

Benefits & Limitations of
**Conventional Farming
& Organic Farming**
in view of Increases in World Population

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Overview

- ▶ Introduction
- ▶ The Global Challenge
- ▶ Benefits provided by the Plant Science Industry
- ▶ The Role of Organic Agriculture
- ▶ Conclusion



Introduction



This is CropLife Asia



A Regional Network

spanning Asia-Pacific

6 Member companies



14 Member associations



Part of a Global Federation

of regional and national associations in 91 countries



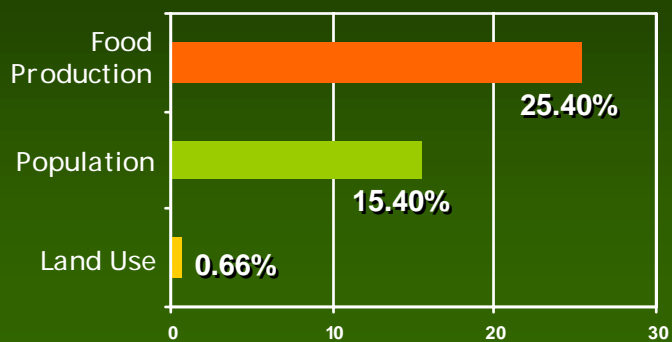
The Global Challenge



“How can agricultural production rise to meet demand in a framework of equitable, environmentally, socially, and economically sustainable development?”

The Good News

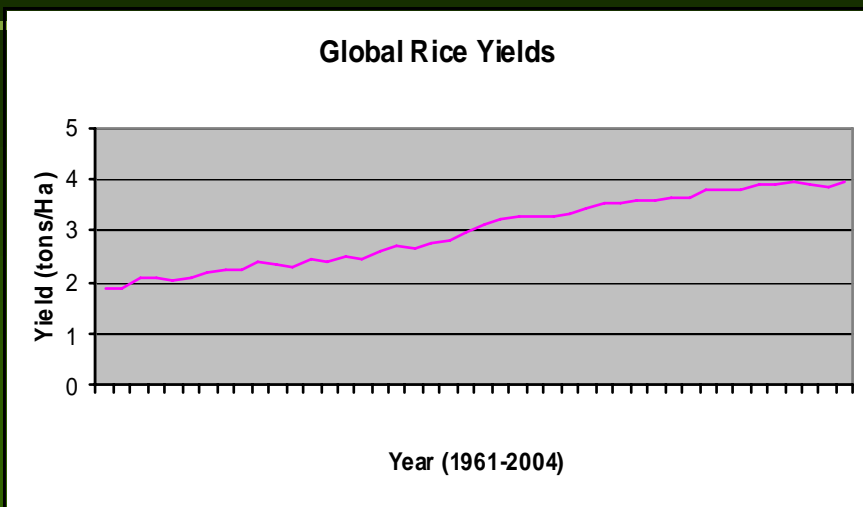
The intensification of agriculture has met the challenge of feeding the increasing population.



Source:
FAOSTAT 2004

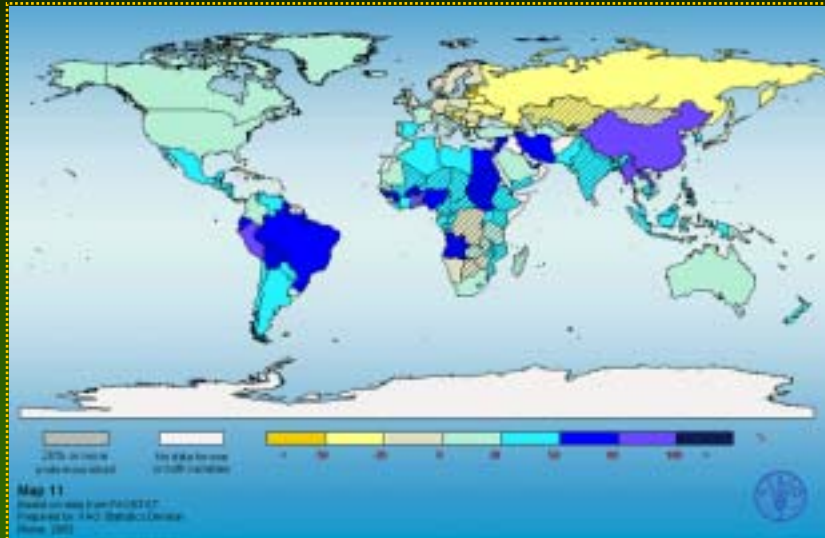


Source: USDA-NASS 11-10-05



Source: IRRI 2005

Production Growth (1990-2002)



From Plough to Plate with Plant Science

“Feeding the world has been possible because of agricultural technology”

*Dr. Norman Borlaug
Father of the Green Revolution
Nobel Prize winner*

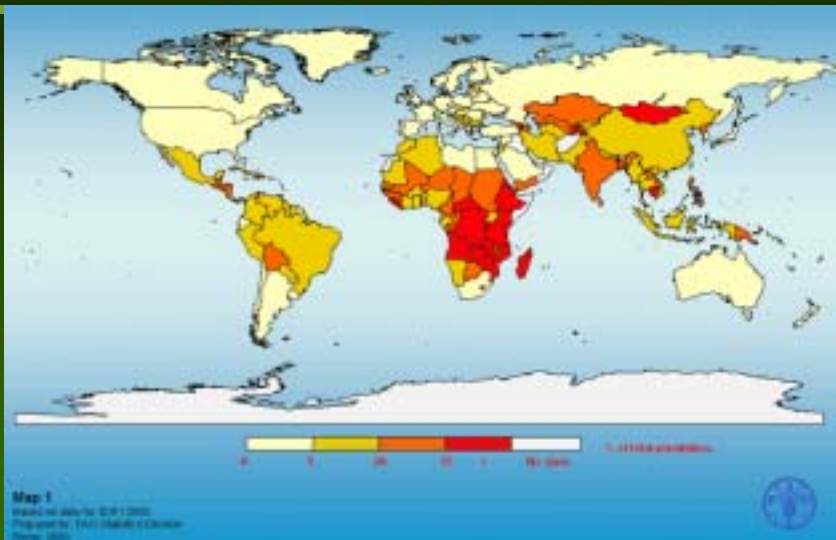


“World agriculture cannot be sustainable without science-based technology”

*Dr. Per Pinstrup Anderson, Professor of Food Nutrition and Public Policy, Cornell University;
Former Director General, IFPRI*

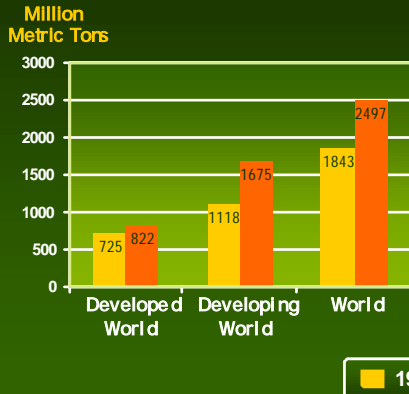
The Challenge

Undernourished Population (1999-2001)

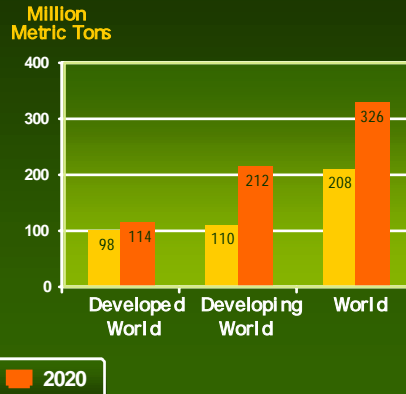


Food Requirements are Changing

Total Cereal Demand



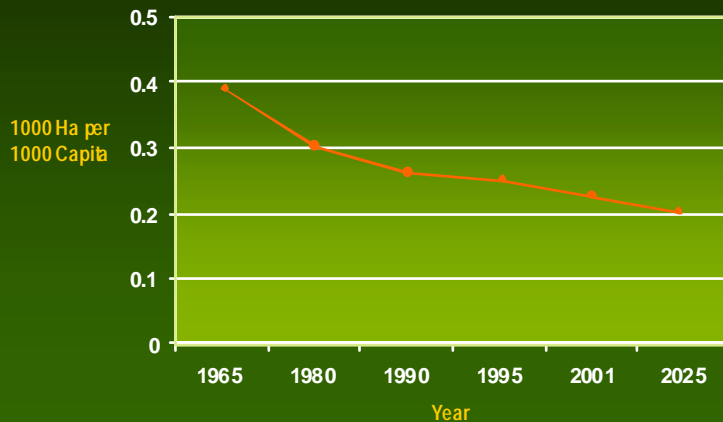
Total Meat Demand



Source: IMPACT Projections, 2001

Potential Arable Land is Decreasing

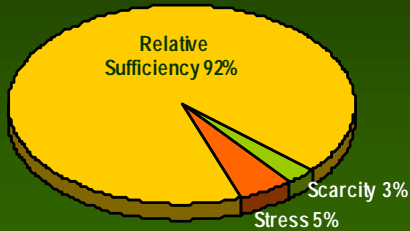
Arable Land per Capita



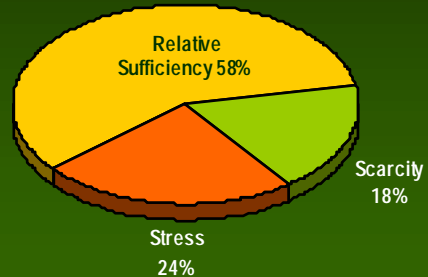
Source: FAOSTAT data, 2004

Water Scarcity

1995
Total Population: 5.7 billion
Medium Population Projected



2050
Total Population: 9.4 billion
Medium Population Projected



Source: Bayer CropScience

"If global cereal utilization remains close to trend in 2006/07, it would exceed the current forecast for production, which could lead to a drawdown of cereal stocks for the second consecutive year."

FAO report on Crop Prospects and Food Situation
April, 2006



Meeting the Challenge



Sustainability Solutions: Plant Science Industry Contributions



Research and
Development



Technology
Transfer and
Extension



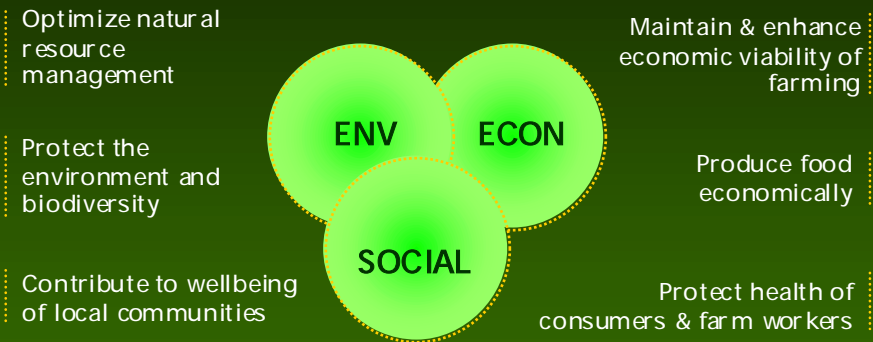
Stewardship,
Education and
Training



Building
blocks of
sustainable
agriculture

The Challenge of Sustainable Agriculture:

*Produce sufficient, affordable, safe,
high quality food, feed and fibre*

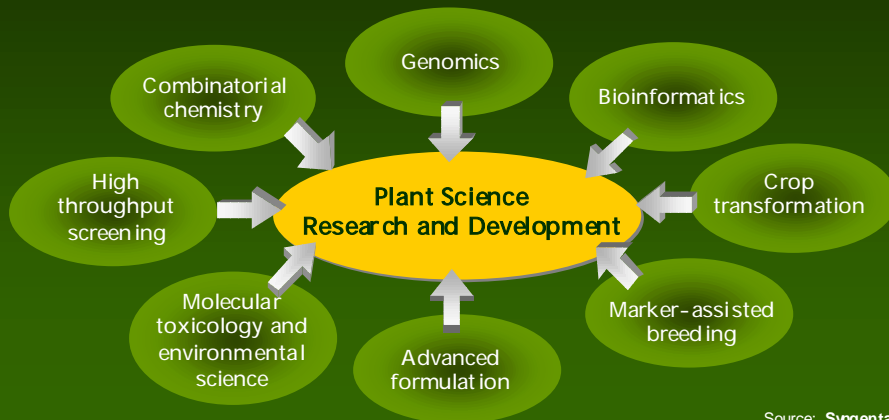


→ Integrate use of best available technologies

Water Matters

- Healthy and well-fed plants are less stressed and therefore use water more efficiently.
- Weed control clearly reduces a crop's competition for moisture and equally results in higher water use efficiency allowing for "more crop per drop." Also controls alien species.
- R&D for enhanced crop varieties offer great potential in water savings:
 - Seeds with reduced growing time have allowed the reduction of planting intervals. Available water is therefore used more efficiently .
 - R&D is underway to develop drought and stress tolerant plants.

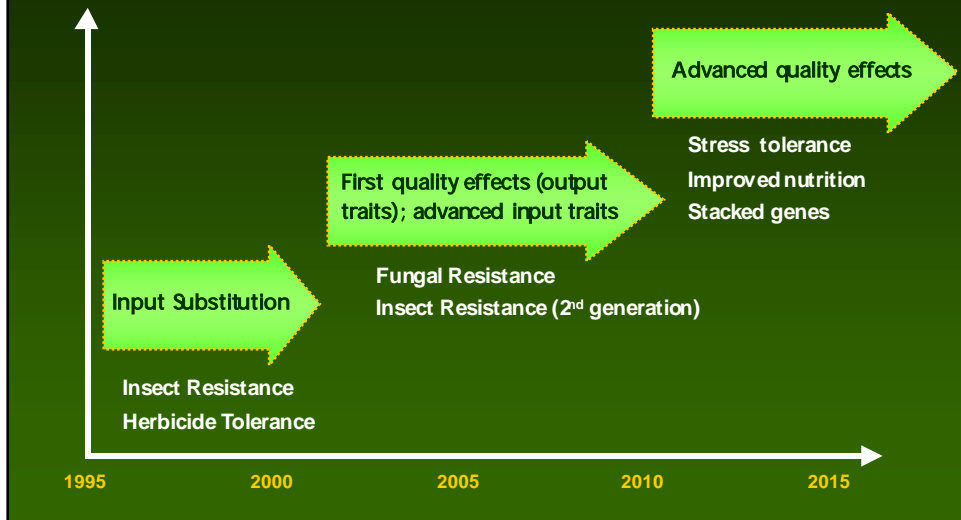
The Plant Science Industry Brings a Unique Combination of Technology Platforms



R&D in Crop Protection Chemistry: Outputs

- Better chemicals with improved safety profile
- Better formulations with reduced risk
- Better packaging and improved container management
- Application technology and precision farming

R&D in Biotechnology: Outputs



The Role of Organic Farming

- Organic production currently occupies 31 million hectares (including pastures)*
- This is **0.6%** of total world land use for food production (including pastures)**
- Limited data on productivity due to small sample size
 - Available data indicate organic production yields are 50–80% of those obtained from conventional agriculture
 - Room for increased productivity to meet growing populations limited

• *IFOAM, February, 2006

• **FAO Statistical Yearbook, 2004

Total land area for food production in 2000*

*Equivalent to the
combined land
mass of:*

- China
- India
- Indonesia
- Thailand



Area required by organic food production *with 60% of the yield offered by conventional production*

*Equivalent to
almost the
entire land
mass of Asia,
including
Australia and
New Zealand*



Is using that much more land worth it?

"Organic vegetables have the same nutrient content as conventionally grown vegetables; in other words, they are not healthier per se"

Georg Schweisfurth, Organic Food Marketer

"From the scientific point of view, available knowledge does not show that consumption, either exclusively or for the most part, of ecologically grown foods would be directly beneficial to human health."

German Consumer Affairs Ministry
from the Senate of the Federal Research Establishments

Conclusions

- The plant science industry plays a key role in sustainable food security.
- The global benefits provided by our industry include:

- Protecting yield
- Increasing yield
- Improving yield quality
- Protecting soil
- Using water more efficiently
- Lowering risk to farmers and consumers
- Improving farmers' access to solutions



through the provision of a wide range of technologies and services including chemical crop protection and ag-biotechnology

On Organic Farming

- Organic agriculture occupies a very **small niche** in global food production
- Organic advocates grow as **prosperity** grows
- Yield penalties and limited room for productivity growth make organic agriculture a **poor prospect** to meet global food needs on a large scale
- Organic Food is no more healthy or nutritious than conventionally grown food

Thank You

