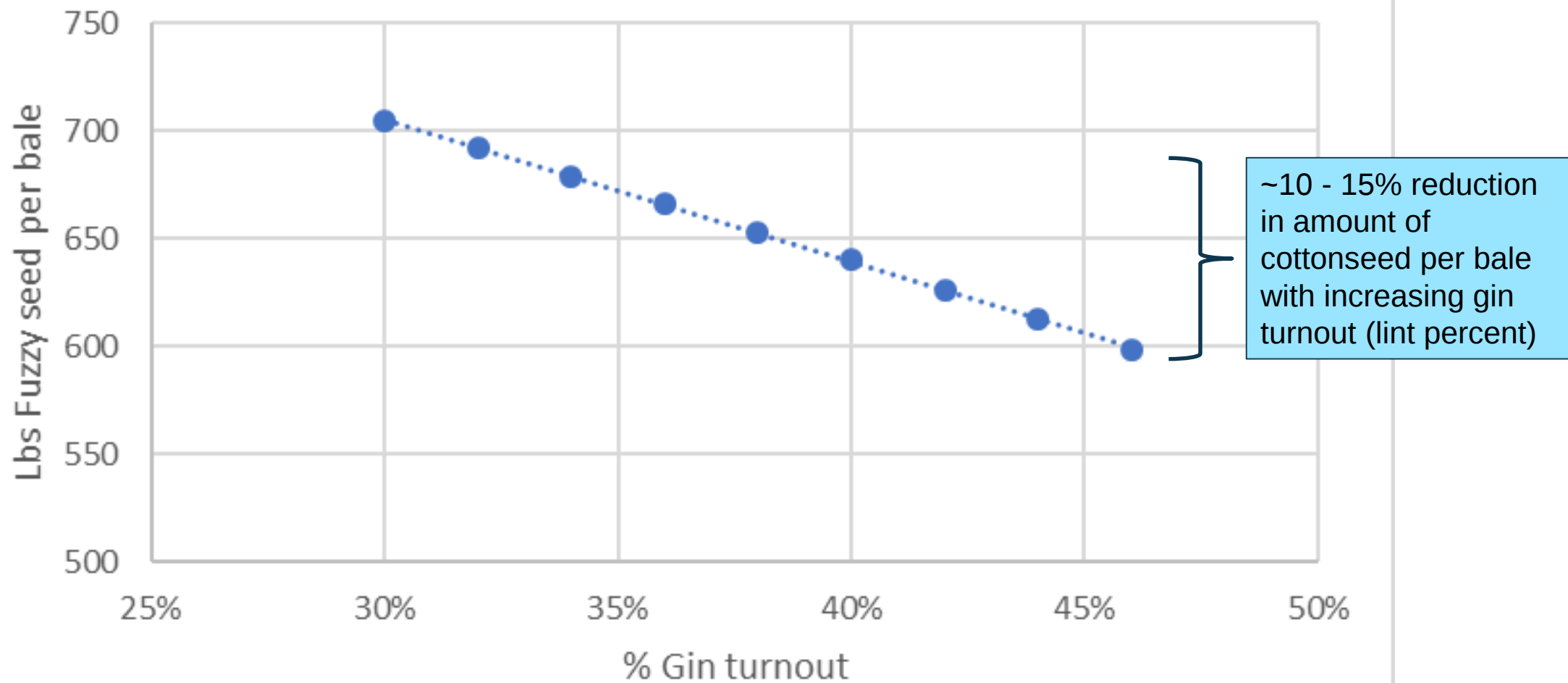


Outline

- // 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

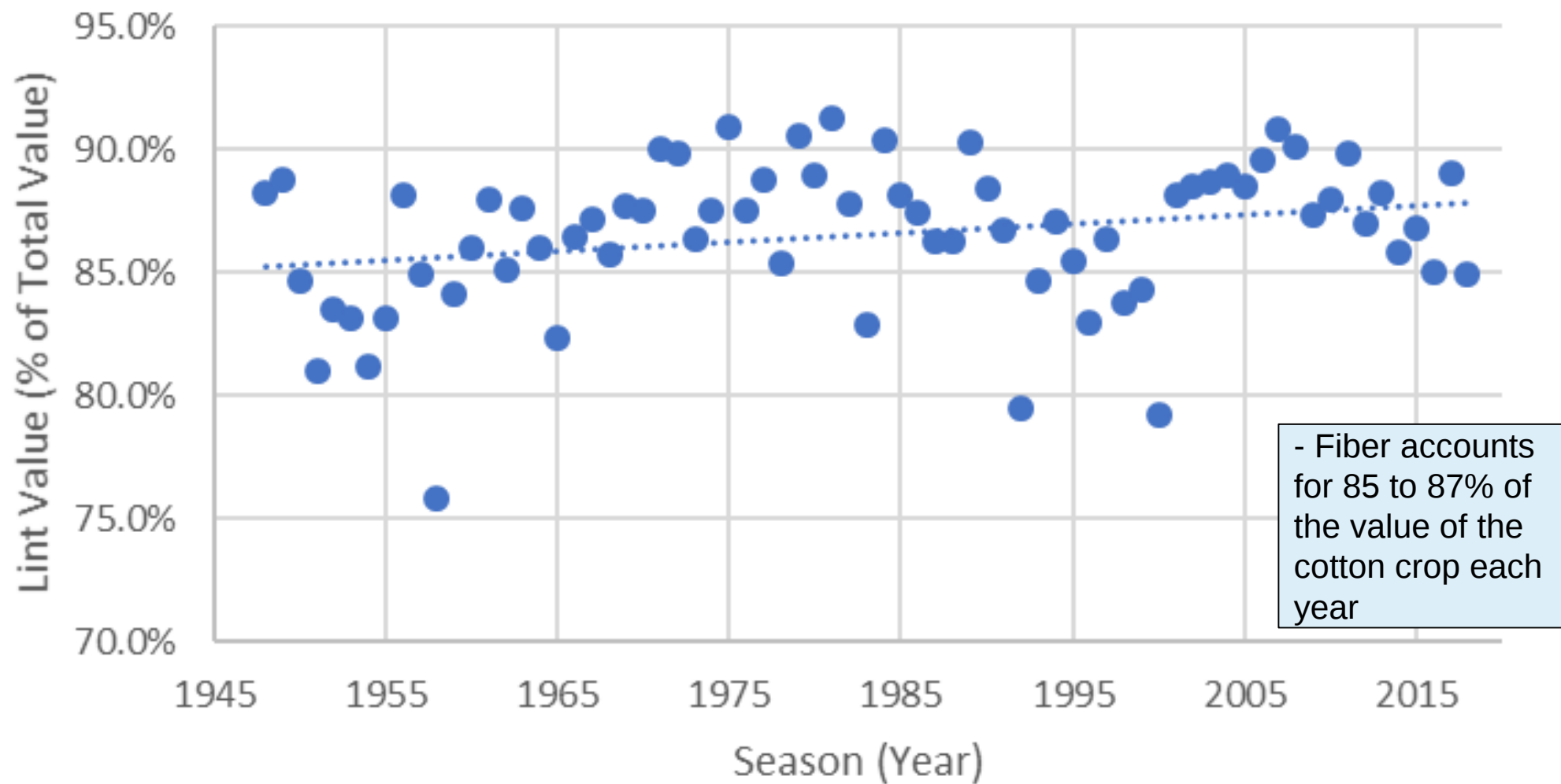


Estimated Pounds of Fuzzy Cottonseed per bale



Note: assuming a standard trash level across all turnout levels

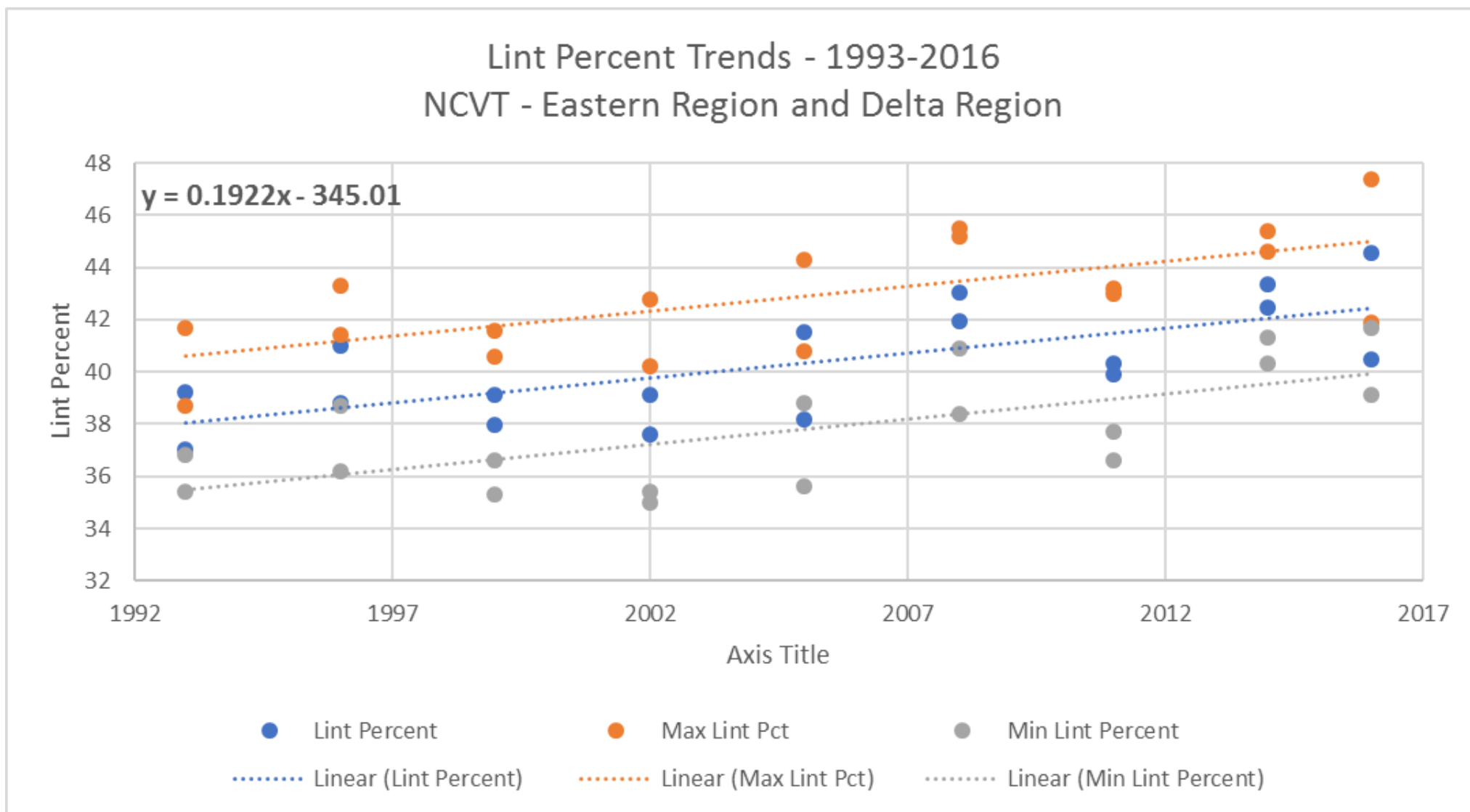
US Cotton Crop Lint Value (% of total value)



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



Lint percent trends – 1993-2016

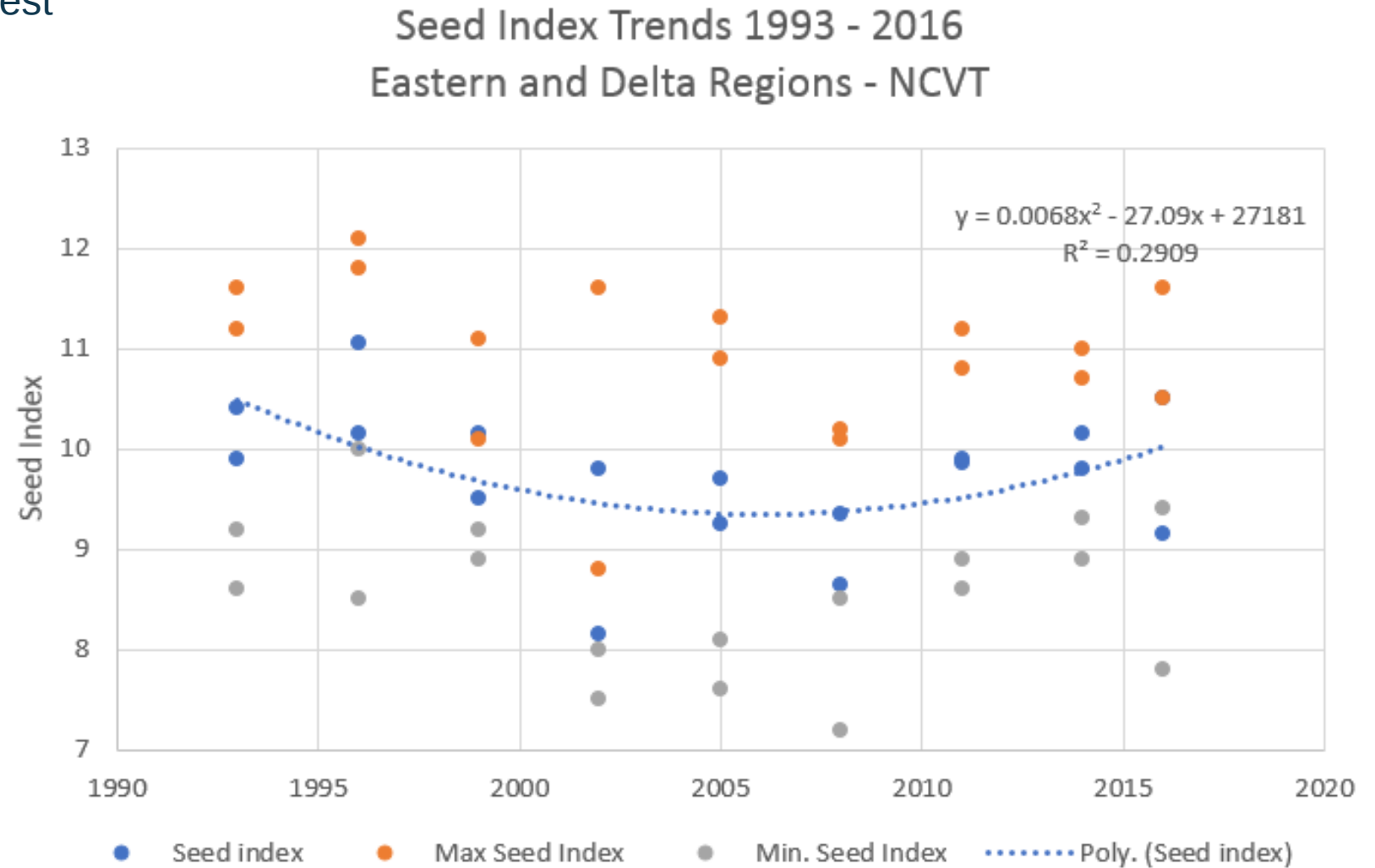


Source: <https://www.ars.usda.gov/southeast-area/stoneville-ms/crop-genetics-research/docs/national-cotton-variety-test/>



Seed index trends: 1993-2016

National Cotton Variety Test



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

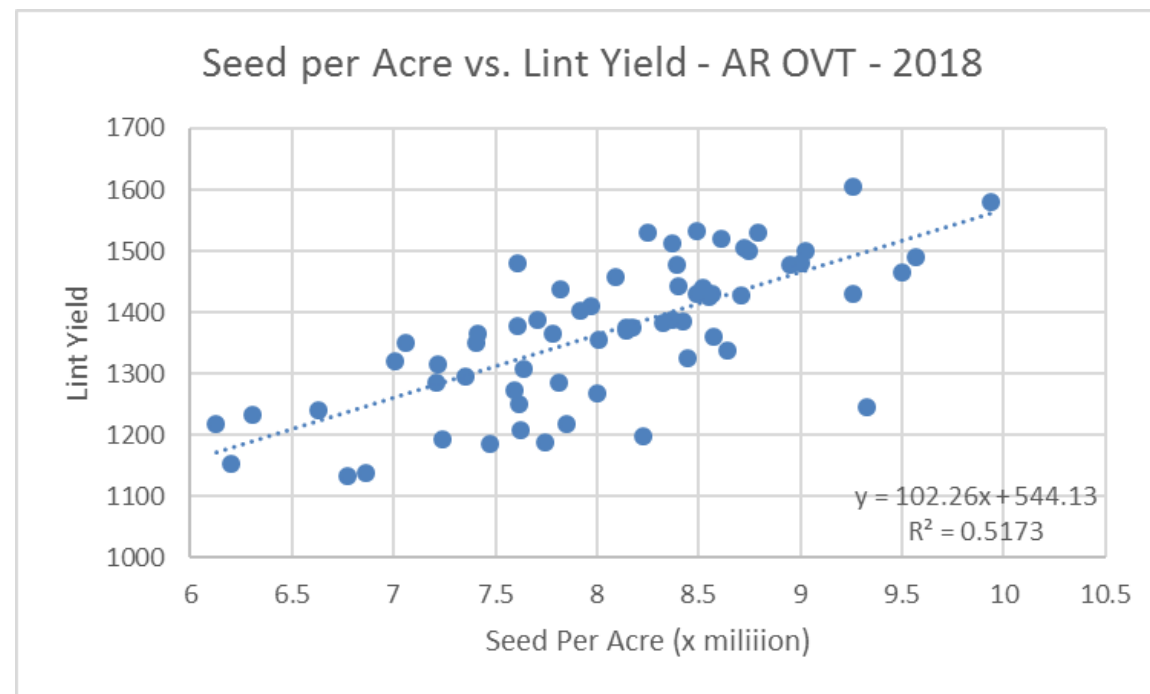
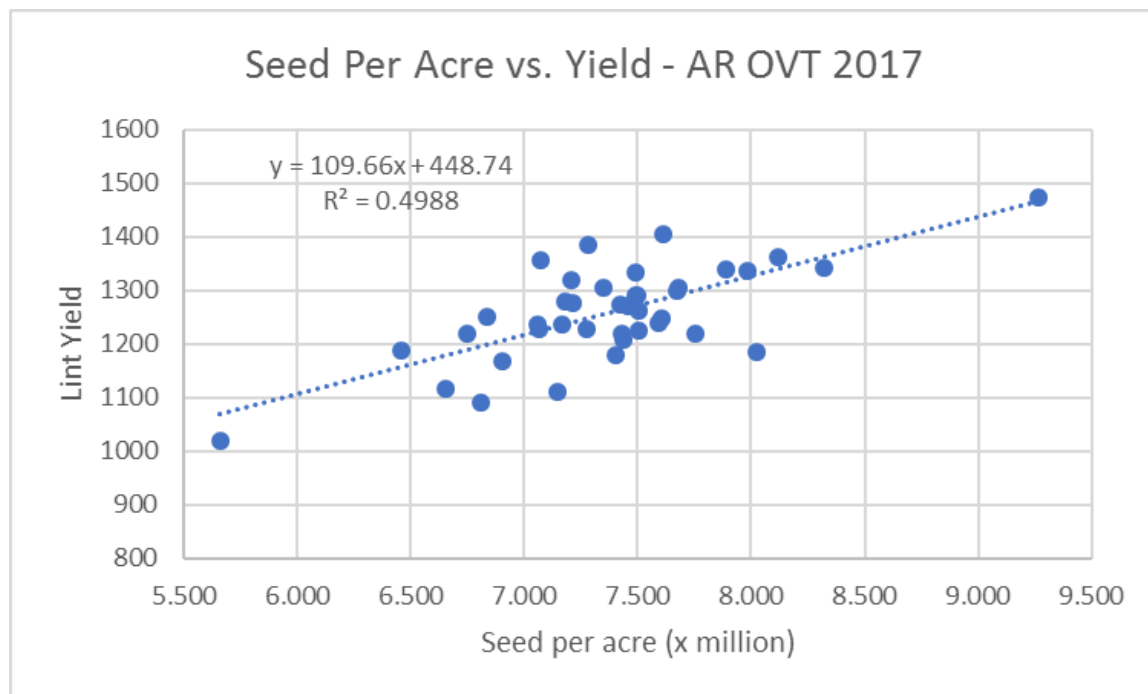
Data Sources:

- 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



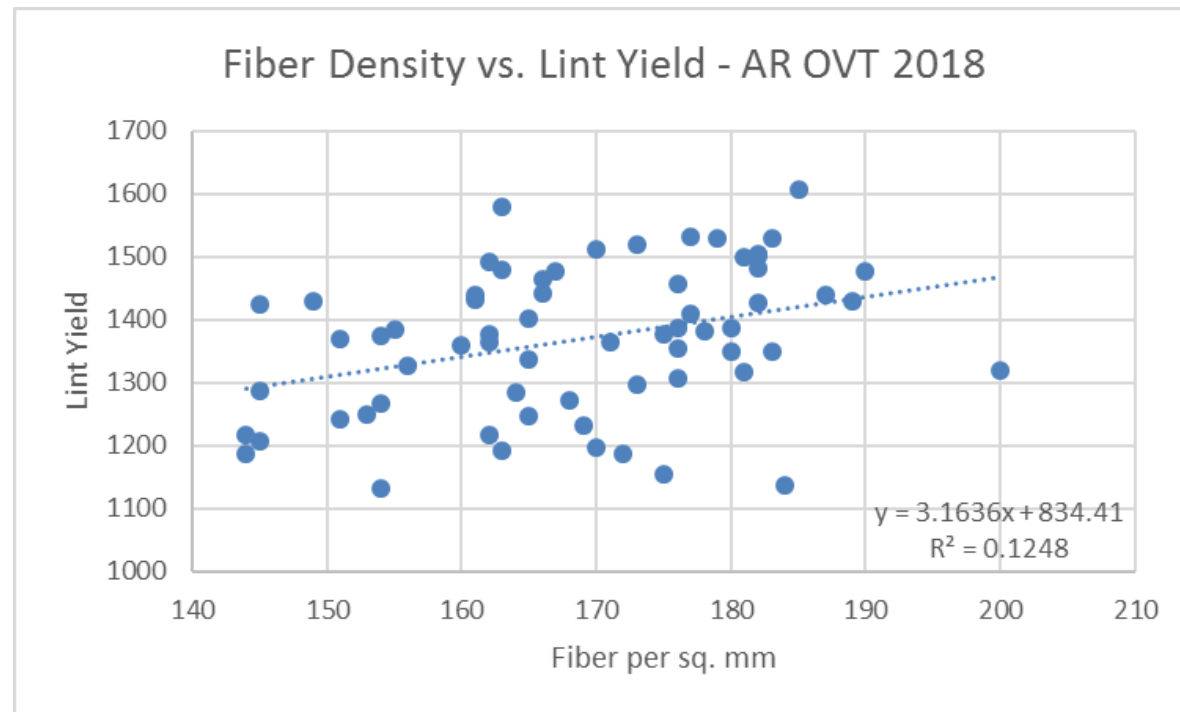
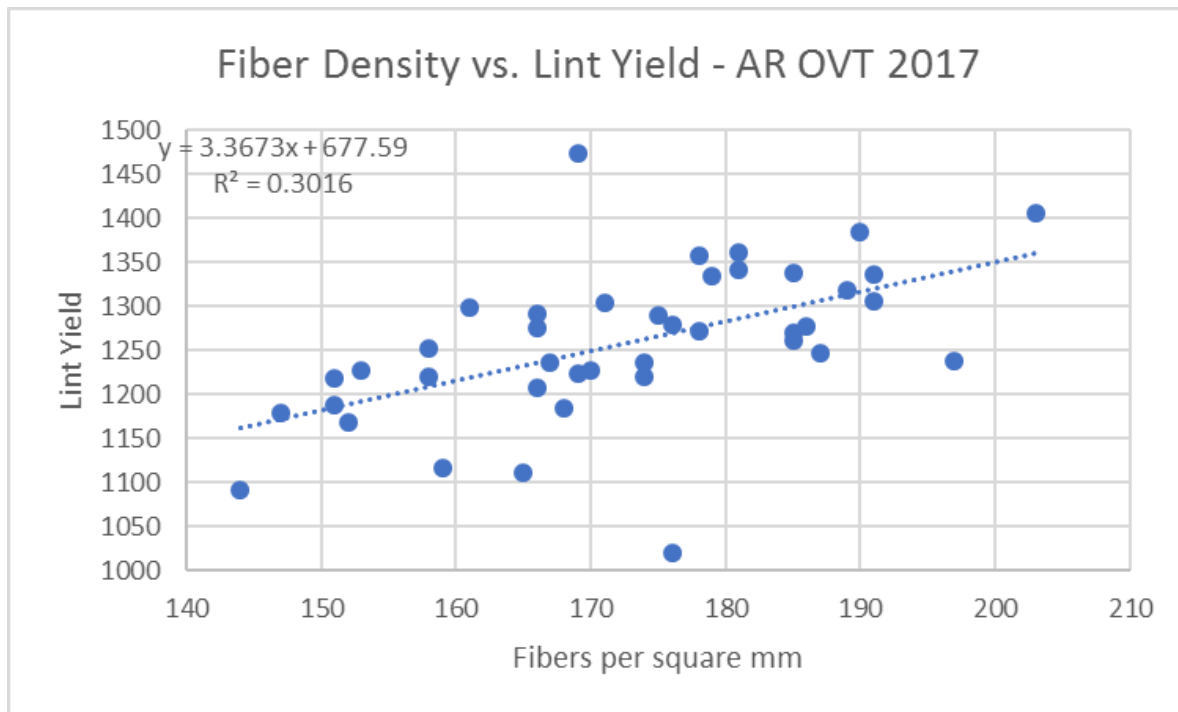
Data Sources:

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Yield Components (Fiber Density) vs. Lint Yield

University of Arkansas - 2017



Data Sources:

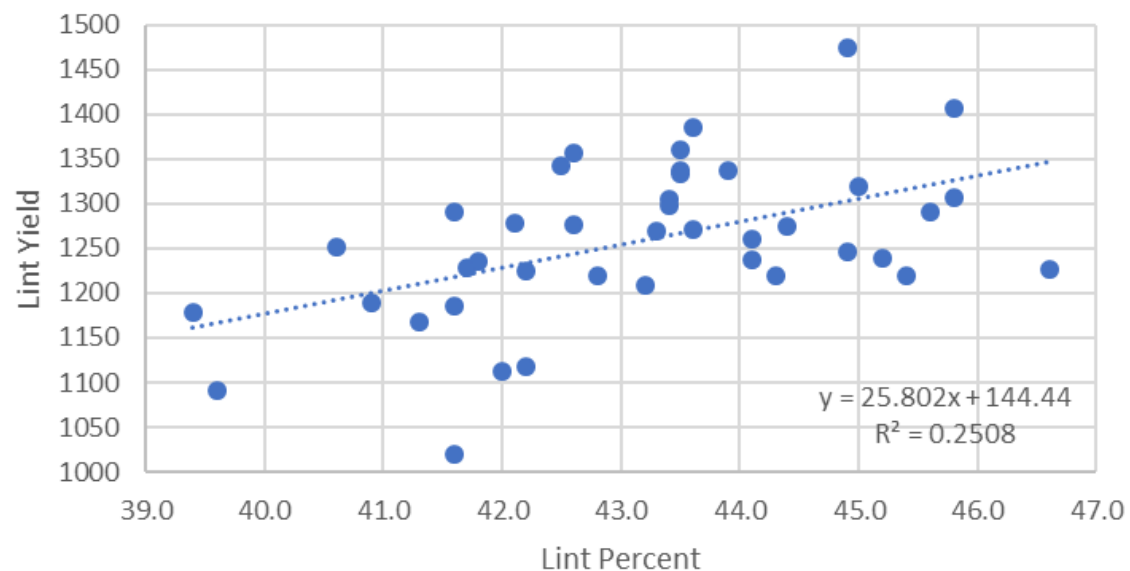
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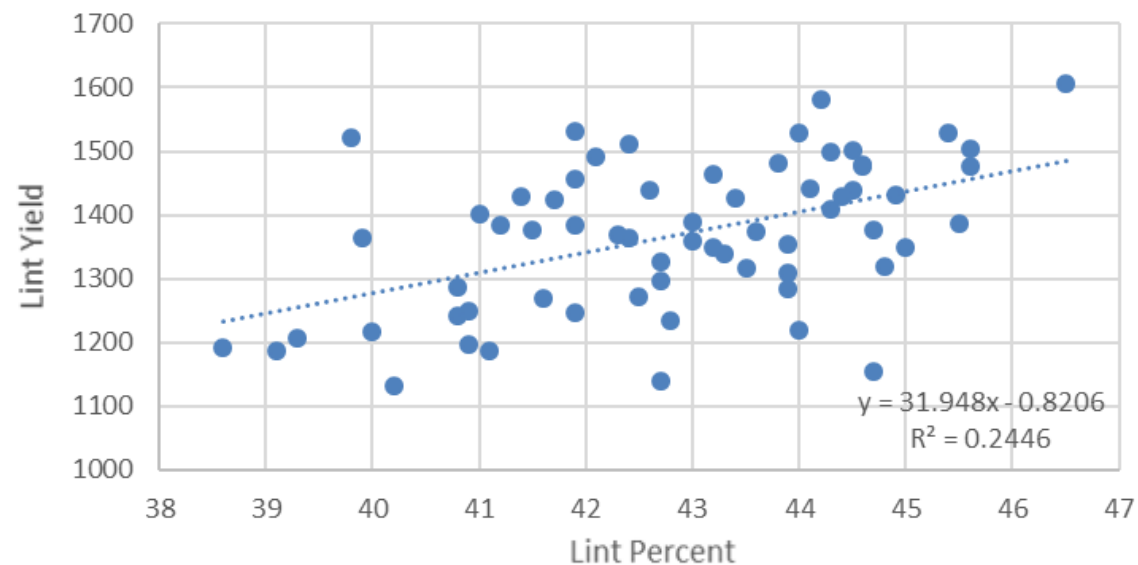
Lint Percent vs. Lint Yield

AR OVT 2017 & 2018

Lint Percent vs. Lint Yield - AR OVT 2017



Lint Percent vs. Lint Yield - AR OVT 2018



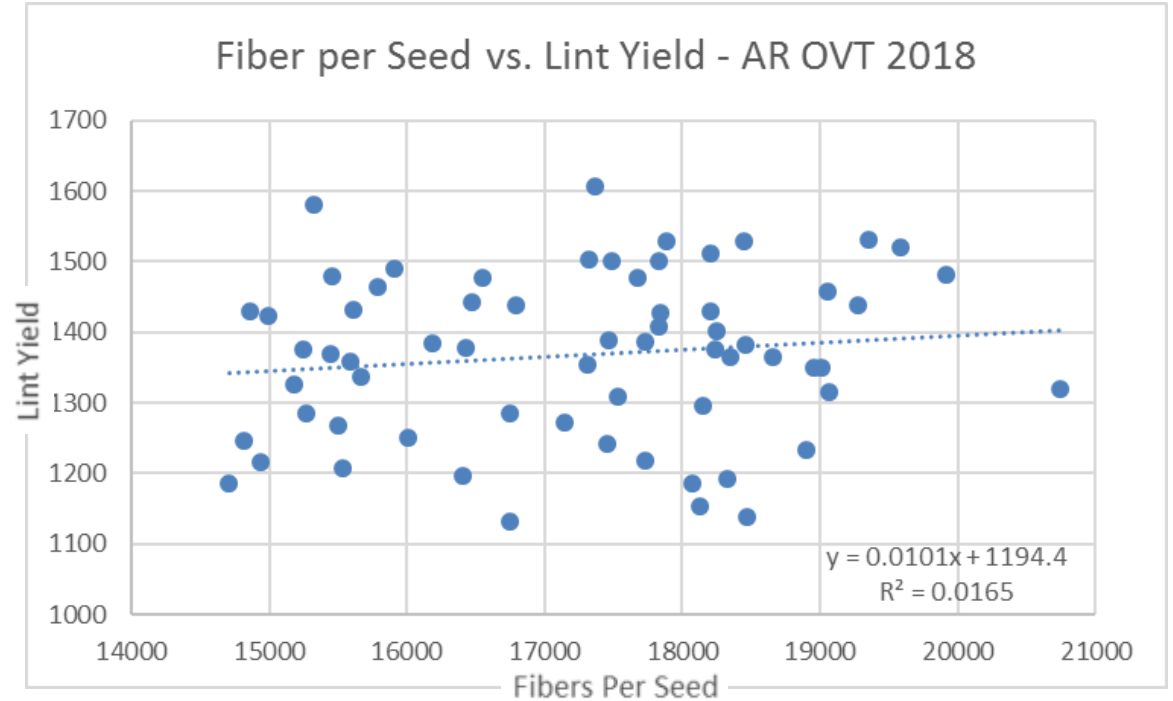
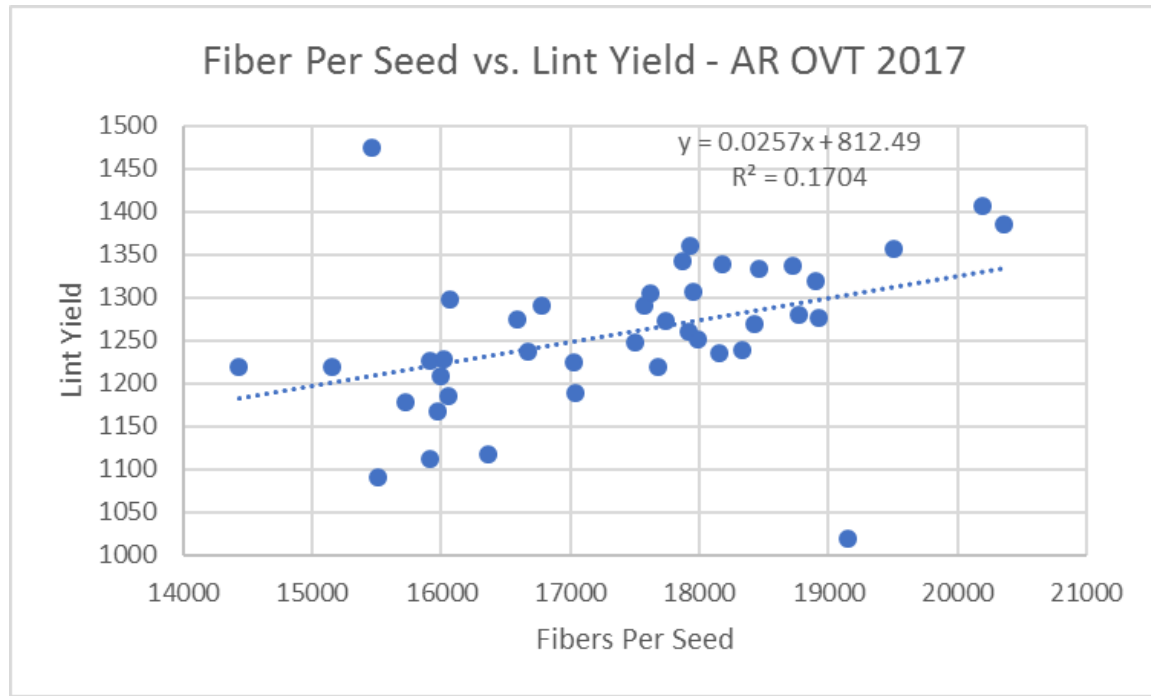
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Yield Components vs. Lint Yield

University of Arkansas - 2017



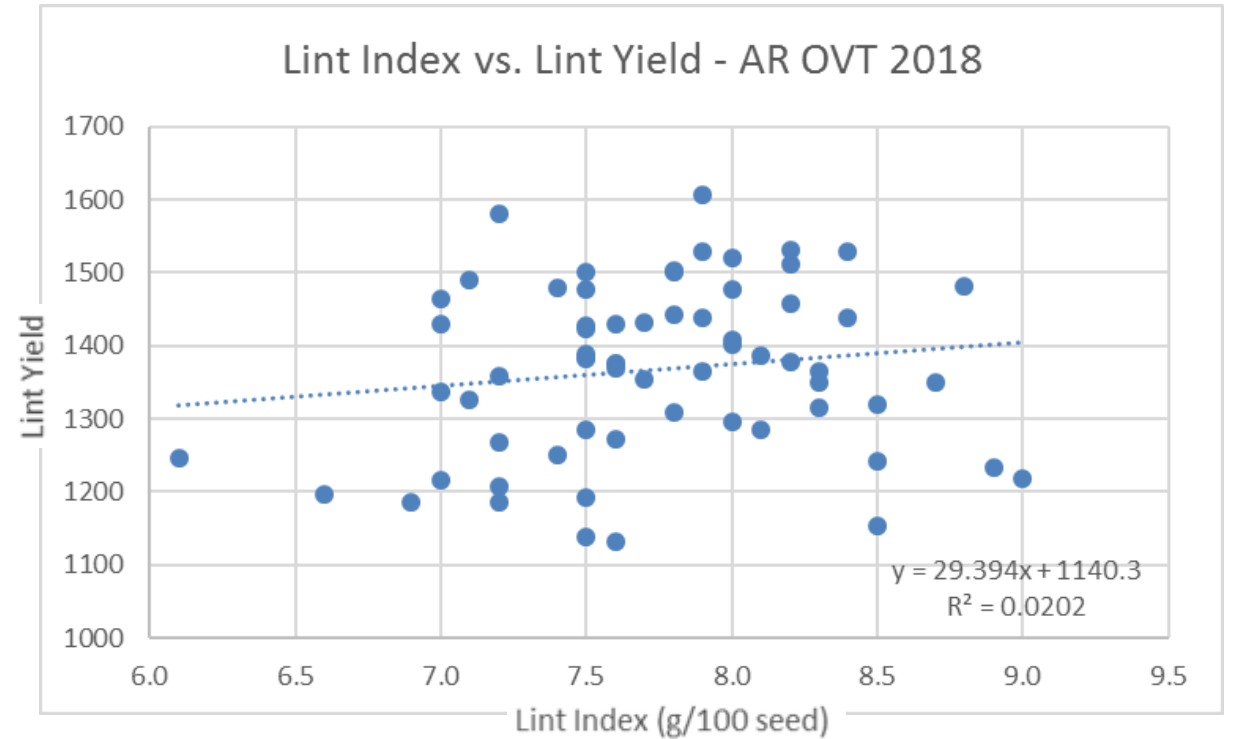
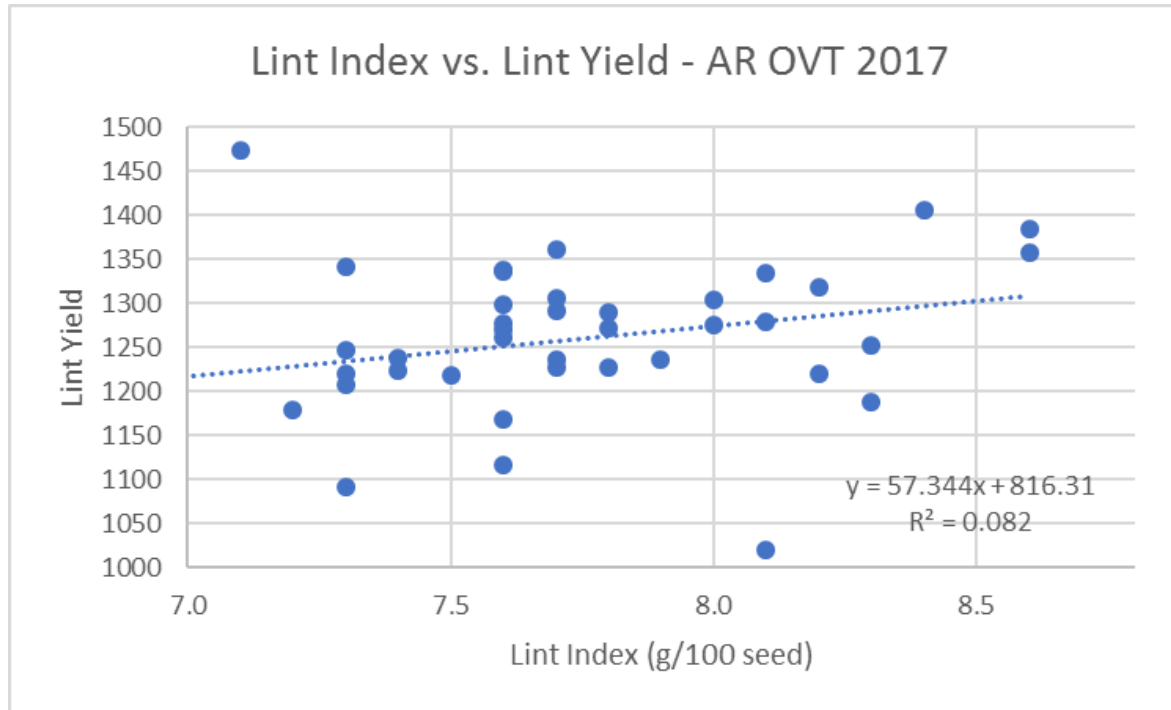
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Yield Components vs. Lint Yield

University of Arkansas - 2017



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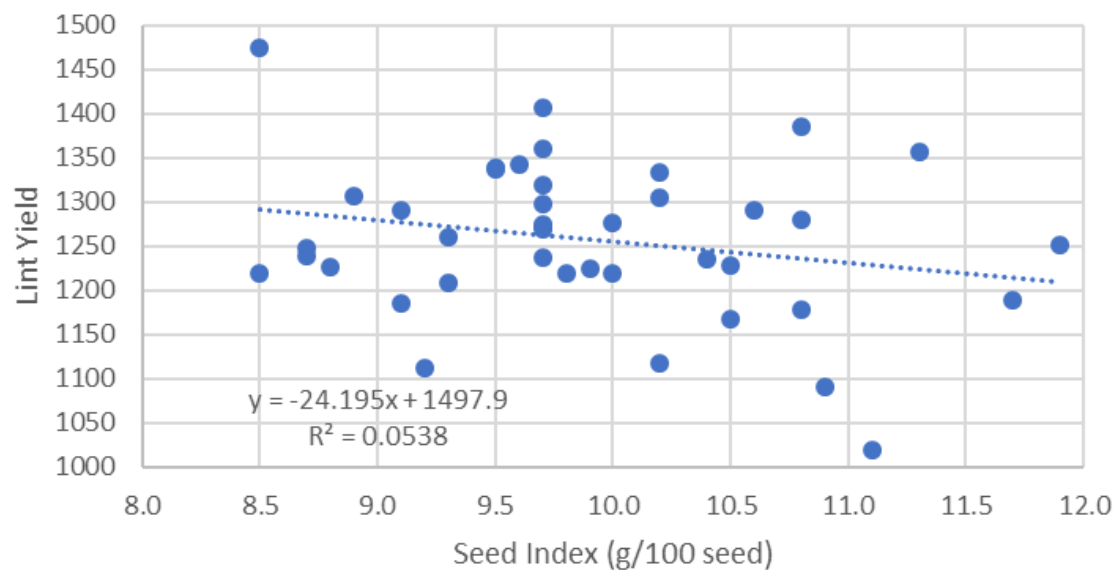
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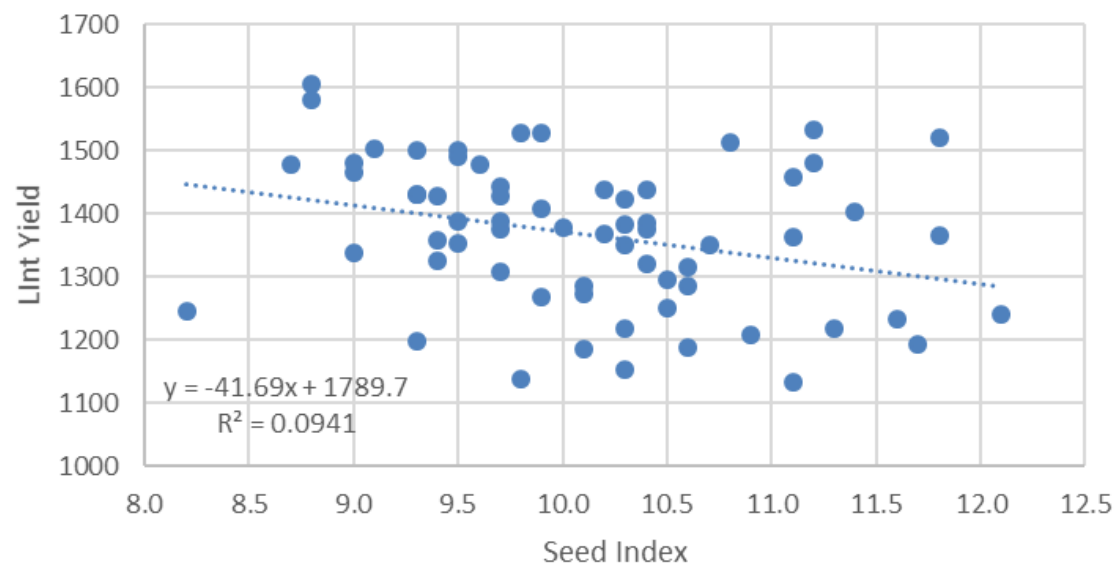
Yield Components (Seed Index) vs. Lint Yield

AR OVT – 2017& 2018

Seed Index vs. Lint Yield - AR OVT 2017



Seed Index Vs. Lint Yield - AR OVT 2018

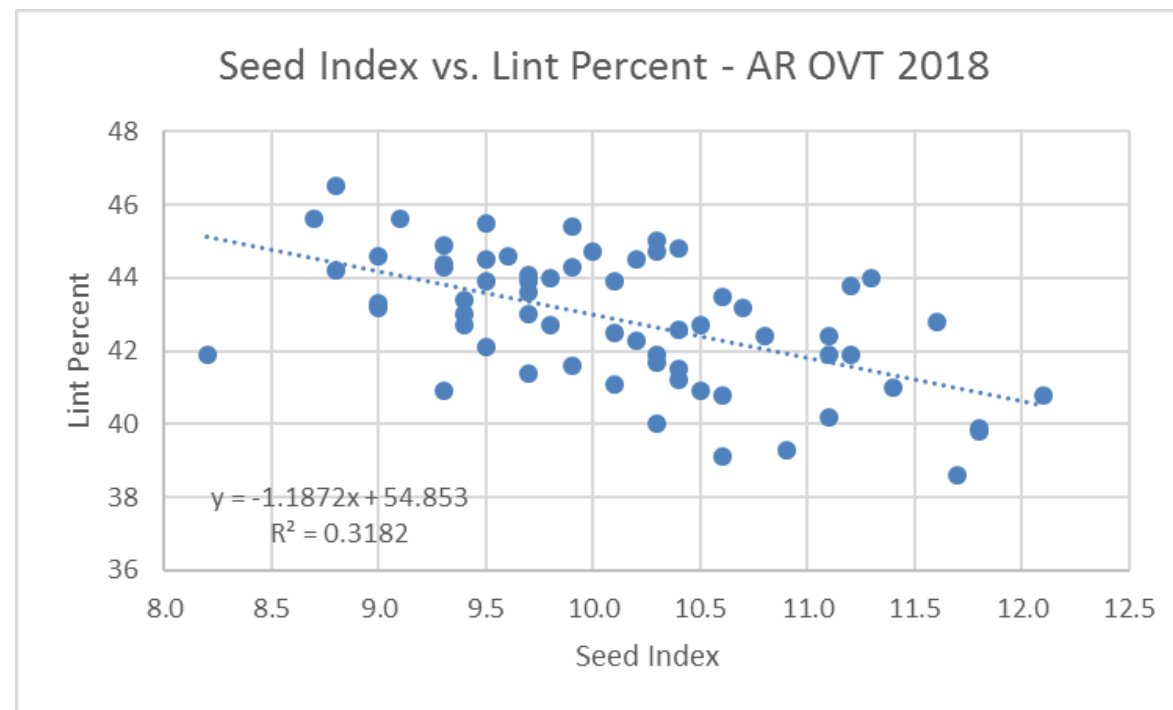
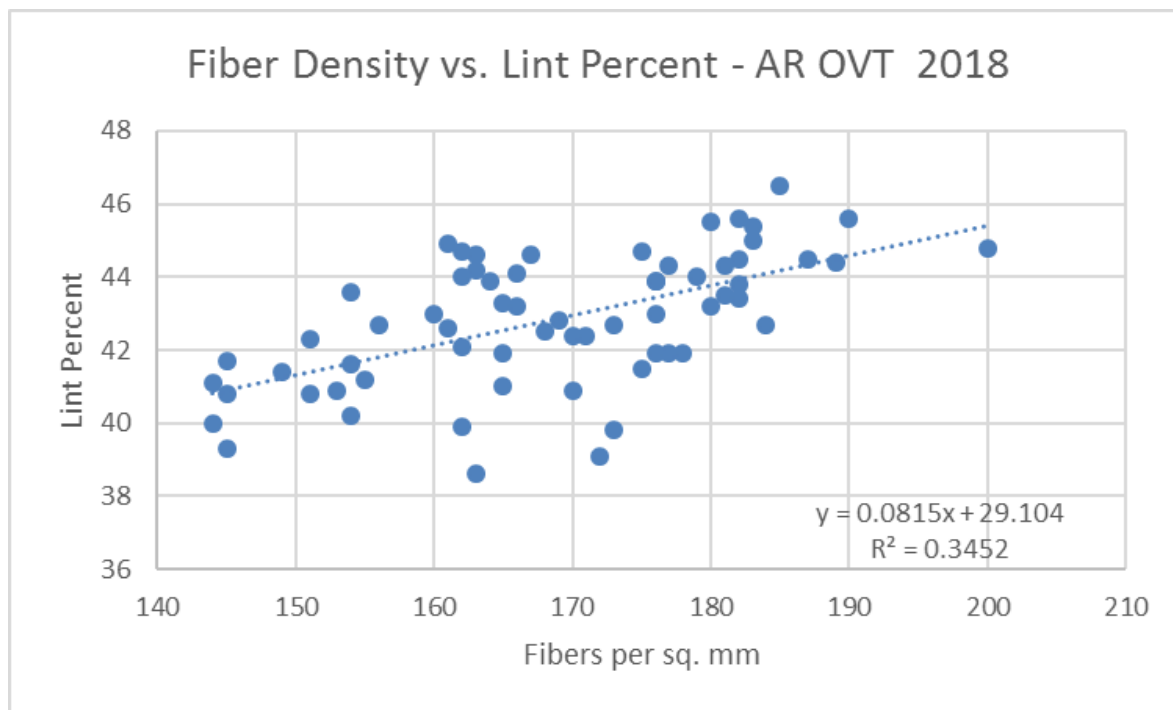


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- Bourland, et al., 2018. Arkansas Cotton Variety Test 2018. Arkansas Agricultural Exp. Station, Research Series 658.



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

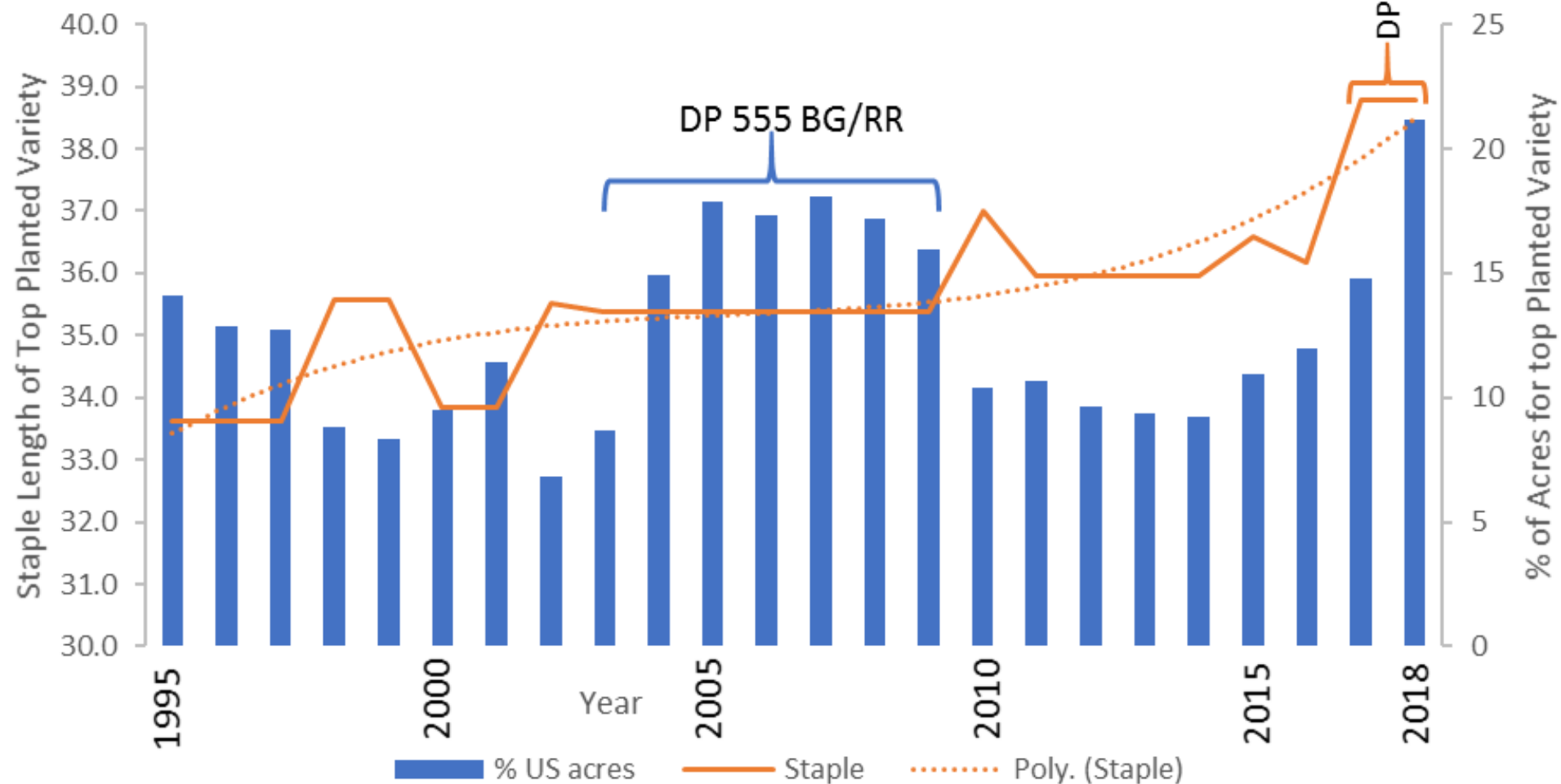
// No significant relationship



Deltapine[®] variety perspective



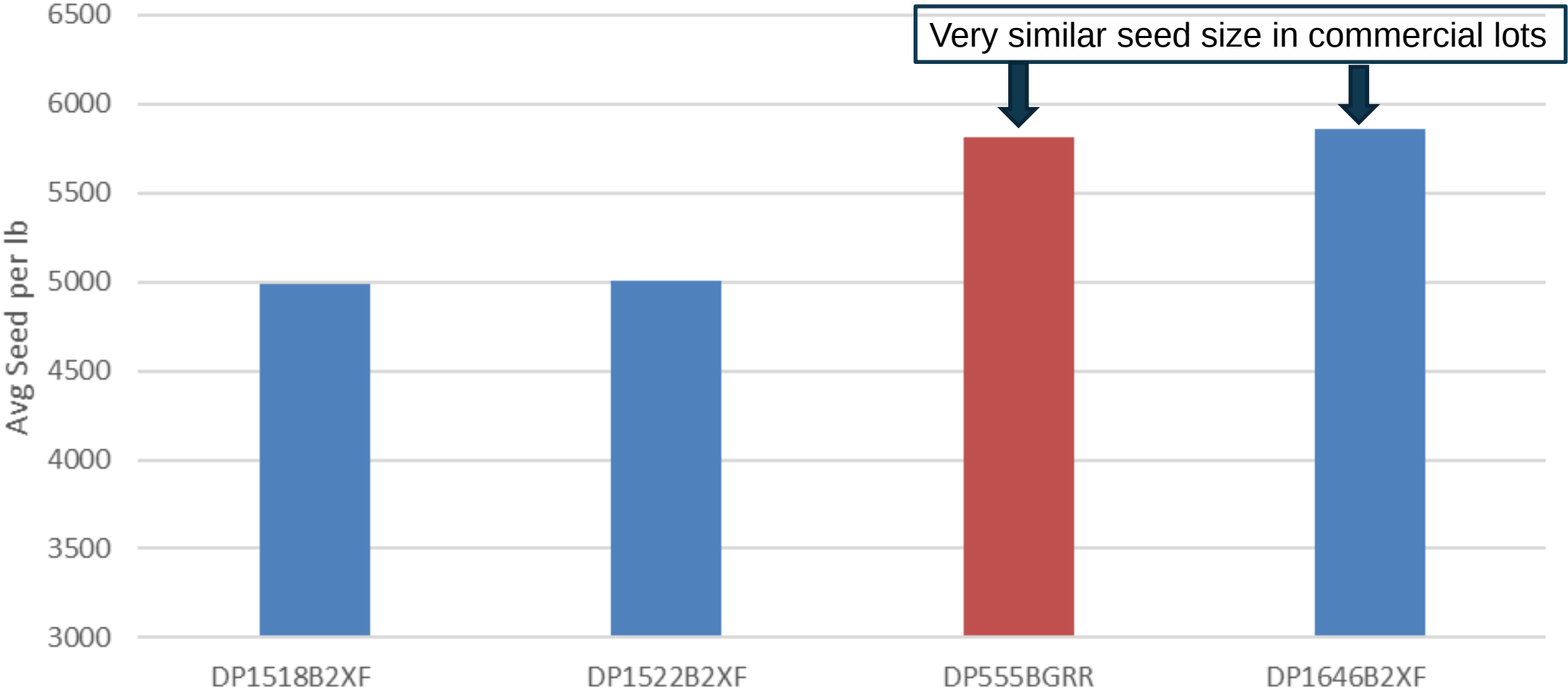
% Acres Planted and Staple Length of Top Planted Varieties in US - 1994 to 2018 (USDA-AMS Varieties Planted Report)



Polynomial function (cubic) fits fiber length trend



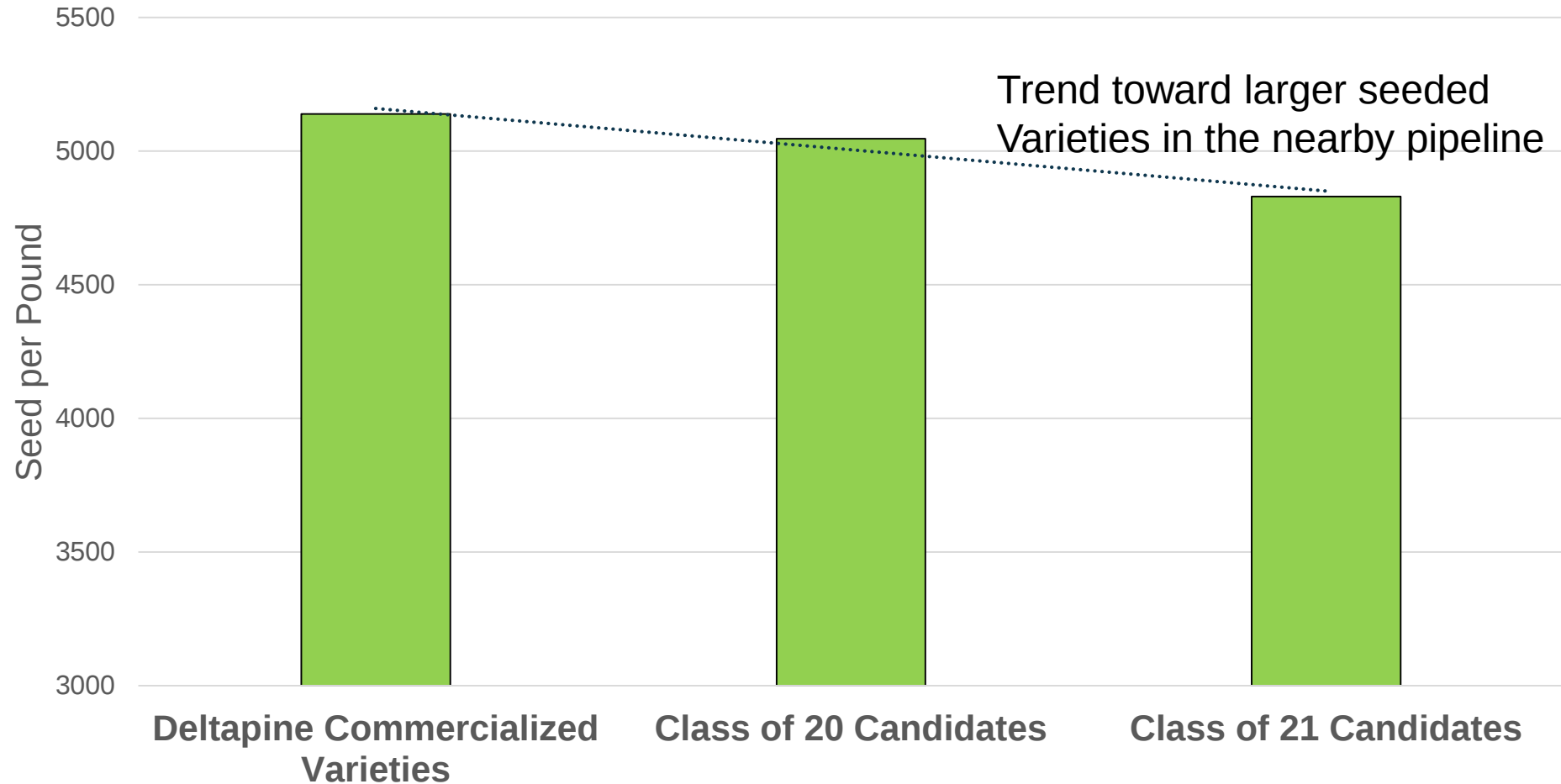
Average Seed per pound (Commercial lots)



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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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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