Seed Size and Cool Germination Effects on Cotton Stand, Early Growth, and Yield

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Seed Size and Quality - Background

- **Prior to 2005, seed was sold on a weight basis (50 lb bags)**
  - **Growers preferred smaller seed because there were more in a 50 lb bag (especially DP 555)**
- **In 2006, most seed companies packaged seed in specified seed count quantities.**
  - **The desire now is for larger seed because of a perceived increase in vigor.**

Seed Size and Quality - Background

- Extension personnel have always stressed the importance of quality seed.
  - Cool Germ – Know it before you plant.
  - Vigor Index has been developed by Hopper and others in TX.

- What About Seed Quality?
  - Cool Germ
  - Seed Size
  - Purity
- Is there a justification for searching for larger seed sizes and/or higher cool germ lots?

Seed Quality Trials

- What is really important?
  - Seed Size or Seed Quality?

- Two Years (2005 & 2006)
- Alexandria, LA

Seed Quality Trials

Two Varieties
- DP 555 BG/RR and DP 449 BG/RR

Two Planting Dates
- Mid-April and Mid-May

Four levels of Seed Quality
- Large Seed / High Cool Germ
- Large Seed / Low Cool Germ
- Small Seed / High Cool Germ
- Small Seed / Low Cool Germ

Partial ANOVA

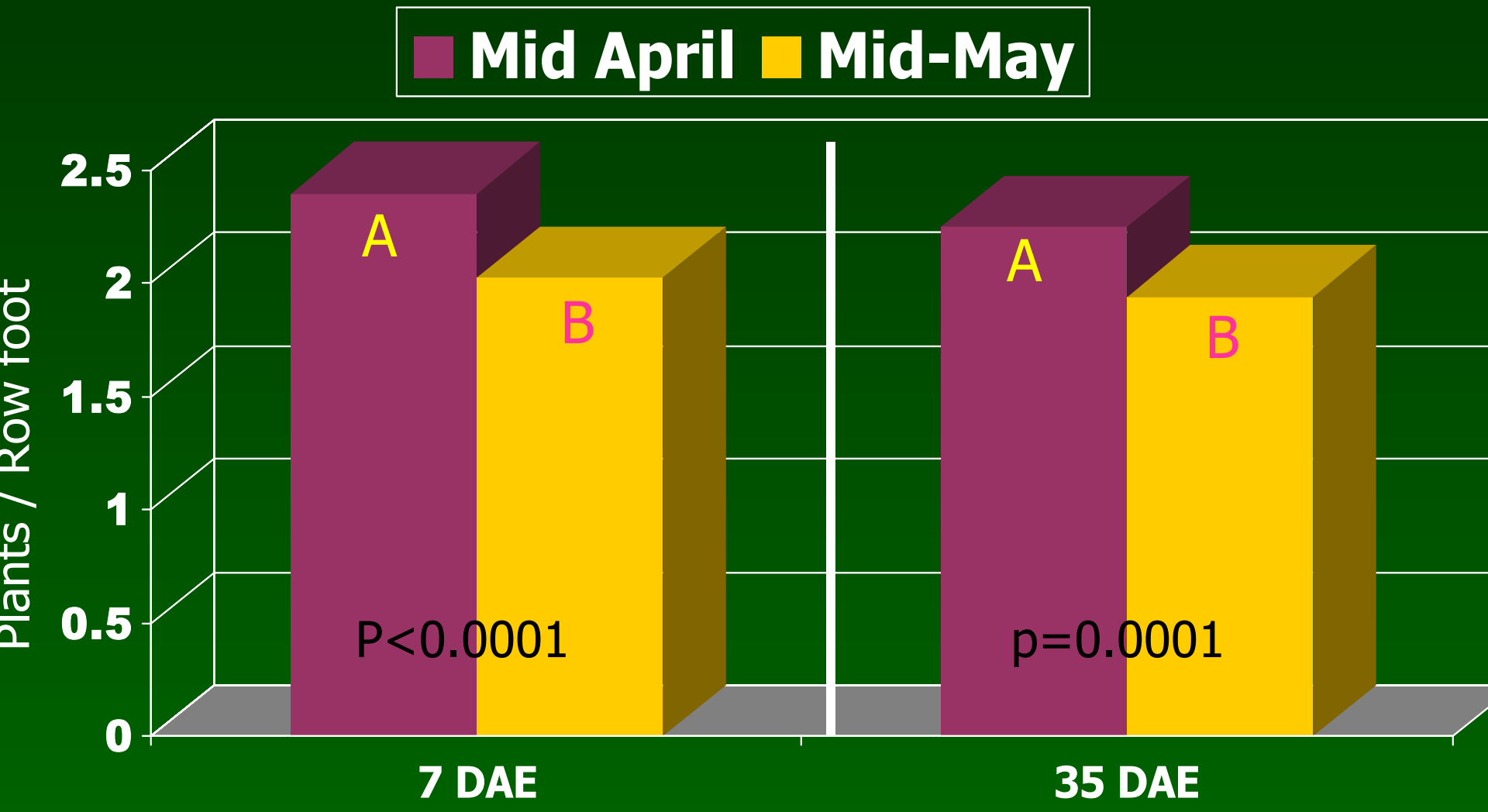
Source	Plant Stand		Vigor	
	7 DAP	35 DAP	7 DAP	35 DAP
Year	0.0004	0.0001	<0.0001	0.0208
Planting Date	<0.0001	0.0001	NS	0.0572
Variety	NS	NS	NS	0.0903
Seed Quality	0.0632	0.0242	0.0809	0.0002
Variety x Planting Date	NS	NS	NS	NS
Variety x Seed Quality	NS	NS	NS	NS
Planting Date x Seed Quality	NS	NS	NS	NS
Var x PD x SQ	NS	NS	NS	NS

Partial ANOVA cont'd

Source	Plant Height		Yield
	E. Bloom	Final	
Year	0.0001	0.0798	0.0475
Planting Date	<0.0001	<0.0001	<0.0001
Variety	0.0001	<0.0001	NS
Seed Quality	NS	NS	NS
Variety x Planting Date	NS	NS	NS
Variety x Seed Quality	NS	NS	NS
Planting Date x Seed Quality	NS	NS	NS
Var x PD x SQ	NS	NS	NS

Effect of Planting Date

Plant Stand

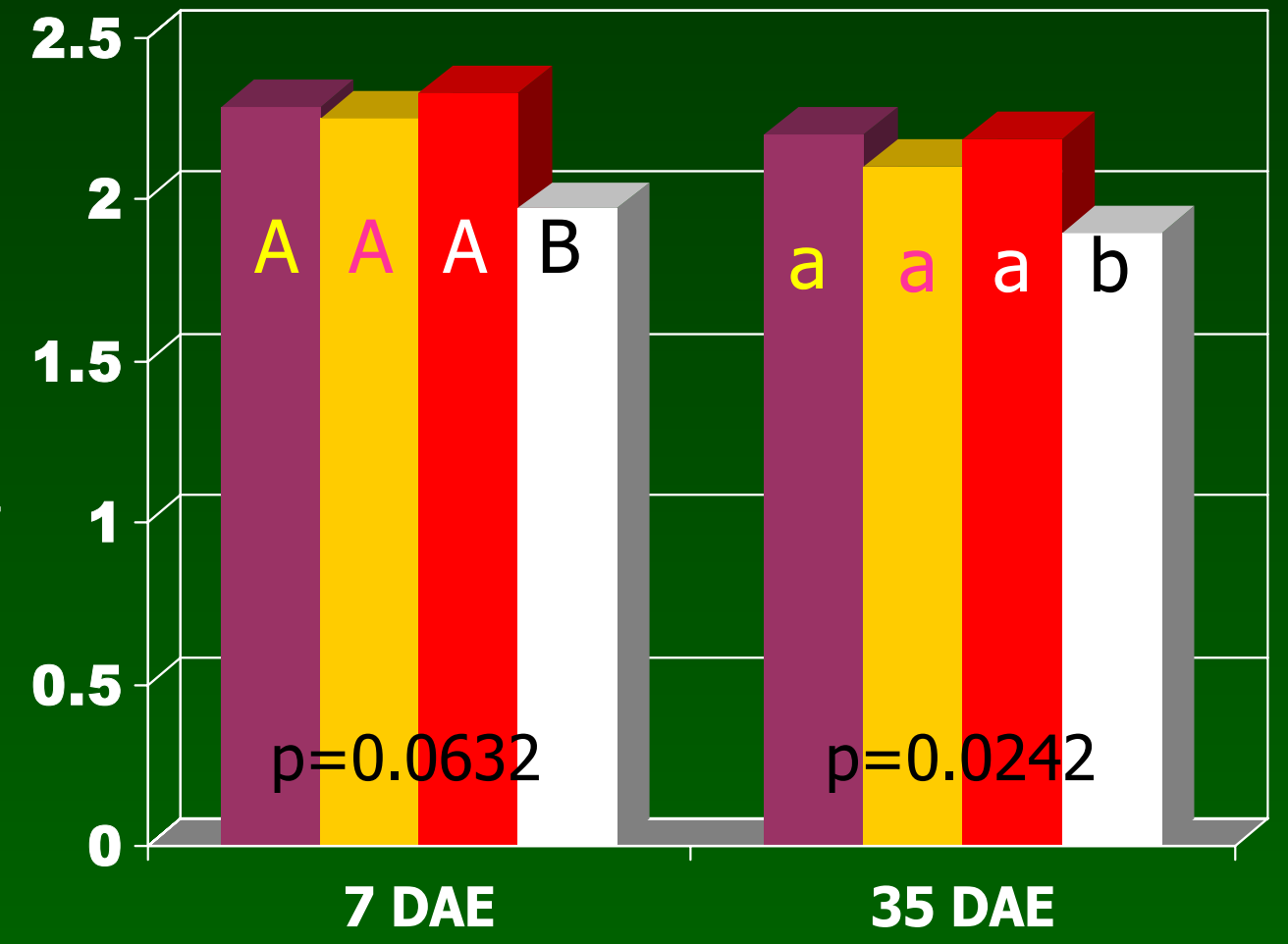


Data pooled over years, varieties, and seed qualities.

Effect of Seed Quality

Pooled across planting dates, varieties, and years

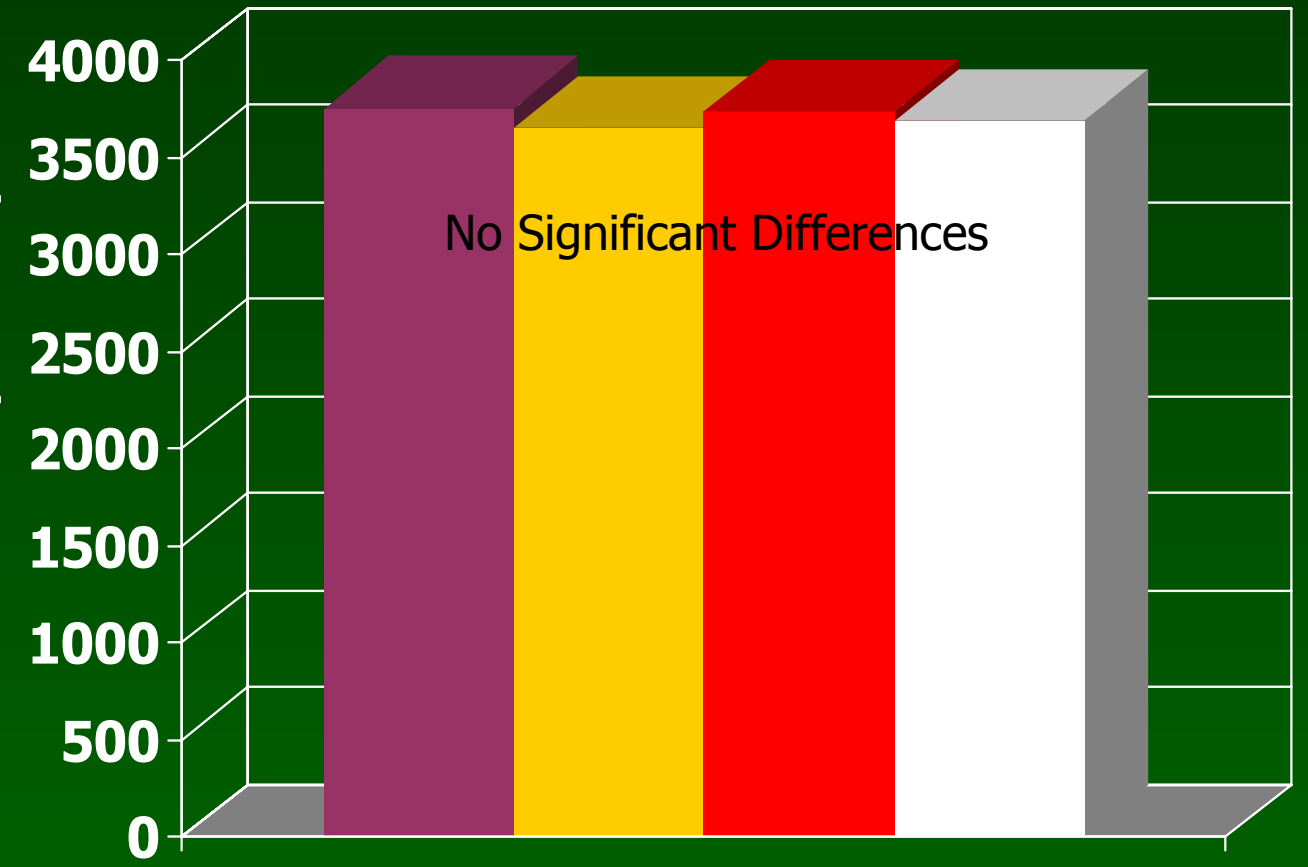
Plant Stand



Effect of Seed Quality

Averaged across planting dates and varieties

Yield



Data pooled over two years.

Conclusions

- **Most observed effects were expected**
  - **Planting date affected plant stand, vigor, and yield**
  - **Variety has some small effect on vigor.**

Conclusions

- **Seed Quality Effects**
  - **Only the combination of small seed size and low cool germ resulted in reduced stands or vigor.**
  - **Apparently a larger seed can overcome the negative influence of low cool germ and vice versa.**
- **The lack of interactions suggests that these results would be similar across a range of varieties**

Is Seed Quality Important?

- **Absolutely, but the environment (i.e. planting date in this study) plays a larger role in stand establishment and performance.**
- **The basics of planting in good conditions, having a good soil seed contact, and well prepared seedbed are the keys to achieving adequate stands.**

Acknowledgements

- Delta and Pine Land Company provided the seed lots for testing
- Staff of the Dean Lee Research Station