



AGRICULTURE, FOOD SECURITY AND POVERTY ERADICATION

**Rio+20: Towards Sustainable Development
Canberra, 25th November 2011**



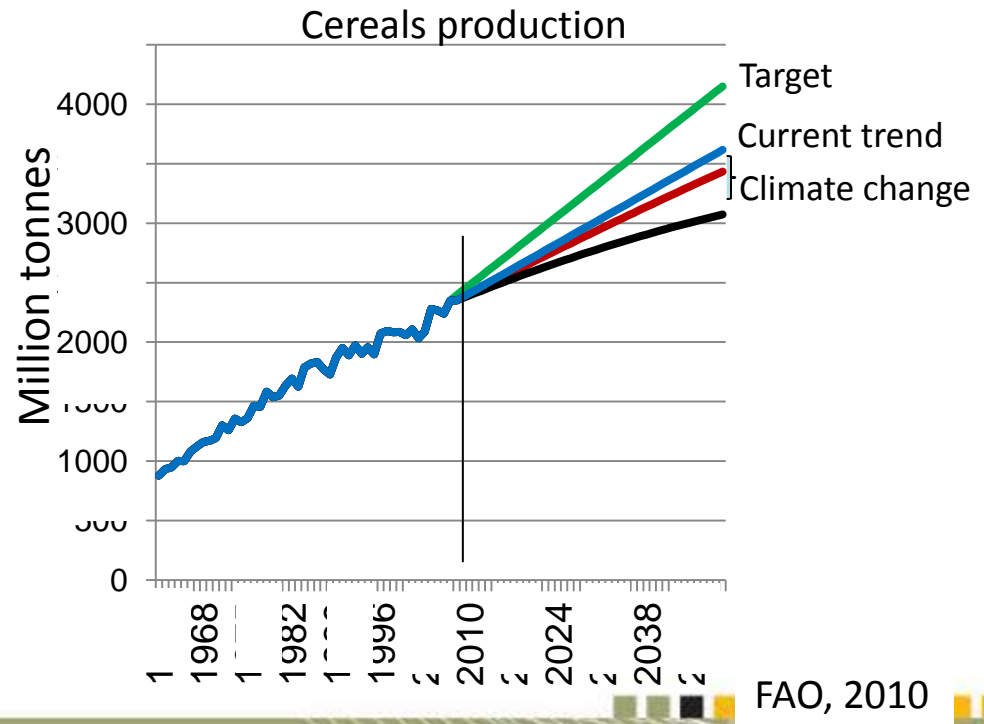
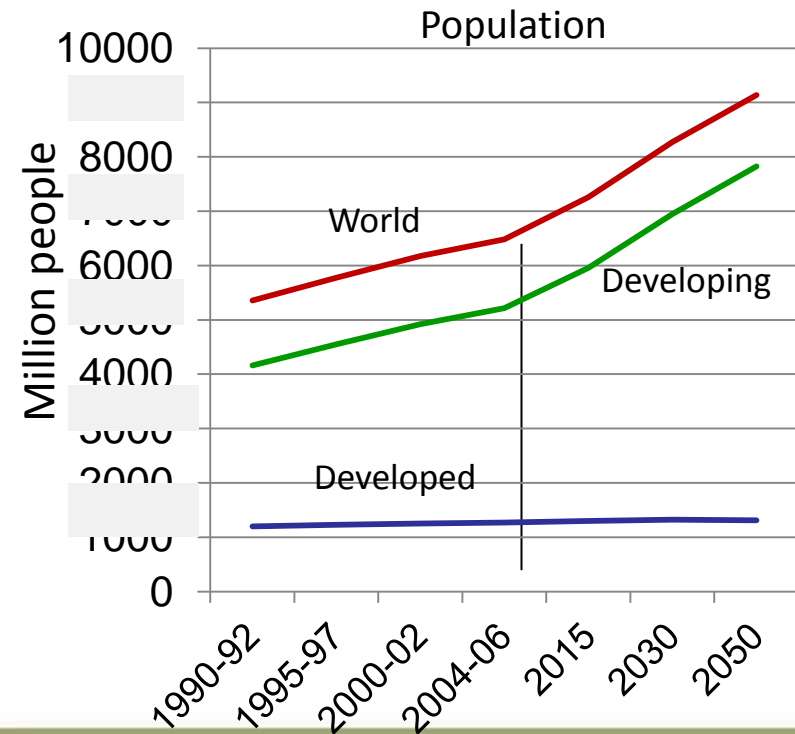
Borlaug's 1969 prophecy:

“The seriousness or magnitude of the world food problem should not be underestimated. Recent success in expanding wheat, rice and maize production in Asian countries offers the possibility of buying 20-30 years of time”

N.E. Borlaug, 1969 – A Green Revolution Yields a Golden Harvest

“A hungry world is a dangerous world. Without food, people have only three options: They riot, they emigrate or they die. None of these are acceptable options”

Josette Sheeran, Executive Director World Food Program, 2009



Ground Water Food Bubble

India: 20 million irrigation wells – many start to get dry
175 million Indians are fed with grain from over-pumping

China: 130 million Chinese are fed with grain from over-pumping

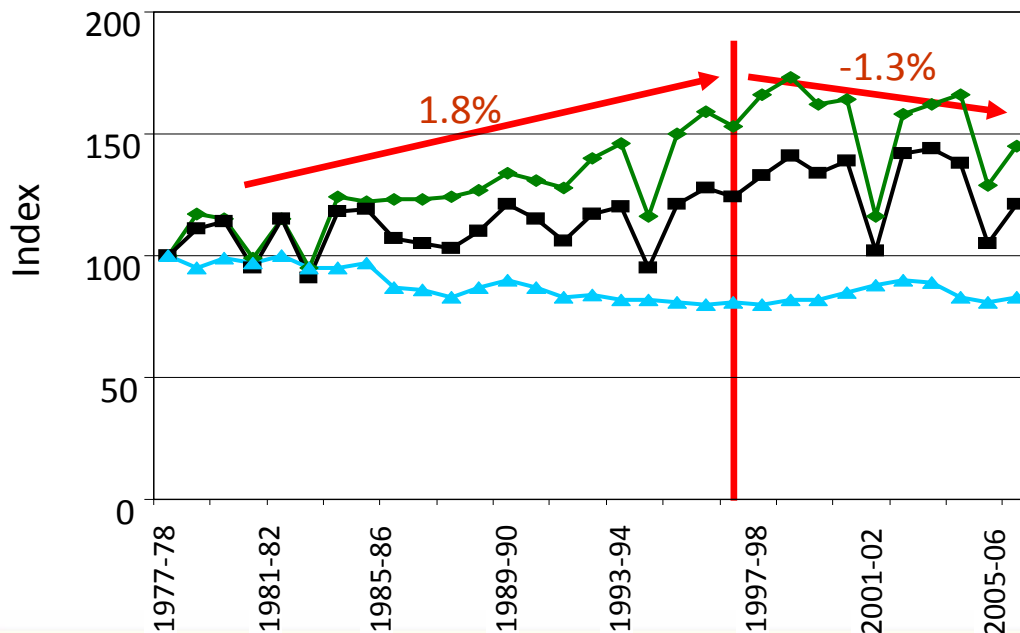
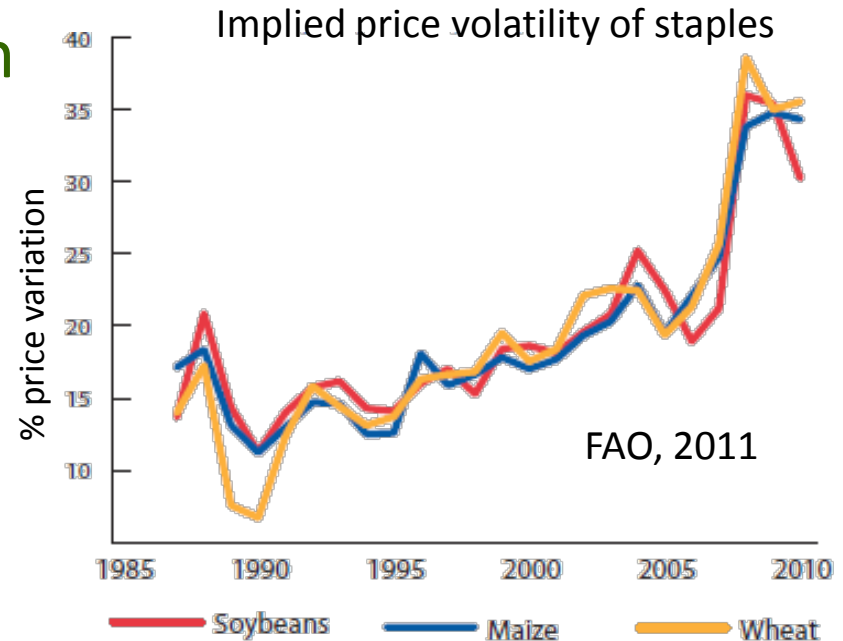


How will India and China
make up for the
inevitable shortfalls
when the aquifers are
depleted?

Source: World Bank

Challenges - Production

- Price volatility
- Climate variability and climate change
- Resource access and cost
- Declining agricultural productivity in many regions



Long term growth rate

◆ Total factor productivity	1.4 %
■ Total Outputs	0.8 %
▲ Total inputs	-0.6 %

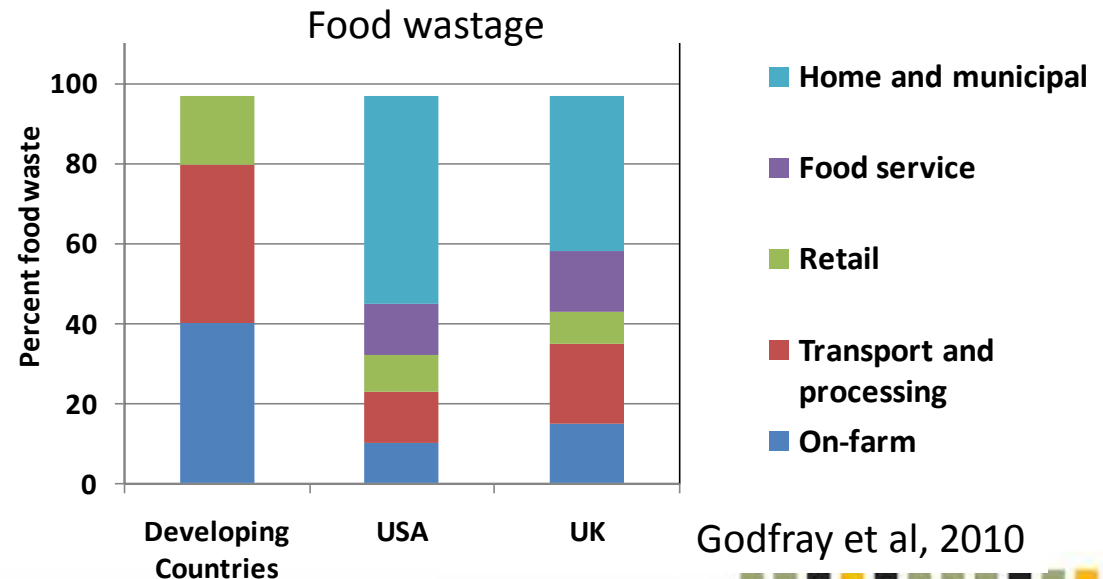


Food in society

- Interest and knowledge of food production and processing
- Nutrition and population health profile
- Loss and waste



Choosing and valuing nutritious food?



Rising meat consumption

Millions of live animals	1961	2008	Fold increase
Chickens	3, 884	18,398	4.7
Pigs	406	941	2.3
Cattle	1,030	1,528	1.5
Sheep and goats	1,343	1,940	1.4

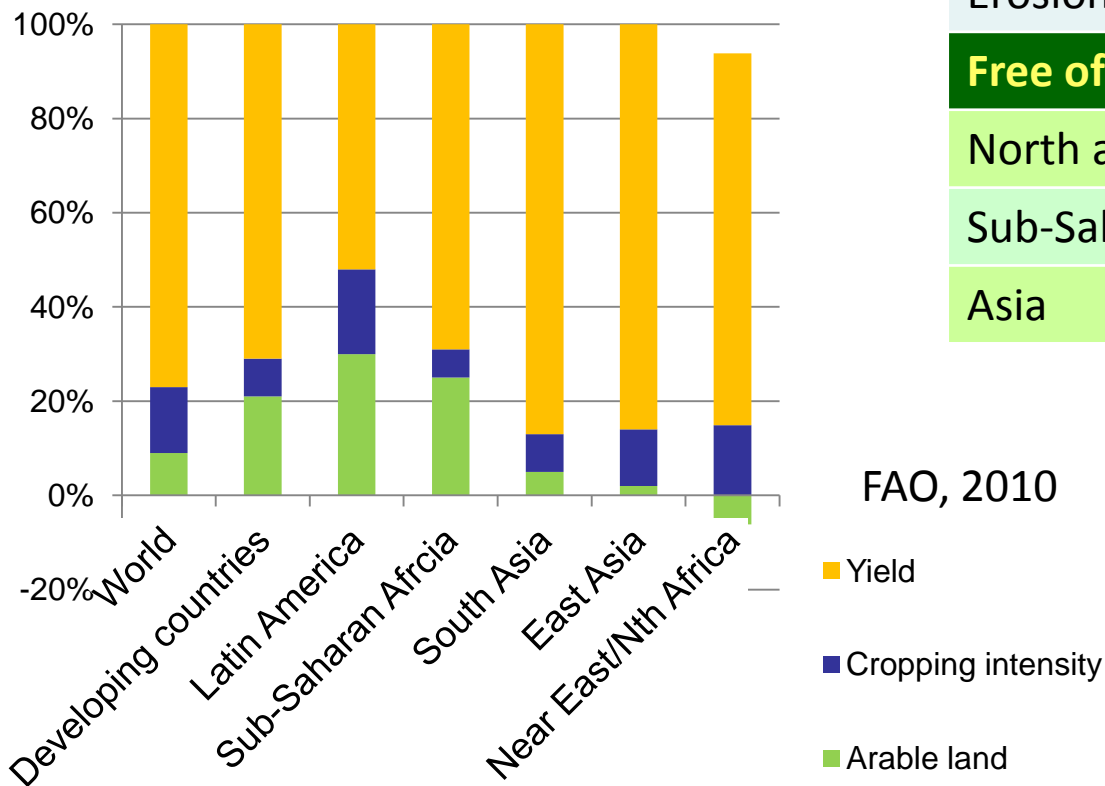


Biofuels

240Kg maize is needed to produce 100 litres of ethanol
Either fill the tank of an SUV or feed one person for a year



Increases in crop production?



FAO, 2010

Major soil constraints

Al toxicity	15%
Salinity	6%
Erosion	16%
Free of major constraints	24%
North and Central Asia	40%
Sub-Saharan Africa	18%
Asia	23%



The investment challenge

An EBRD country example: Ukraine

- Ukraine has huge agricultural potential ...
 - 8% of global grain exports, with a potential to double yields and increase grain output from 40mt to 80mt
- ... requires massive investments ...
 - Investment costs of c. \$1000-\$2000 per ha
 - Require a total of 40-80 billion US\$
 - Adapting existing technologies
 - Using sustainable technologies
- ... which need transparent and predictable policies to boost investor confidence

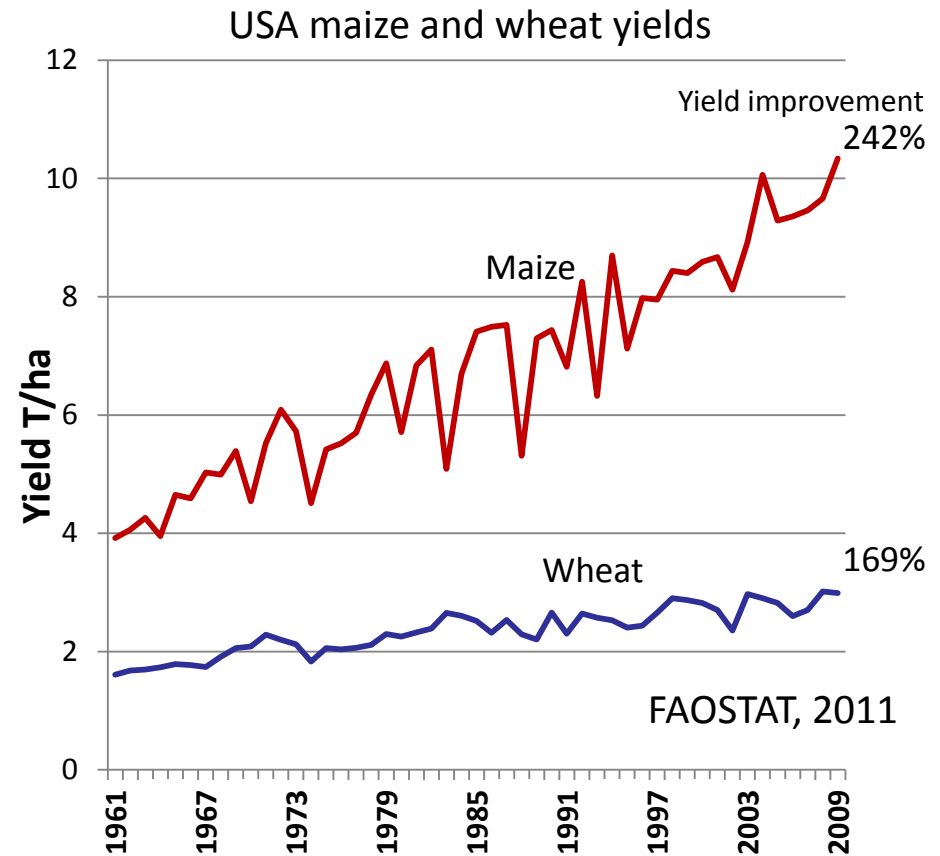
Source: Heike Harmgart

European Bank for Reconstruction and Development

Can science and technology help?

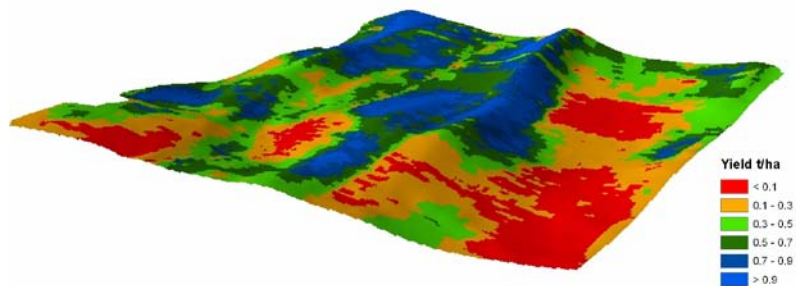
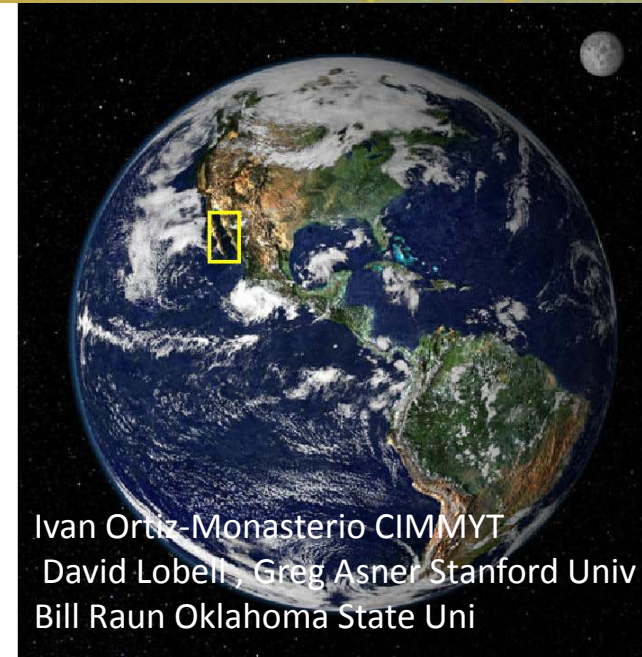
- Improve use of resources
 - Water
 - Land
 - Fertilisers
 - Chemicals for pest and disease control
 - Energy
- Alternative crops
- New breeding and selection strategies

2007 Data	Area (x10 ⁶ ha)	Production (x10 ⁶ tonnes)	Yield (t/ha)
Maize	158	792	5.0
Rice	156	660	4.2
Wheat	214	606	2.8



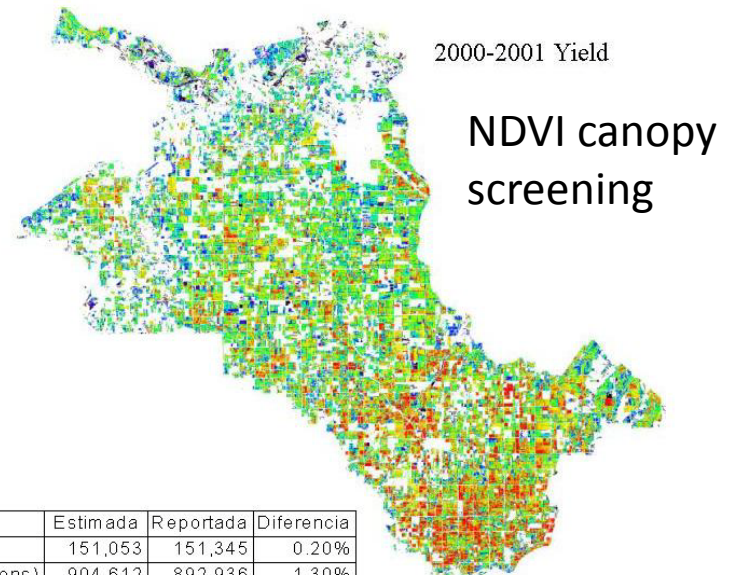
Resource management

- Regional resource management
- Optimising resource use by farmers
 - Information and decision support systems



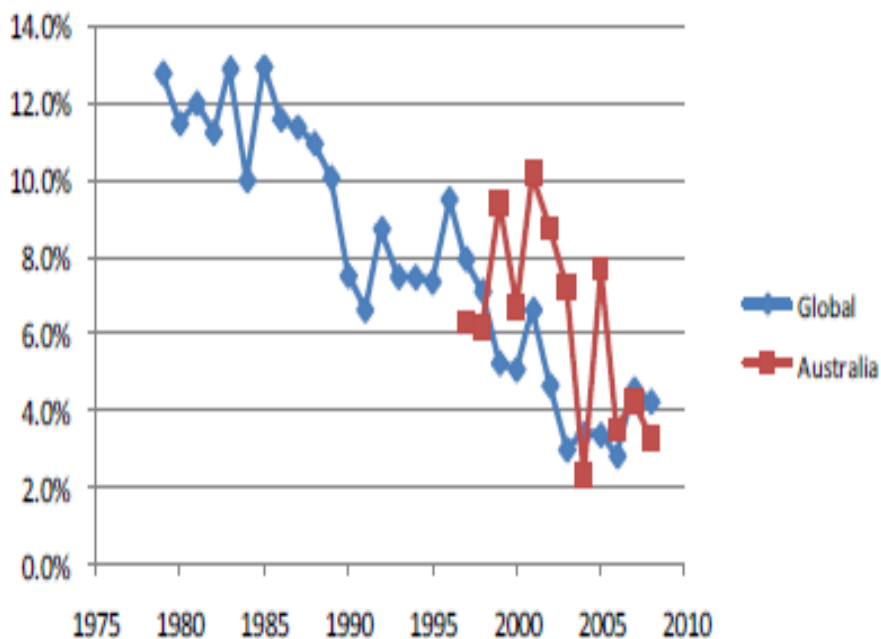
Yield mapping

Rendimientos de Trigo



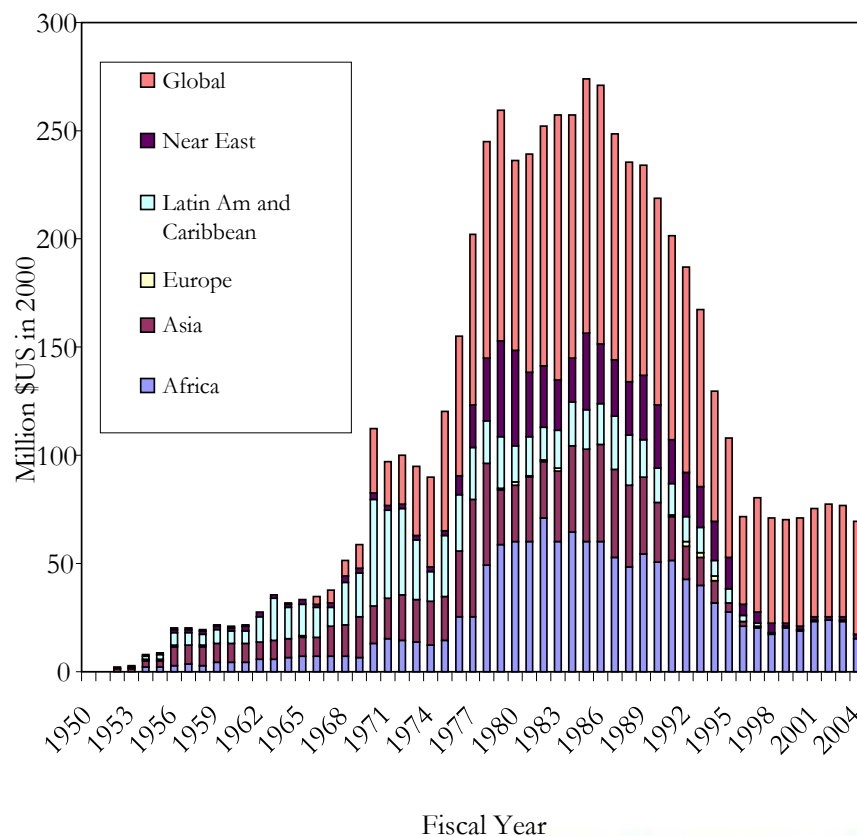
Agricultural aid spending

Agriculture's share of overseas development aid



ACIAR, 2010

USAID funding for agricultural R&D



Fiscal Year



Wish list

- Education
 - Population control
 - Improved resource management
- Political stability
- Infrastructure
 - Food distribution and storage
 - Roads, rail, ports, silos
 - Farm machinery
 - Chemicals and fertilizers
- Technology delivery
 - Communication
 - Human resources
 - Physical resources

