Role of Land Grant Universities in Feeding the World

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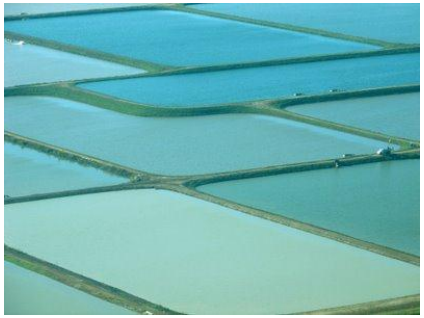
Alabama's $5.5 Billion Ag Industry

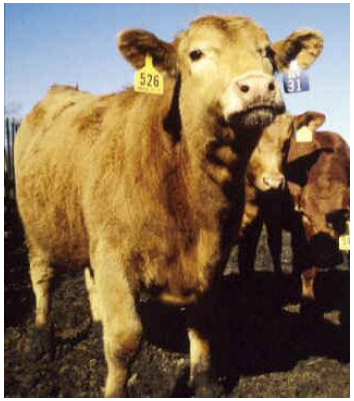
- Catfish (2nd in US)
- Broilers (3rd in US)
- Peanuts (3rd in US)
- Pecans (5th in US)
- Sweet potatoes (5th in US)
- Tomatoes (9th in US)
- Cotton (10th in US)
- Goats (11th in US)
- Cattle & calves
- Nursery and Landscape
- Corn
- Soybeans
- Wheat
- Vegetables
- Dairy products
- Hogs

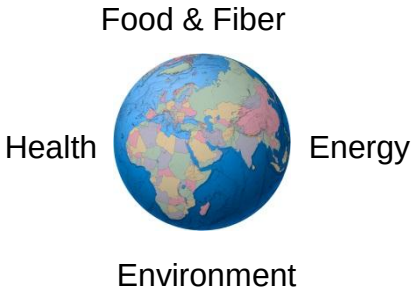
AL ranks 24 in agriculture (1.7%)

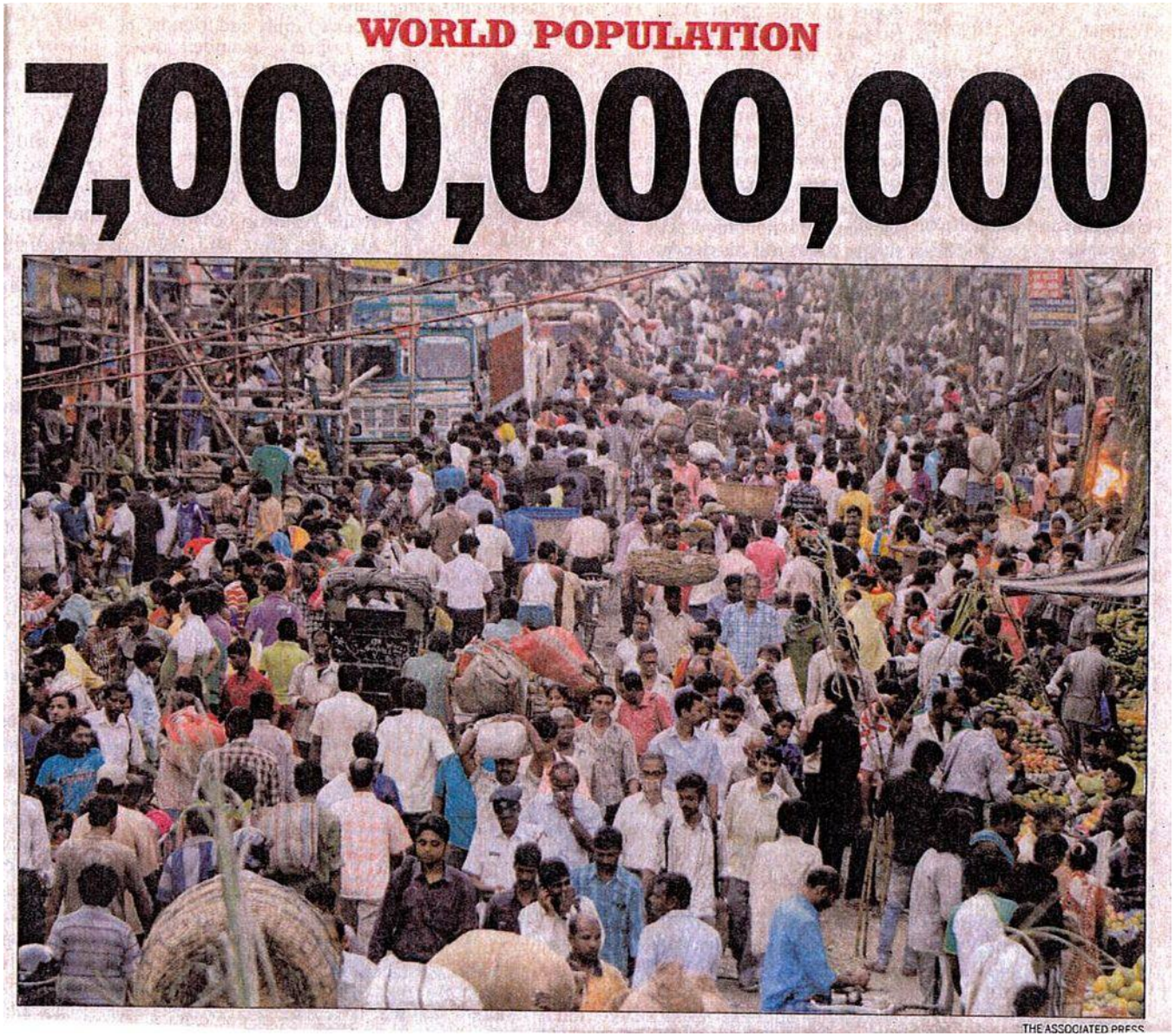
Agriculture in Alabama

- Diverse agriculture
  - Poultry/livestock
  - Aquaculture
  - Row crops & horticulture
  - Timber
- 48,000 farmers
- ≈$5 Billion annual receipts
- 21% of jobs in Alabama
- 22% of economic activity



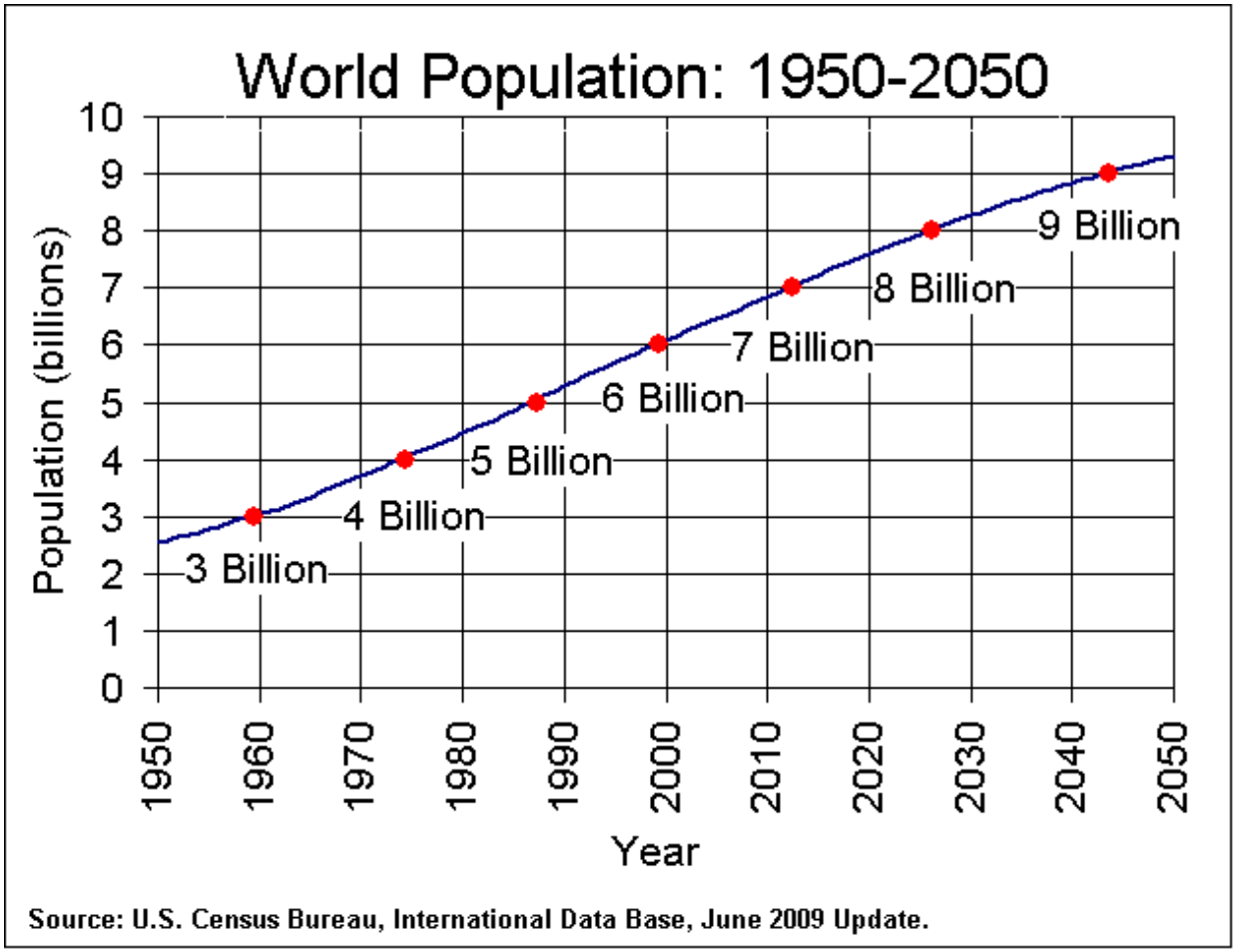






November 1, 2011

World Population



By 2050, 70% of world will live in cities

Challenges Facing the World

By 2050…

- Global middle class projected to grow from 1 billion to 3 billion
- 70% of population living in cities
- Global food demand must double

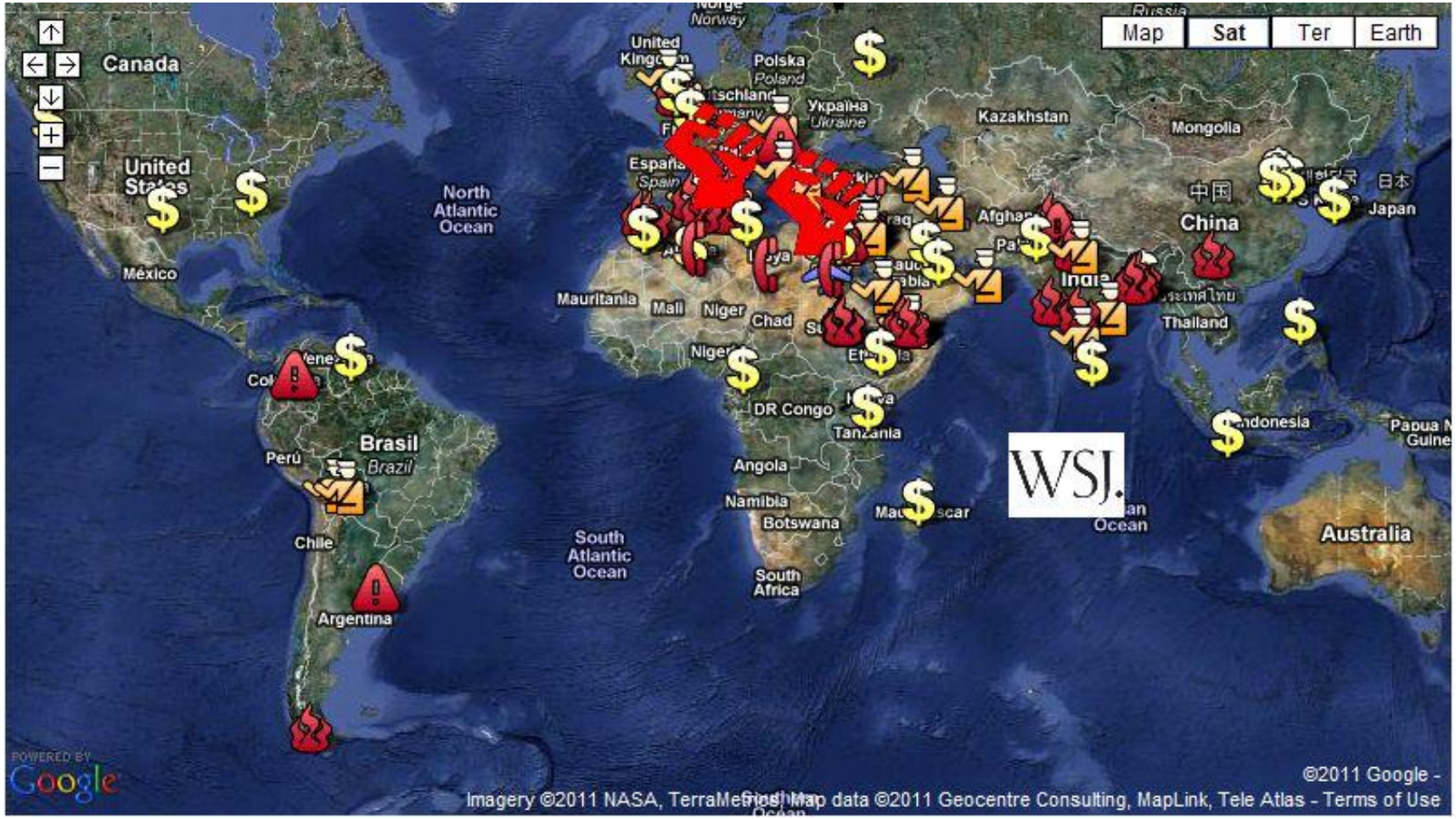
Free trade is the driver of global economics

Food Facts

- From 2002-08, China added the consumer equivalent of Europe to global food demand
- China demand for meat tripled during past 15 years
- Food demand is rising 2% per year
- Food production is rising 1% per year

Effect on Food Prices

High Food Prices Causes Conflict



Grand Challenges Facing the World

Food & Fiber

Health

Energy

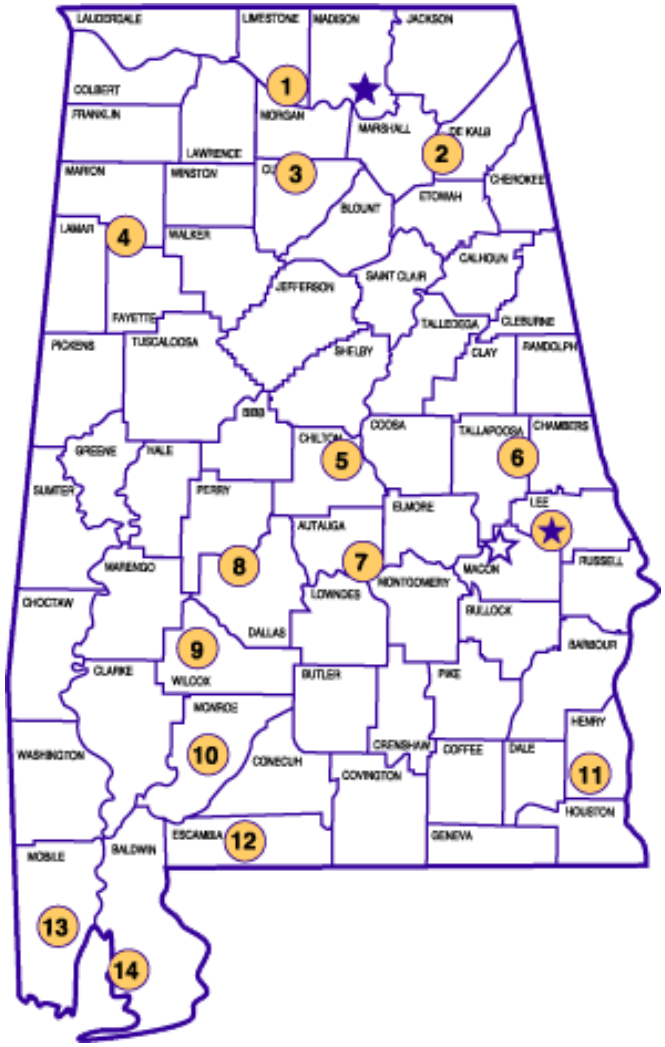
Environment

Agriculture is critical to the future!

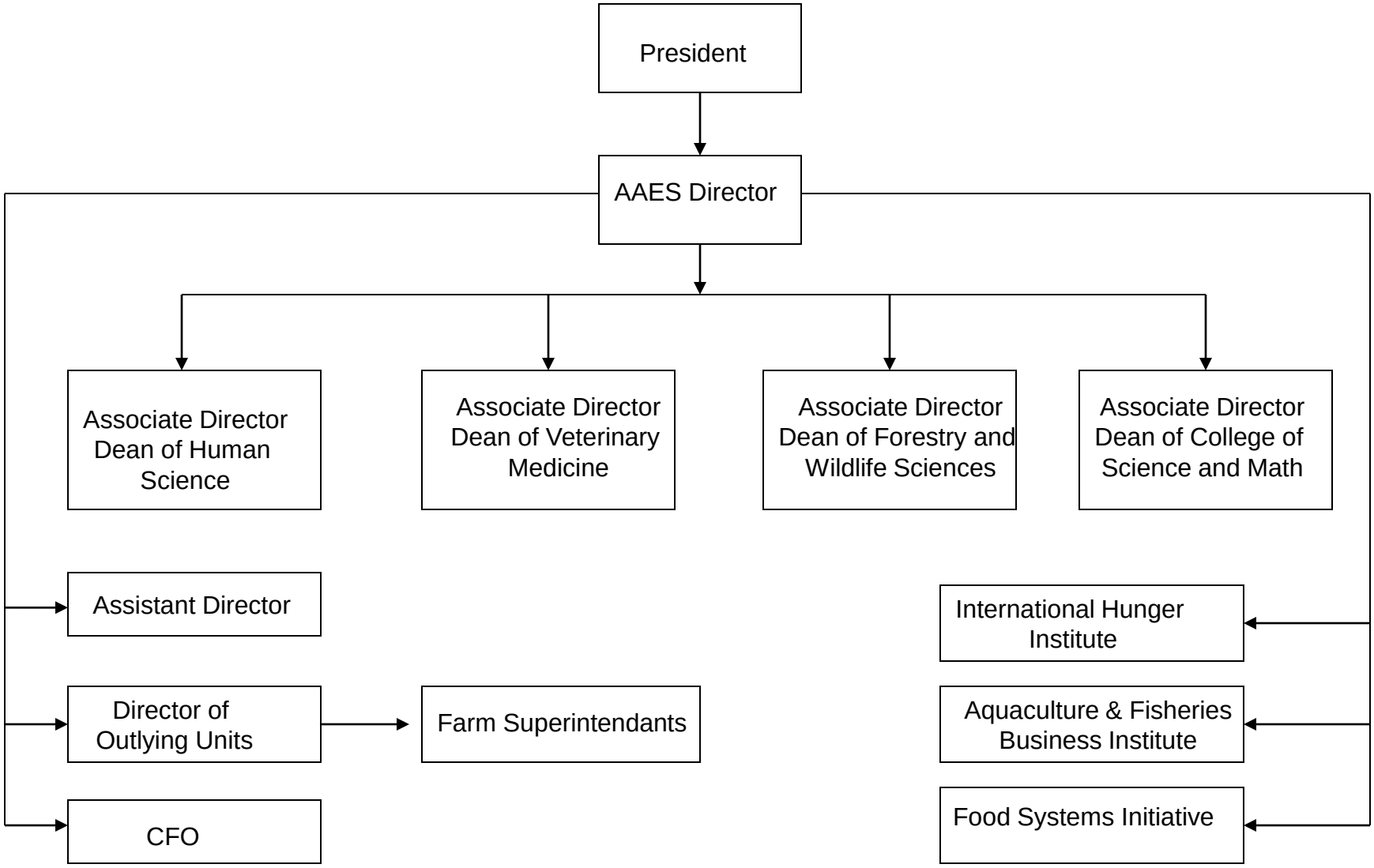
Research & Extension

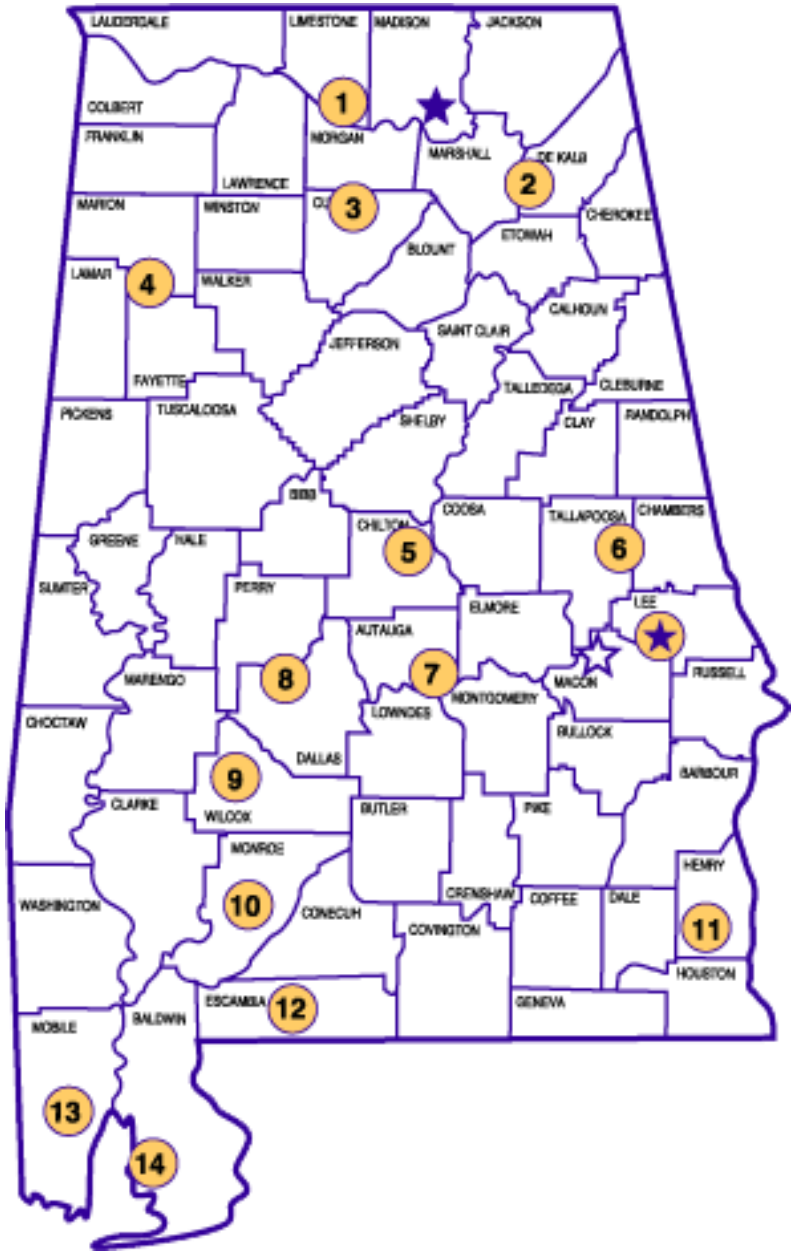
Sources of Funding

- State funding
- Federal formula funding
- Grants and contracts
- Industry gifts
- Licensing royalties



Alabama Agricultural Experiment Station





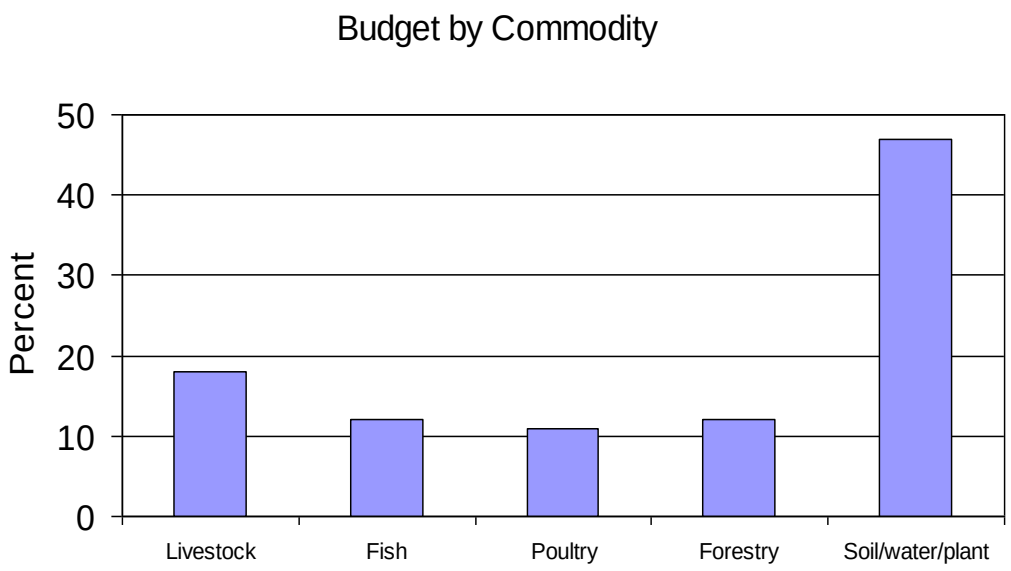
AAES Farm System

- 15 Farms
- 6 R&E Centers
- $6.3 Million budget

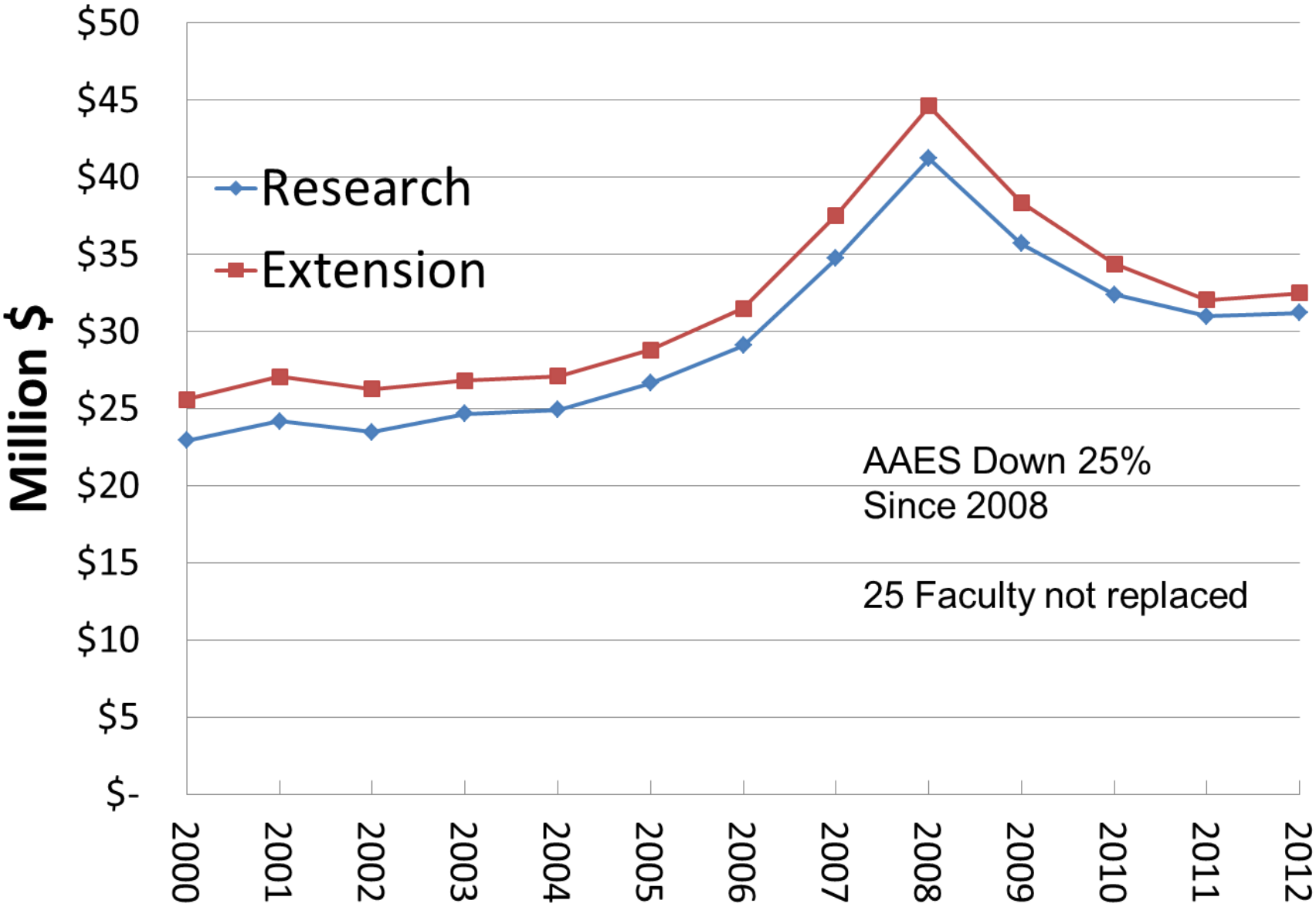
- Row crops
- Vegetables
- Horticulture
- Cattle

Budget

- $31 million state funds
- $5 million federal
- 73% personnel
- 313 buildings
- 286 hard FTE’s
- 351 total FTE’s



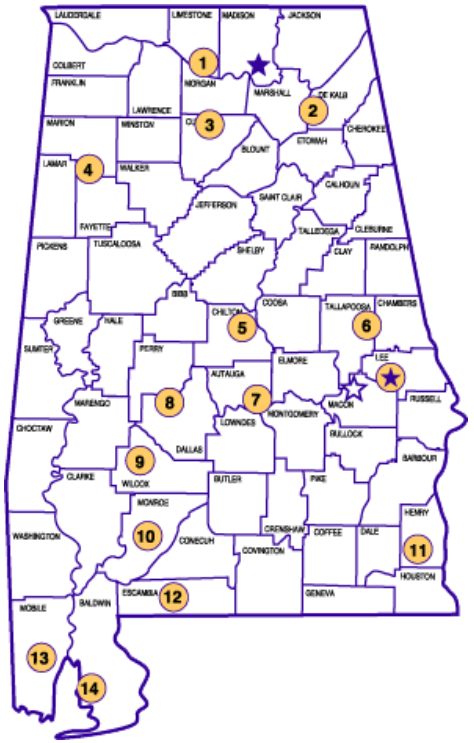
State Funding For Agriculture Programs at Auburn



Research Strategies

Incremental changes in technology

- Genetic improvement
- Precision agriculture
- Irrigation management
- Production management
- Nutrient management
- Animal management
- Disease management
- Food safety (AUFSI)
- Aq. & Fish Business Institute



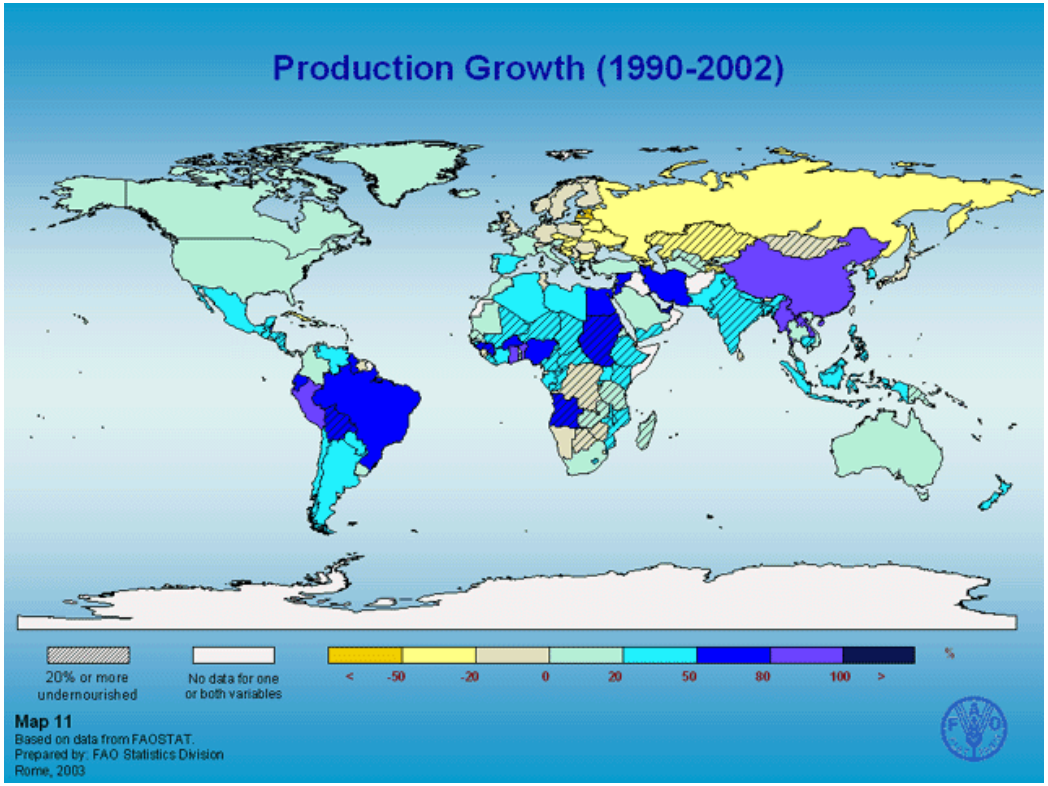
Research Strategies

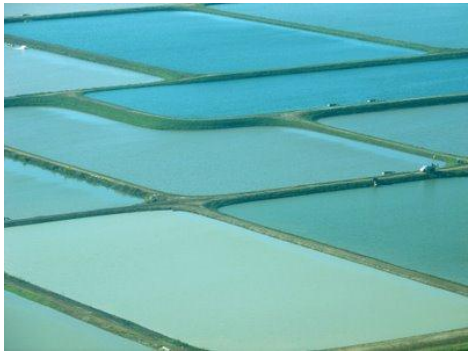
Breakthrough Technology

- New system to triple catfish production
- Development of hybrid catfish
- Development of the US catfish industry
- Development of the tilapia industry
- Developed vaccines for poultry
- Development of fruit and vegetable varieties
- Renewable energy

New Technologies Needed to Increase Food Production

- Education in poor areas
- Credit markets
- Government stability
- Biotechnology
- Genomics
- Tissue engineering
- Post-harvest storage
- Product development





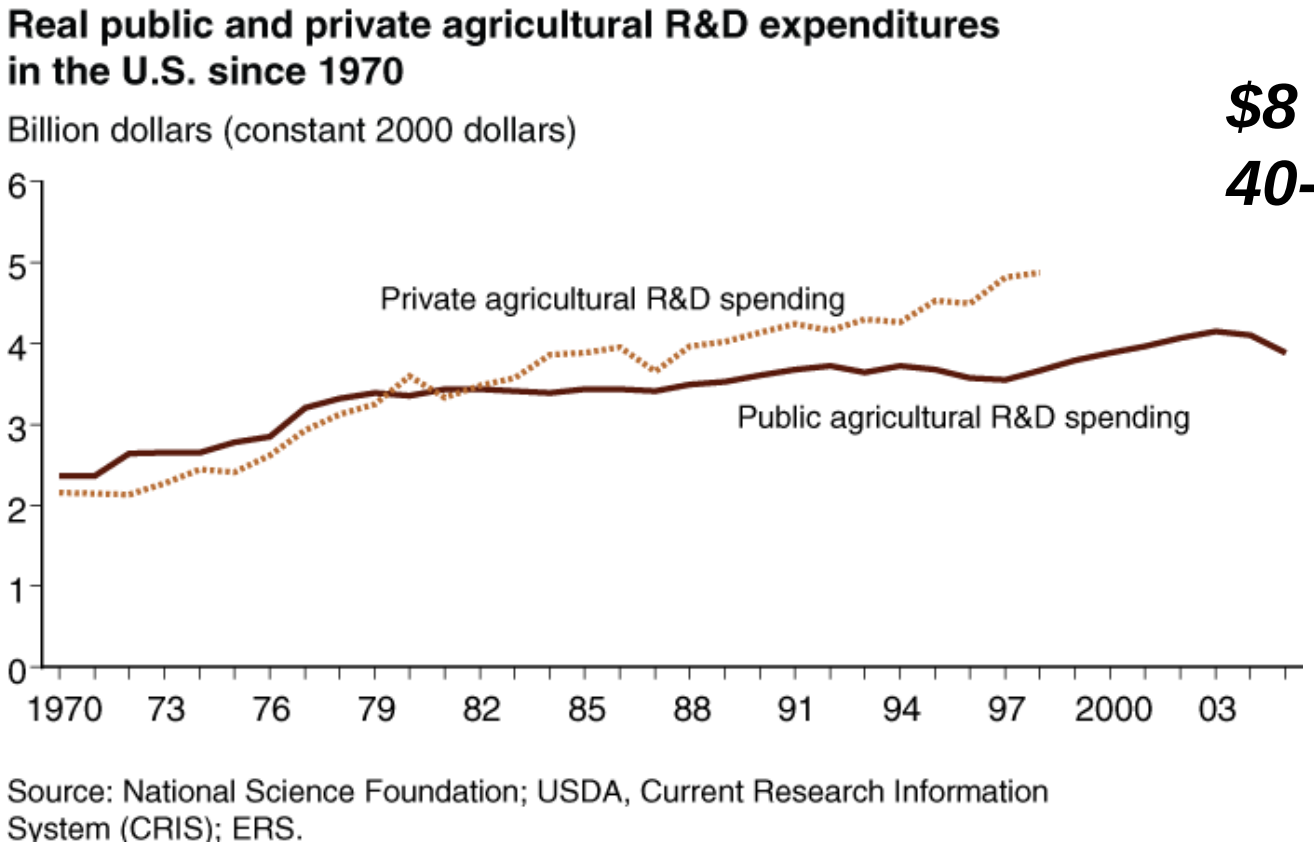
How to Double Food Production?

- Breakthrough technology
- Incremental technology improvements
- Localized applied research
- Extension programs
- Policies to support food production

That's the Land Grant Strategy!

Agricultural Research

In 2000, only $23 Billion spent globally on agricultural research ($1.5 trillion spent on armaments)

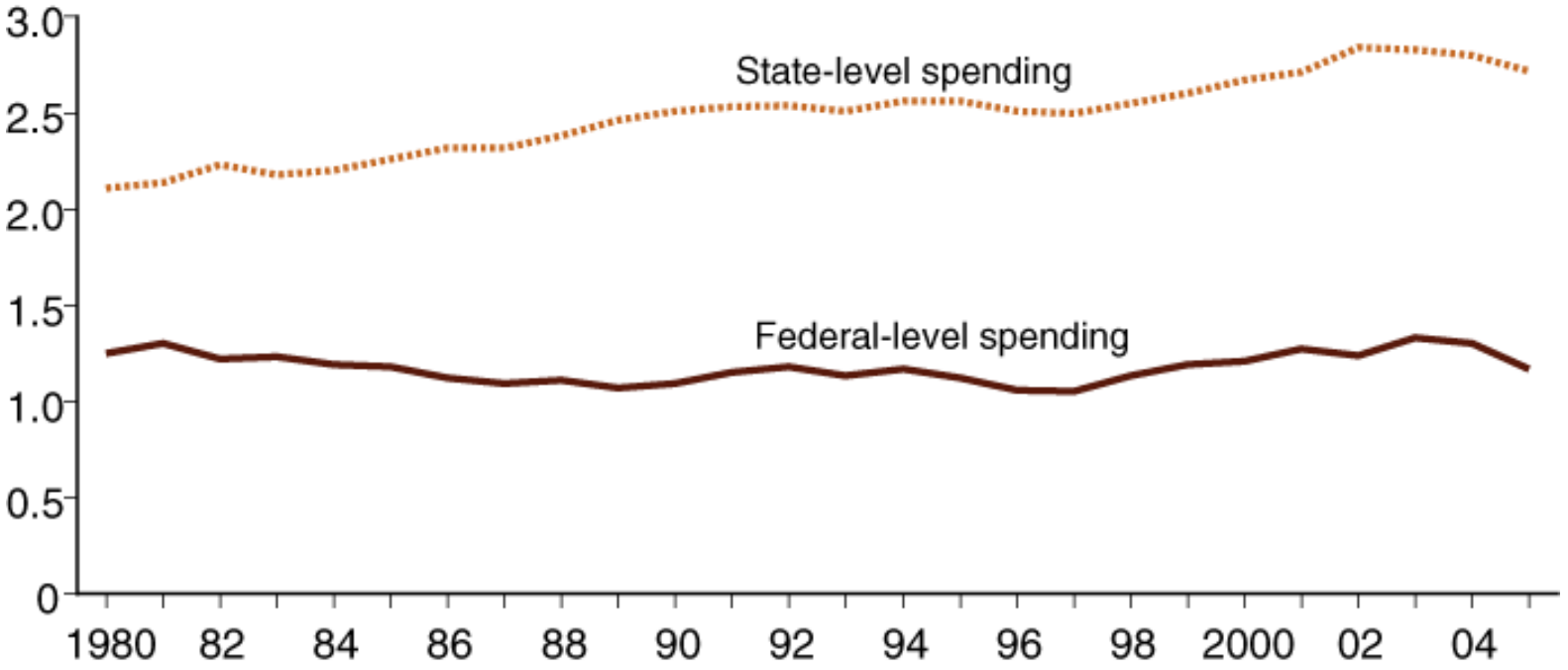


$8 Billion in US
40-50% ROI

Figure 6

Public agricultural research spending, 1980-2005

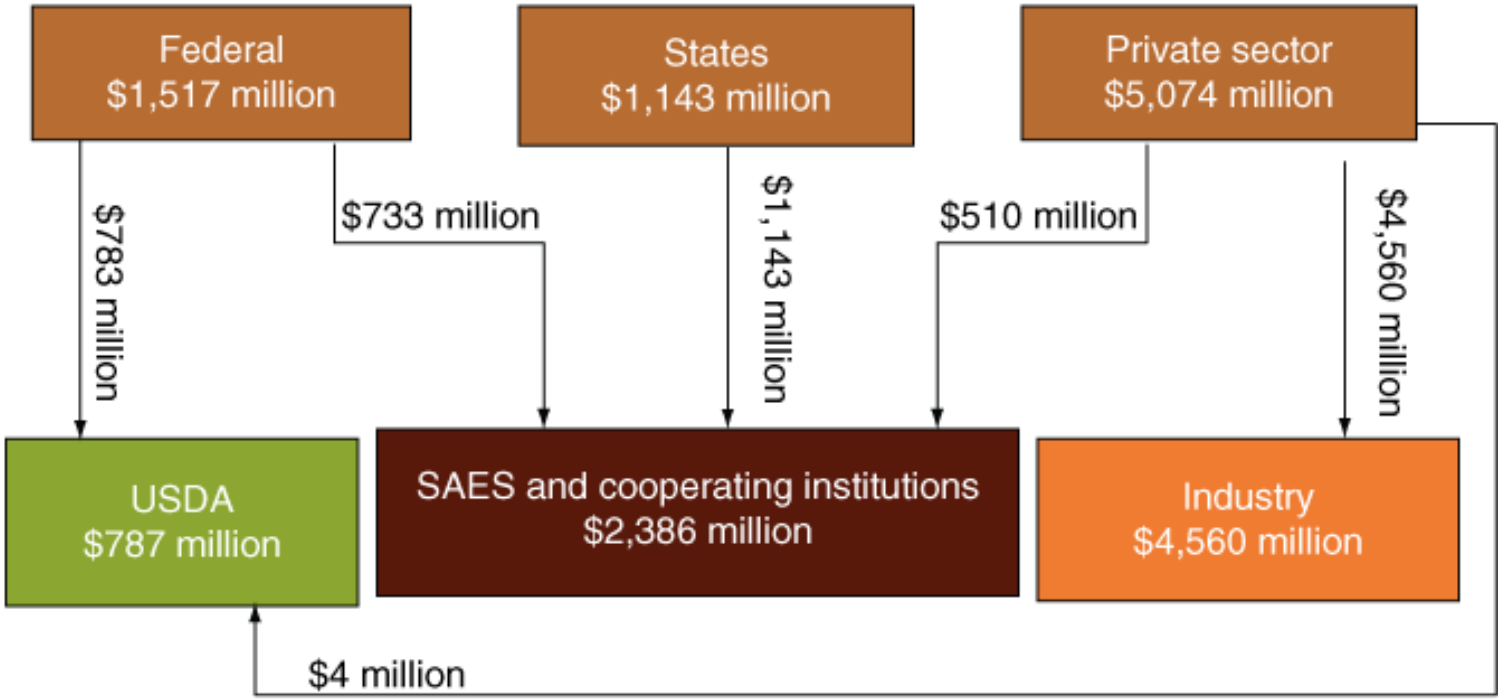
Billion dollars (constant 2000 dollars)



Source: USDA, CRIS; National Science Foundation, *Federal Funds for Research and Development*.

Figure 3

Sources and flows of funding for agricultural research in 1998 (nominal dollars)

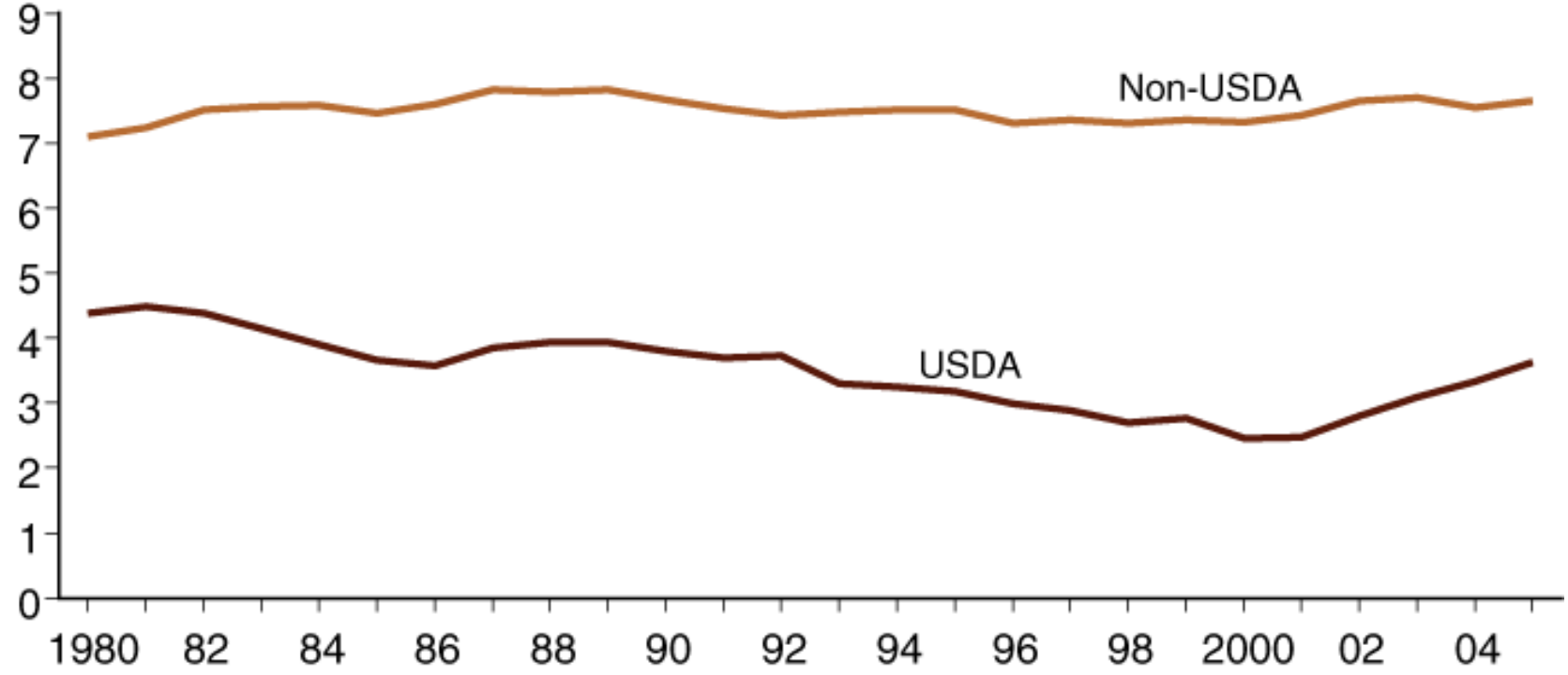


Source: USDA, ERS (update of fig. 3, p. 9, AER-735, K. Fuglie et al., 1996) and CRIS.

Figure 15

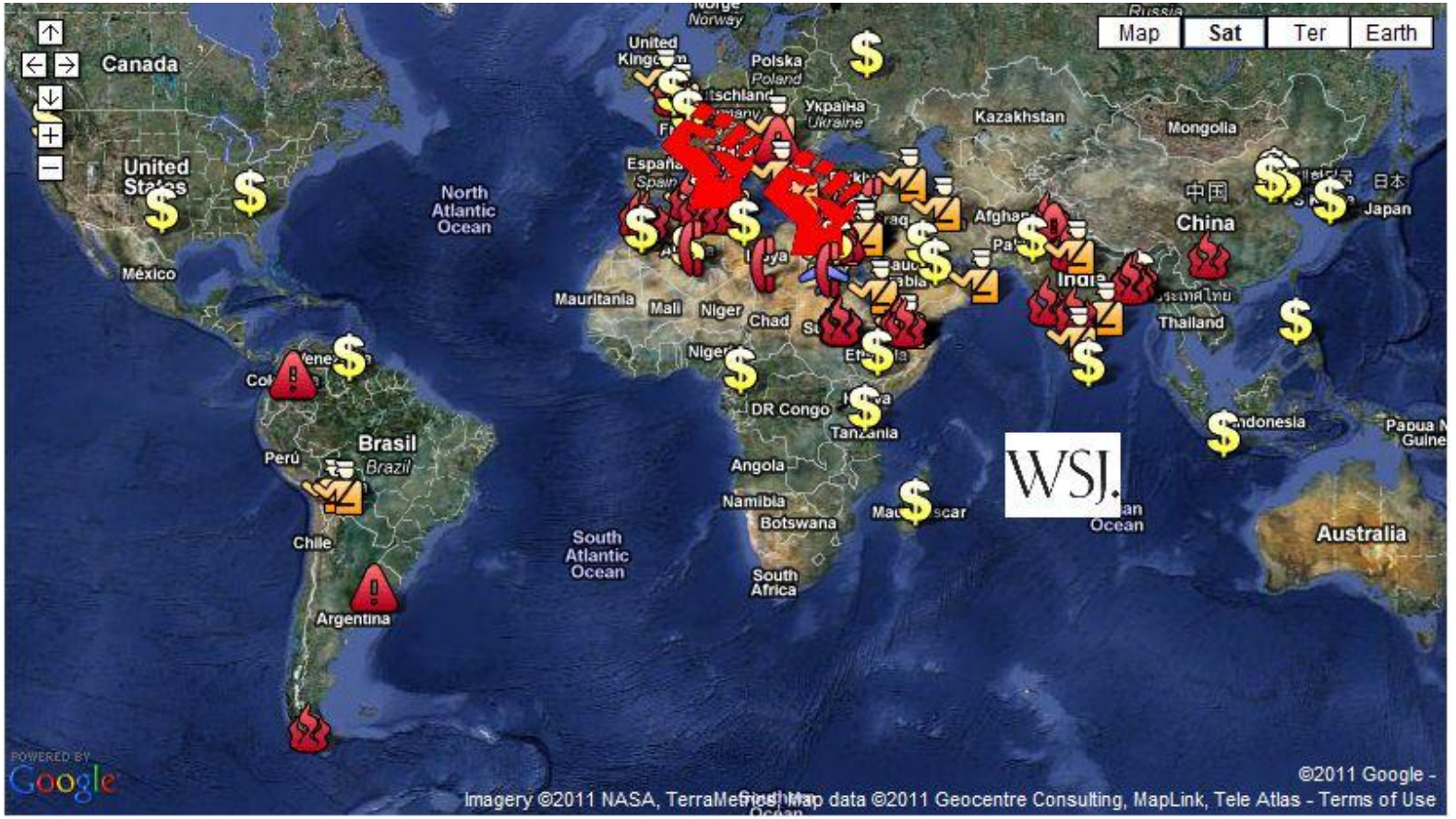
Research scientist years at USDA and State-level institutions

Full-time equivalents (FTEs)



Source: USDA, CRIS.

What If We Fail?



- Since 2007, food riots in 40 countries

Federal Government:
$714 per farmer for Ag research
$325,000 per farmer for defense

Summary

- Middle class will triple by 2050
- Agricultural research funding is declining
- Must double food production in 38 years
- World must increase investment to increase rate of technology development

What if we fail?