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Closing the yield gap: Can we help? Should we help?

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CONTENT

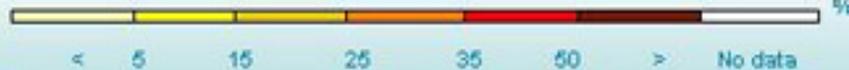
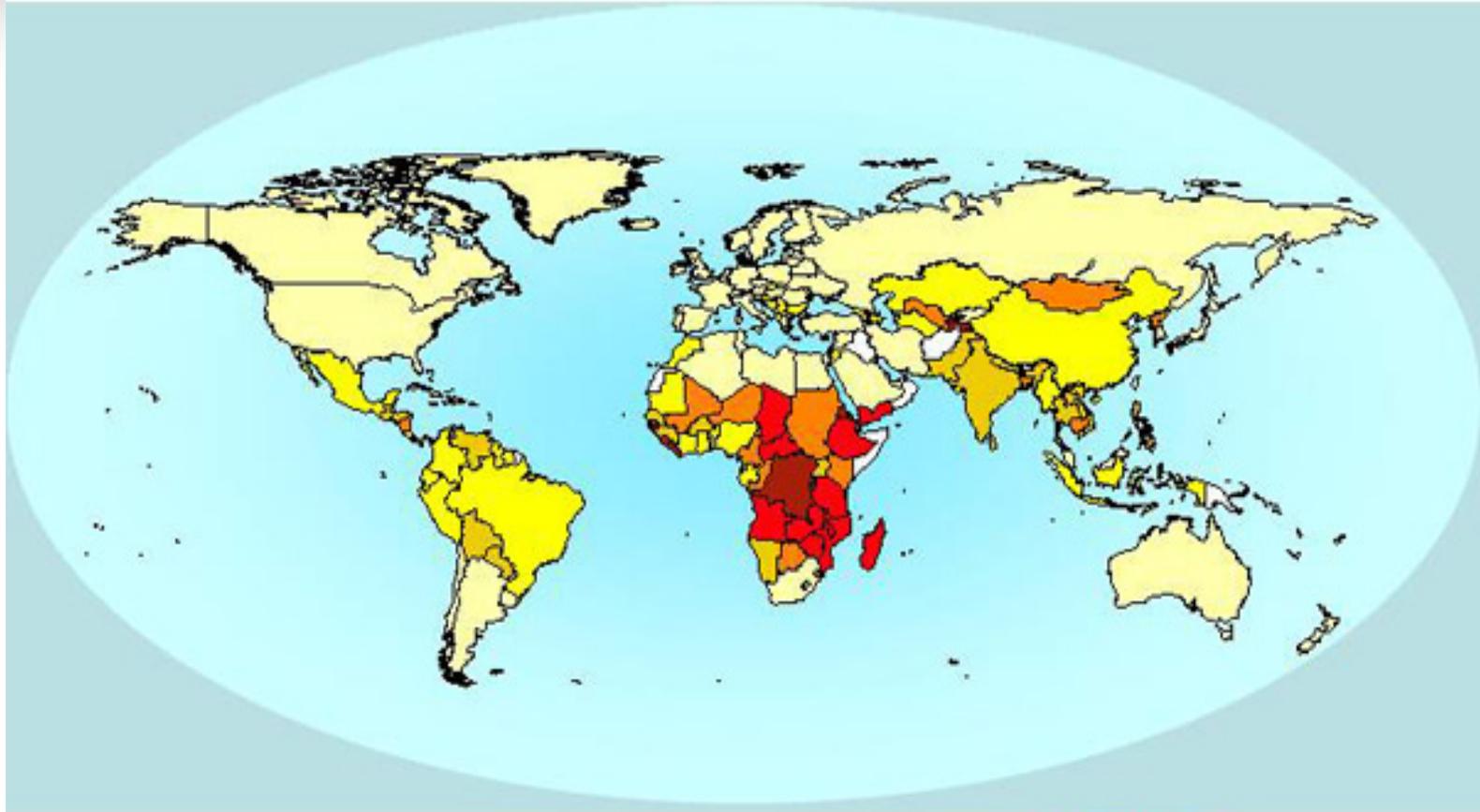
- **The challenges facing agriculture.**
- **Why is there a yield gap?**
- **Can we help?**
- **Should we help?**
- **Conclusions.**

Who are we and why should we care?

- **‘WE’ -- External organisations in the public, private sectors and civil society -interested in sustainable development.**
- **Interdependence – food prices are rising, stocks are declining - climate change is happening.**
- **Renewed interest in agriculture – but more for the products, ecosystem services, solutions or choices it can provide**



Hunger map



النسبة المئوية للمغربيين للتغذية

营养不良人口

Undernourished population

Population sous-alimentée

Población subnutrida

2002-2004



Challenges for agriculture - 1

- Demand for most goods and services – cereals, livestock products, fish, timber and other forest products will double over the next generation – (IFPRI and FAO)
- **Population growth** - developing world – Asia and Africa
- **Economic growth** – volume, choice and diversification
- **Catching up** – reducing hunger, poverty, malnutrition etc
- **Urbanisation** - half the world's population will live in cities
- **Globalisation** – interconnected, interdependence, competitiveness and trade (suspension of Doha Round)

Challenges for agriculture- 2

- **Climate Change** – drought, heat, bugs
- **Biofuels**
- **Consumerism** – market power and forces – food safety
- **Education** – diversification of services and choice
- **Cultural changes** – diversification and sovereignty
- **Structural changes**

Challenges for agriculture - 3

- **Delivering**
 - More ecosystem services
 - More income
 - More people
 - Greater diversity and choice
- **Using**
 - Less water
 - Less land
 - Less energy
 - Less environmental damage

Structural Changes

- **Farmers declining in numbers**
- **Farmers ageing, sickening**
- **Increasing proportion of women headed farming families**
- **Consolidation in the value chain and changes in economic power**
- **Consumers increasingly interested in supply chain issues**

Why is there a yield gap?

- Is there a yield gap?
- Beware of generalisations?
- Yes – but what are the possible causes?
 - Unrest
 - Infrastructure – transport
 - Institutions
 - Information – lack of it or confused messages
 - Incentives – policies and market failures
 - Environmental and asset degradation
 - Climate and weather - water
 - Unhelpful aid
 - Technology – inappropriate, unavailable, unaffordable

Maize research in Kenya in 1970's

- Plant on time
- Weed early
- Get the optimal plant population
- Plant an appropriate variety
- Add nutrients
- Pre- and post-harvest crop protection
- Assure market

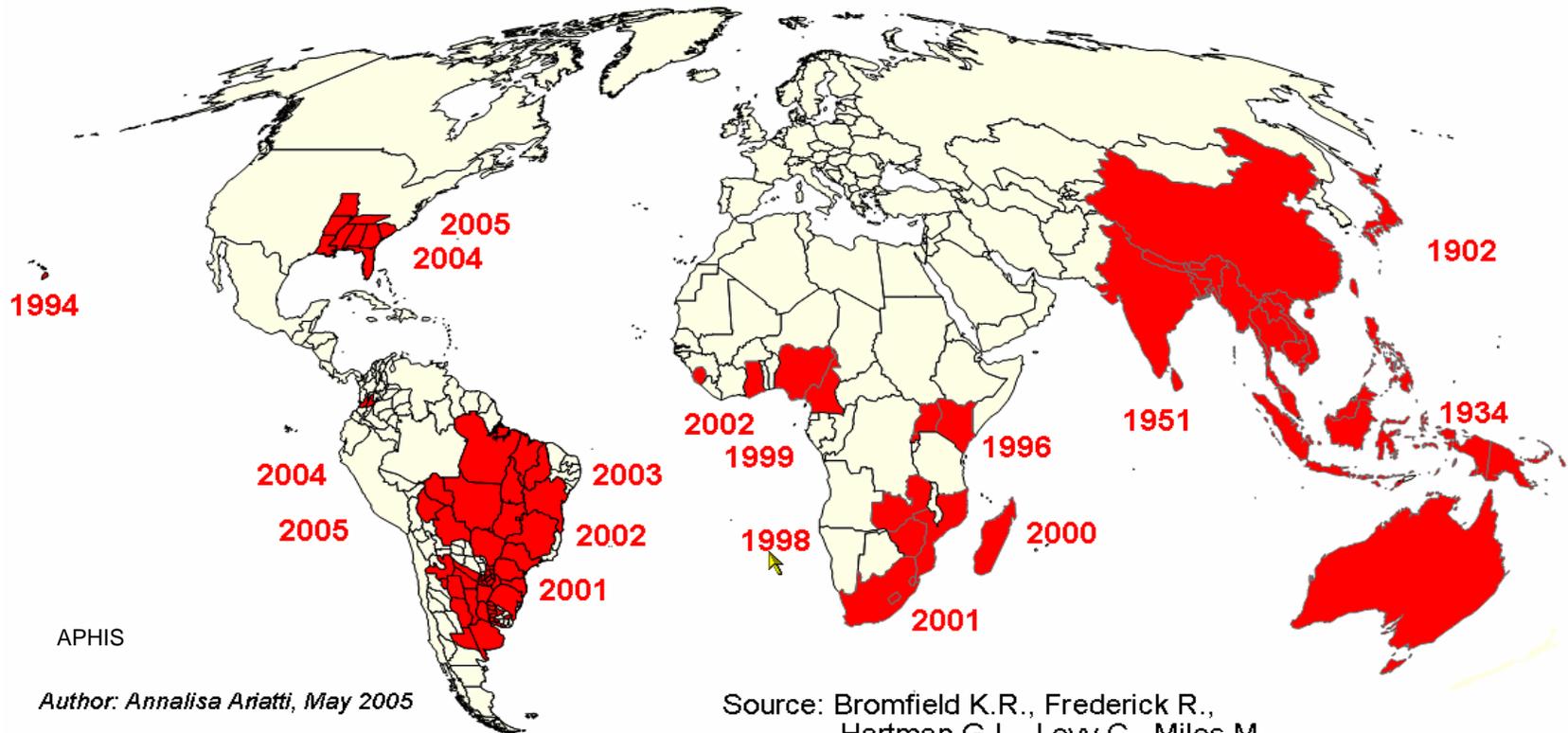
Challenges for crop protection - 1

- **Pathogens – more numerous, breed faster, mutate more often and do so 24hrs a day**
- **Need to increase and sustain production and productivity.**
- **The imperative to stay ahead of movements, mutations and resistance.**
- **Globalisation of diseases and relative ineffectiveness of border controls.**
- **Growing concern over food quality and post-harvest disease eg mycotoxins.**

Challenges for crop protection - 2

- **Growing list of and costs of regulations-** restricting options and slowing introduction of innovation.
- **Retail/consumer concerns over residues and processes-** now reflected in markets
- **New systems for the control of old and new pathogens needed.**
- **Expect the unexpected – climate change, biofuels.**

Spread of Asian soybean rust



Can we help? Yes, but!

- **Appropriate, robust and affordable solutions or choices**
- **Use all the tools – policies, awareness, capacity, infrastructure, institutions, markets and technologies**
- **Invest in training and know-how.**
- **Facilitate market access**
- **The importance of ownership and sustainability**
- **Building on local knowledge**
- **The need to have an exit strategy.**

Should we help – and how?

- Raises moral, ethical and practical issues and whether the demand is real or ,proxy‘.
- Partnerships and alliances
- Engagement of beneficiaries
- Avoiding dependency or techno-fix approaches

Delivering results

- partnership will be essential.

- Science will be judged by what it delivers and to whom.
- Increasing the speed at which solutions and new technologies come forward
 - Investment, coherence, critical mass – new tools eg MAB
- Realism and trust
- Continuous delivery of information, technologies and choice will be essential to meet the challenges
- Current funding and policy framework is dysfunctional.

Conclusions - 1

- **Agriculture is in the limelight.**
- **Farming is a business not a charity, it must deliver a greater volume of ecosystem services for more people.**
- **Closing the yield gap is in all our interests.**
- **Plant protection challenges will continue as production systems intensify.**
- **As climate changes pest and disease outbreaks will become more likely.**
- **Outbreaks will be increasingly global in spread or impact.**
- **Need to greater and more intelligent use of genetic variability.**

Conclusions - 2

- Genomics, bioinformatics and marker assisted breeding are valuable tools and could be used more widely if practical and institutional constraints can be resolved.
- Integrated systems – will be needed, but locally developed.
- Greater coherence between research, development and consumers.
- We can help – but will need partnerships for critical mass, speed and delivery.
- We must keep consumers informed and engaged