

Impact of Reduced Funding on Soybean Research



Our soybean checkoff.



IOWA SOYBEAN

—ASSOCIATION—

Expanding Opportunities. Delivering Results.



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)



Funding Today

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)

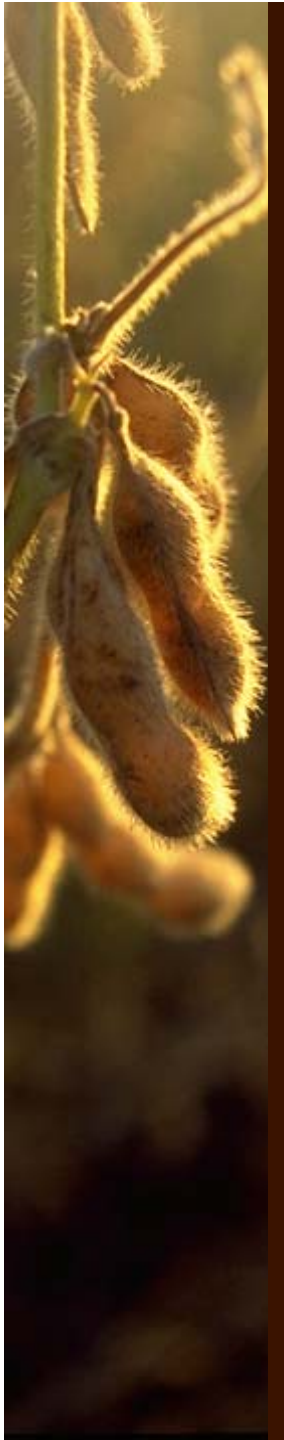
Protection - Maintenance

Soybean

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

Corn

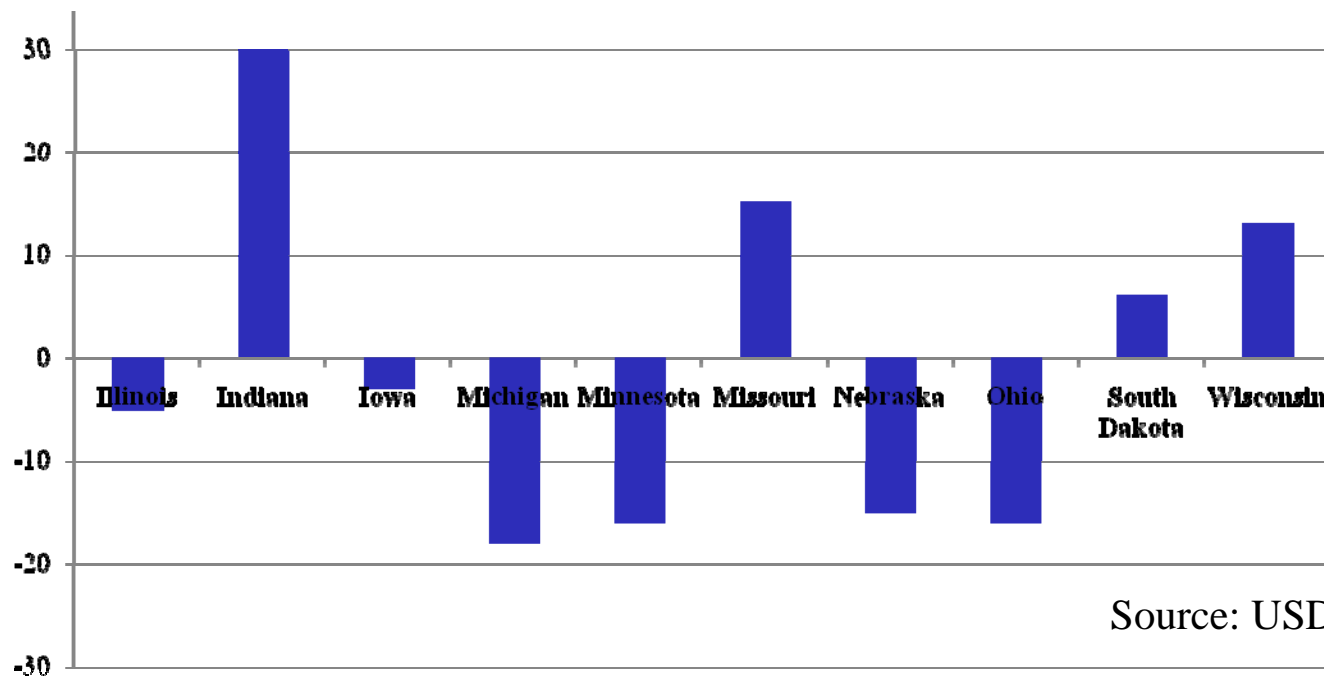
- » **Genome mapping**
- » **Agronomic traits, cold and drought tolerance, stalk strength, amino acid levels**
- » **Herbicide tolerance**
- » **Fungal resistance**
- » **Insect resistance**
- » **Starch alteration, nutritional quality**
- » **Plant-made pharmaceuticals**



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

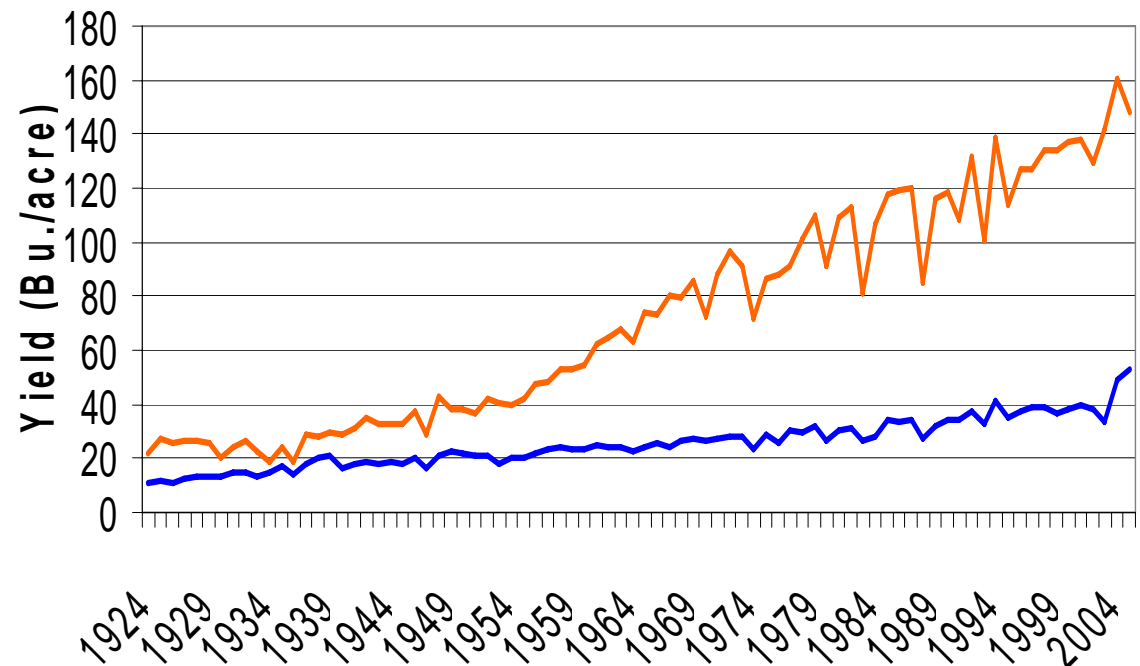
- Biotechnology

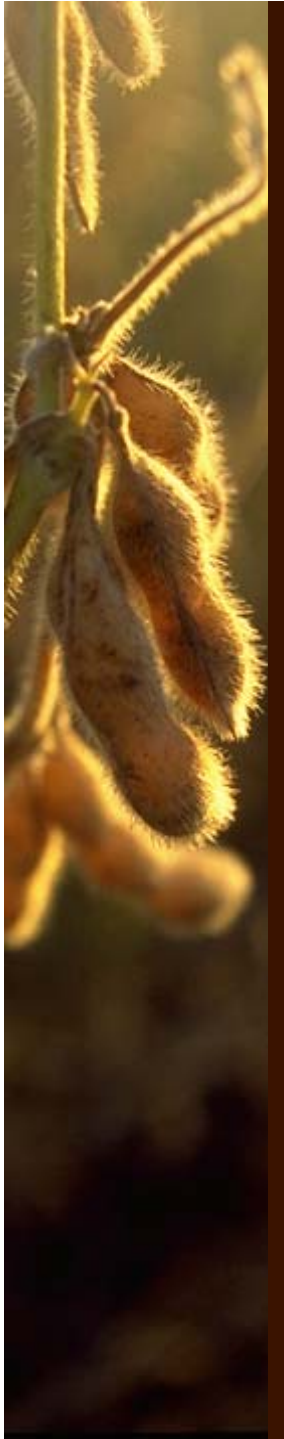
- » Insect resistance – *Coleoptera spp.*, *Aphis glycines*
- » Nematodes – *Heterodera spp.*

- Biological efficiency

- » Max soybean yield 137 bpa; mean 43
- » Max corn yield 500+; mean 160

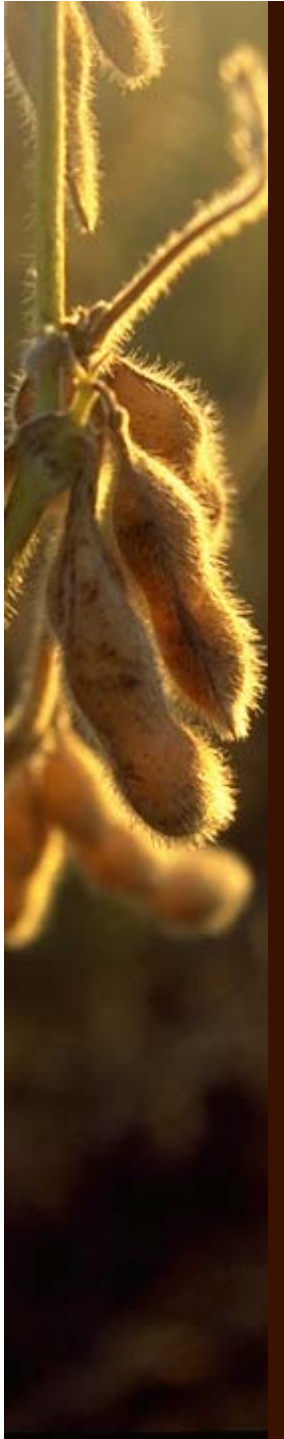
US Corn and Soybean Yield, 1924-present.





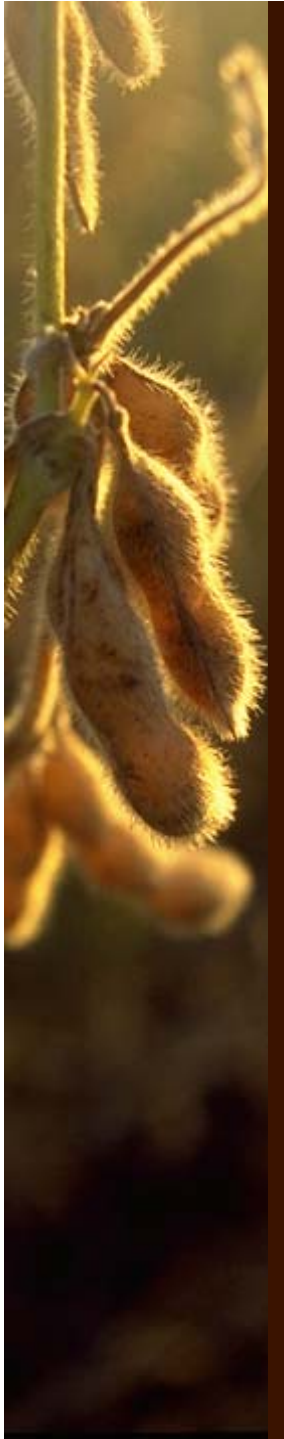
Voids in Soybean Research

- 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



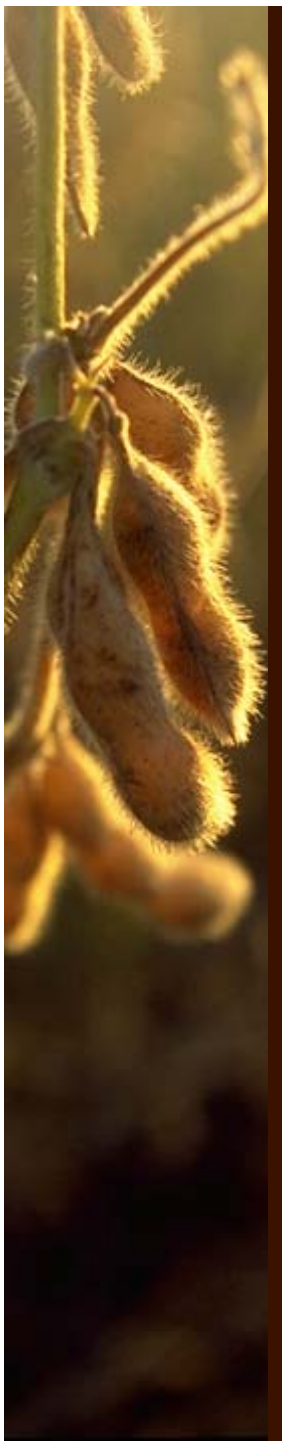
Voids in Soybean Research

- 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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