Impact of Reduced Funding on Soybean Research
Historical funding

Rate of increase in private vs. public sector

• 1900-2000 – 4.0 percent per annum for public vs. 4.5 percent for private

• In 2000 private sector expenditures were 2.3 times higher than public expenditures.

(Huffman and Evenson, 2006)
Private vs. Public Funding

- Monsanto, Syngenta, and Pioneer each invest $500 million annually.
- USDA Research & Education in FY08
  - $577,798,000 (-13% from FY07)
- Soybean checkoff funding
  - $29 million in FY2006-07

Checkoff and USDA funding are critical for the development of fundamental science to be used to facilitate revenue-generating technology.
Ongoing Research Areas

- Mechanization
- Biological efficiency
- Protection-maintenance
- Management
- Post-harvest

(Huffman and Evenson, 2006)
Protection - Maintenance

**Soybean**
- ✓ Genome mapping
- ✓ Agronomic traits
- ✓ Herbicide tolerance
- ✓ Fungal resistance
- ✓ Insect resistance
- ✓ Virus resistance
- ✓ Marker genes
- ✓ Quality improvements – human health

**Corn**
- » Genome mapping
- » Agronomic traits, cold and drought tolerance, stalk strength, amino acid levels
- » Herbicide tolerance
- » Fungal resistance
- » Insect resistance
- » Starch alteration, nutritional quality
- » Plant-made pharmaceuticals
What impact will reduced funding have on public research?

- Continued reduction in faculty positions at land grant universities

Changes in number of faculty at the professor, associate, and assistant levels at select universities. 2000/2001 to 2005/2006.

Source: USDA
Voids in Soybean Research

• Biotechnology
  » Insect resistance – *Coleoptera* spp., *Aphis glycines*
  » Nematodes – *Heterodera* spp.

• Biological efficiency
  » Max soybean yield 137 bpa; mean 43
  » Max corn yield 500+; mean 160

US Corn and Soybean Yield, 1924-present.
Voids in Soybean Research

• Bioinformatics training
• Molecular mechanisms that influence pathogenicity
• Molecular mechanisms that drive changes in the pathogen population
• Development of rapid diagnostics
• Pathogen/pathogen and pathogen/host interactions
Voids in Soybean Research

• Better education to producers on stewardship of new technologies
  – i.e. glyphosate resistance
• Post harvest
  • Reduce or discover new uses for by-products such as DDGs, glycerin and soybean meal
Conclusions

• Voids in research are numerous
• Knowledge gain in all areas is slowed by limited number of dedicated researchers
• Reductions in public funding will continue to slow innovations in agricultural research
Thank You!

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