ONE BILLION HUNGRY:
CAN WE FEED THE WORLD?

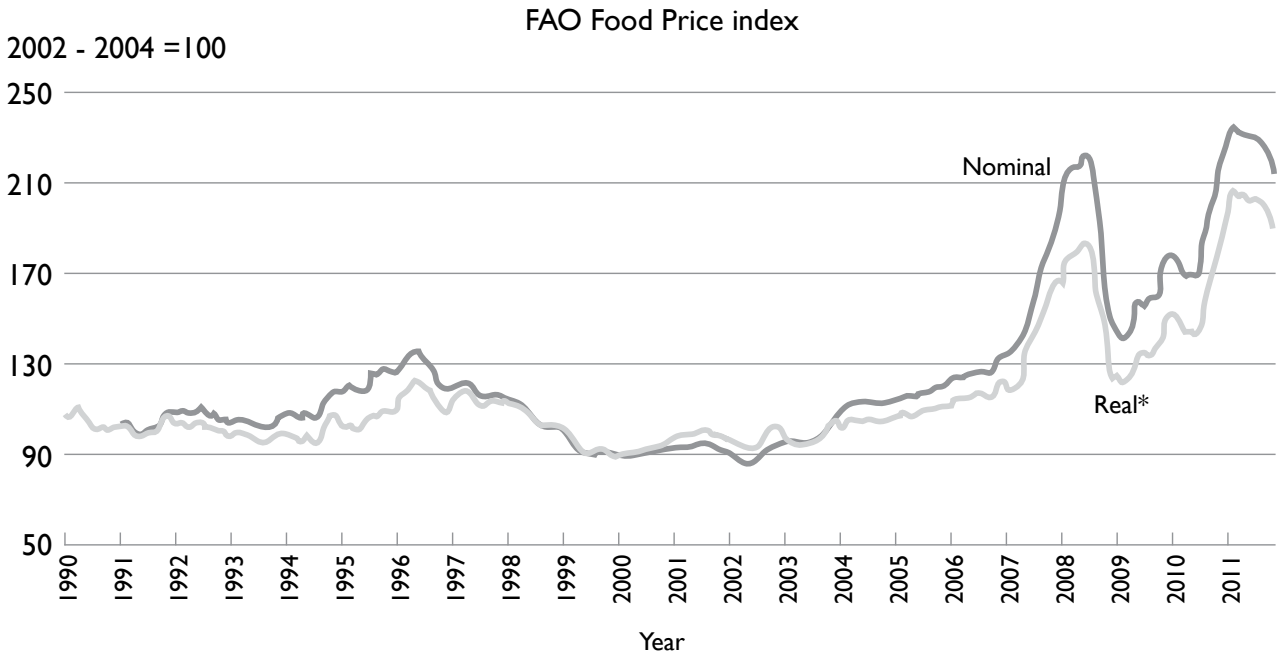
FACTS AND FIGURES

BY KATY WILSON

ACUTE AND CHRONIC CRISES

"Food security is access by all people at all times to enough food for an active, healthy life."

Food Price Spikes



*The real price index is the nominal price index deflated by the World Bank Manufactures Unit Index (MUV).

The Chronic Crisis

Increasing demand for food and crops:

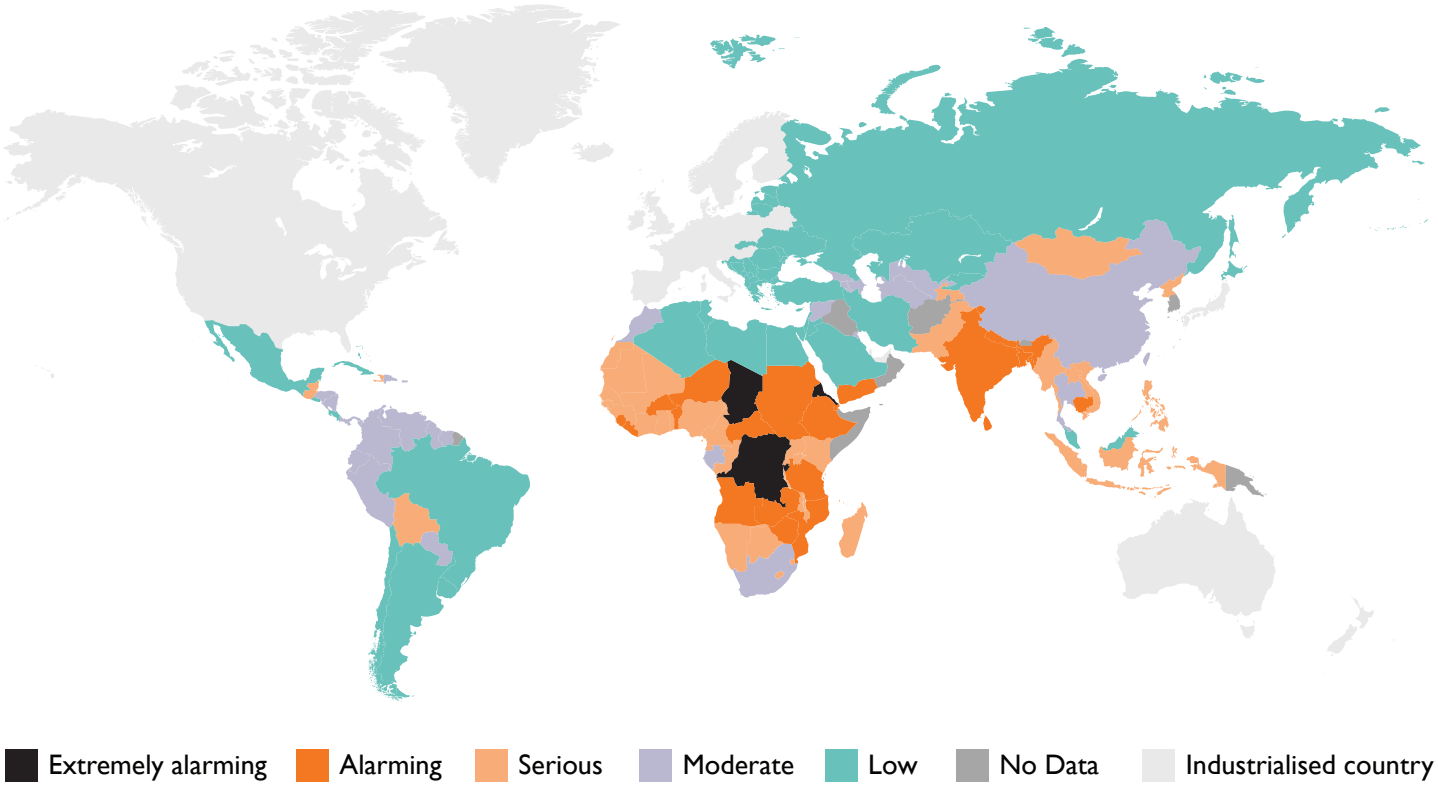
- World population to rise to 9.3 billion by 2050
- Global consumption of grains and oilseeds exceeded production in 7 of the years between 2000 and 2008
- Per capita incomes since 1960 have doubled in the Middle East and North Africa and have increased six-fold in East Asia and the Pacific
- In China, meat consumption has risen from 20kg per person per year in 1985 to 55kg today
- Global ethanol production increased from under 20 billion litres in 2000 to around 85 billion litres in 2010

Deficiencies in supply:

- Rising prices of oil and fertiliser: in 2008 the price of diammonium phosphate, a commonly used source of nutrients in developing countries, rose almost six-fold
- Global population over the past fifty years has increased 110% while global cropland has only increased by 10%, indicating a lack of available new land
- About one fifth of the world's people, more than 1.2 billion, live in areas of physical water scarcity.
- Climate change is likely to have a bigger effect on food supply than any other factor, and agriculture will probably be affected more than any other economic sector

WHAT IS HUNGER?

About one billion people chronically hungry



- 195 million, or, ⅓ of children in the developing world under the age of 5 years are stunted
- 1.4 billion people as of 2008 are in poverty
- 43% of farmers worldwide are women
- By ensuring that female farmers have access to the same resources as their male counterparts, the number of undernourished people in the world could be reduced by 100 to 150 million
- In recent years women working in the agriculture, forestry and fisheries sectors have received only 7% to 9% of agricultural development assistance
- 38% of working youth in Africa are in agriculture

THE GREEN REVOLUTION

"A series of research, development, and technology transfer initiatives, occurring between the 1940s and the late 1970s, that increased agricultural production around the world."

Successes	Factors of its success	Limitations
Global food prices declined for 4 decades	Breeding programmes for staple cereal crops to produce early maturing, day length intensive, and high yielding dwarf varieties	Its impact on the poor was less than expected and its geographic impact localised
Norman Borlaug claimed the Green Revolution saved 1.8 billion hectares of land	The organisation and distribution of packages of inputs, such as fertilisers and pesticides	It did not reduce and in some cases encouraged natural resource degradation and environmental problems
Over forty or so years after the 1950s the total amount of grain harvested had grown by 170%	Implementation of technical innovations was in the most favourable agroclimatic regions and for those classes of farmers with the best expectations of realising the potential yields	There were eventually signs of diminishing returns

THE POLITICAL ECONOMY OF FOOD SECURITY

Trade

The value of global exports and imports has risen from around $1.3 trillion in 1978 to $16 trillion in 2008.

Support to OECD country farmers is $250 billion per year. About 70% of these subsidies and tariffs disadvantage developing country farmers. 38% of the distortions are due to the European Union and 16% to the US.

The World Bank estimates full trade liberalisation would increase the prices of primary agricultural products (crops for human food and animal feed) by over 5%, cotton by 10%, and oil seeds by 15%.

Food Aid

Since 2000 humanitarian aid has accounted for approximately 8.3% of total overseas development assistance.

Today some 4 million tons of food is provided for emergencies, but the amounts under programmes to address chronic hunger have shrunk to less than 3 million.

A DOUBLY GREEN REVOLUTION

Agriculture typically accounts for over 80% of the work force and 50% of GDP in developing countries.

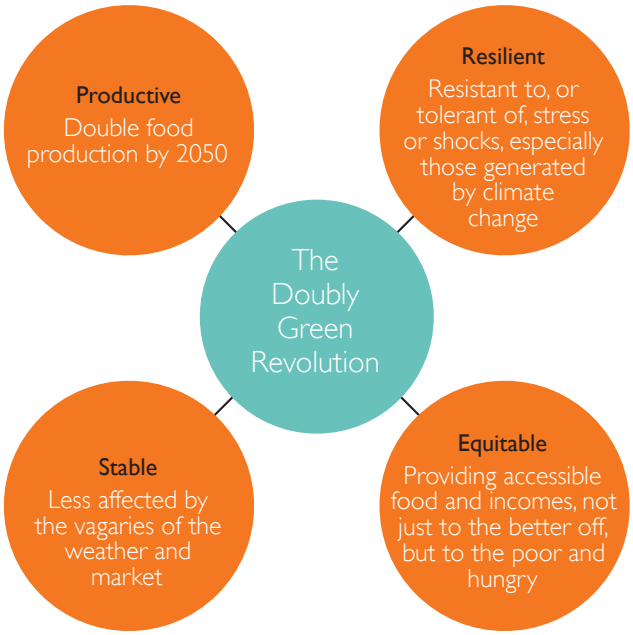
A 1% gain in GDP originating from agriculture generates a 6% increase in overall expenditure of the poorest 10% of the population.

A 1% gain in GDP originating from non-agricultural sectors creates zero growth in overall expenditure of the poorest 10% of the population.

"We require a new revolution that does not simply reflect the successes of the first. It must not only benefit the poor more directly but also be applicable under highly diverse conditions and be environmentally sustainable. We require a Doubly Green Revolution that is even more productive than the first Green Revolution, even more 'green' in terms of conserving natural resources and even more effective in reducing hunger and poverty."

"Moreover it has to be sustainable. We must achieve a pattern of equitable growth that lasts from generation to generation and ensure we do not undermine the environmental and natural resource base on which agriculture depends."

At the core of the Doubly Green Revolution are smallholders. There are approximately 400 to 500 million small farms (2 hectares or less) in the world.

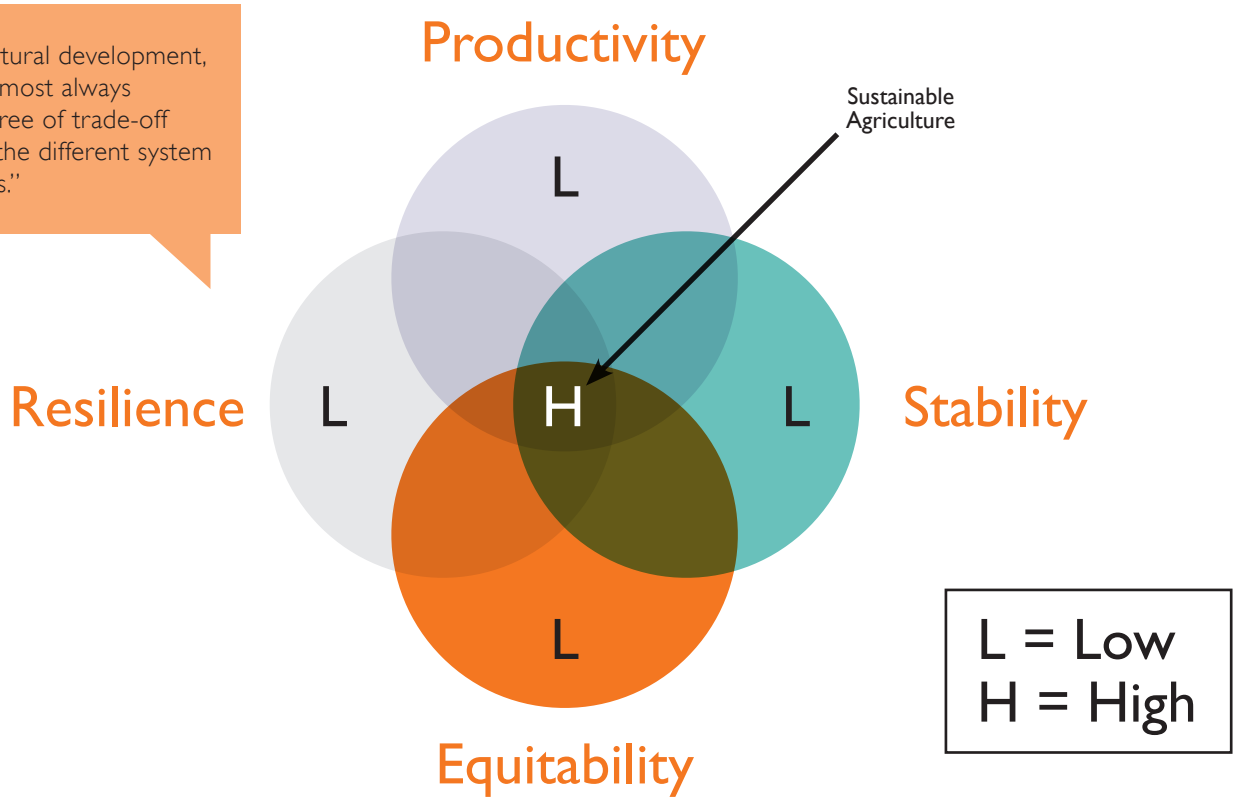


SUSTAINABLE INTENSIFICATION

Properties of an Agricultural Ecosystem

Productivity	Stability	Resilience	Equitability
How much an agroecosystem produces over time	How production varies from year to year	How well the productivity tolerates or recovers from stress or shock	How fairly the products of the agroecosystem are shared among beneficiaries

"In agricultural development, there is almost always some degree of trade-off between the different system properties."



Agricultural Tools and Technologies with High Potential Sustainability

A Livelihood: "a means whereby members of a farm household secure a living comprising capabilities, assets and activities"

For example: in Western Kenya, the critical element in helping households to escape from poverty was diversification of income by establishing links with the urban economy. Of the households which escaped poverty over the past 25 years (19%):

- 73% reported a member who had obtained a job
- 35% had established a small business in the neighbourhood
- 57% diversified on-farm income through production of cash crops

Intercropping
Rotations
Green manuring
Silvo-pasture
Biological Control
Integrated Pest Management
Agroforestry
Conservation Tillage

APPROPRIATE TECHNOLOGY

"We have to eschew dogmatic assertions that one form of intervention, especially one type of technology, is intrinsically best whatever the circumstances."

Because:

- The Doubly Green Revolution embraces a range of outcomes: productivity, stability, resilience and equitability
- The Doubly Green Revolution must work in a wide diversity of environments: natural, social and economic

We will need:

- BOTH microcredit AND macroinvestment
- BOTH free-range AND stall-fed livestock rearing
- BOTH biofuels AND food crops
- BOTH water harvesting AND large-scale irrigation
- BOTH organic AND biotechnological solutions

Whatever the source and wherever the application, the important feature of a technology is that it is locally appropriate:

- Effective
- Readily accessible and affordable
- Easy to use
- Environmentally friendly
- Serves a real need

The Forms of Technology

Median rates of return from agricultural research for different regions of the world lie between 44% and 50%.

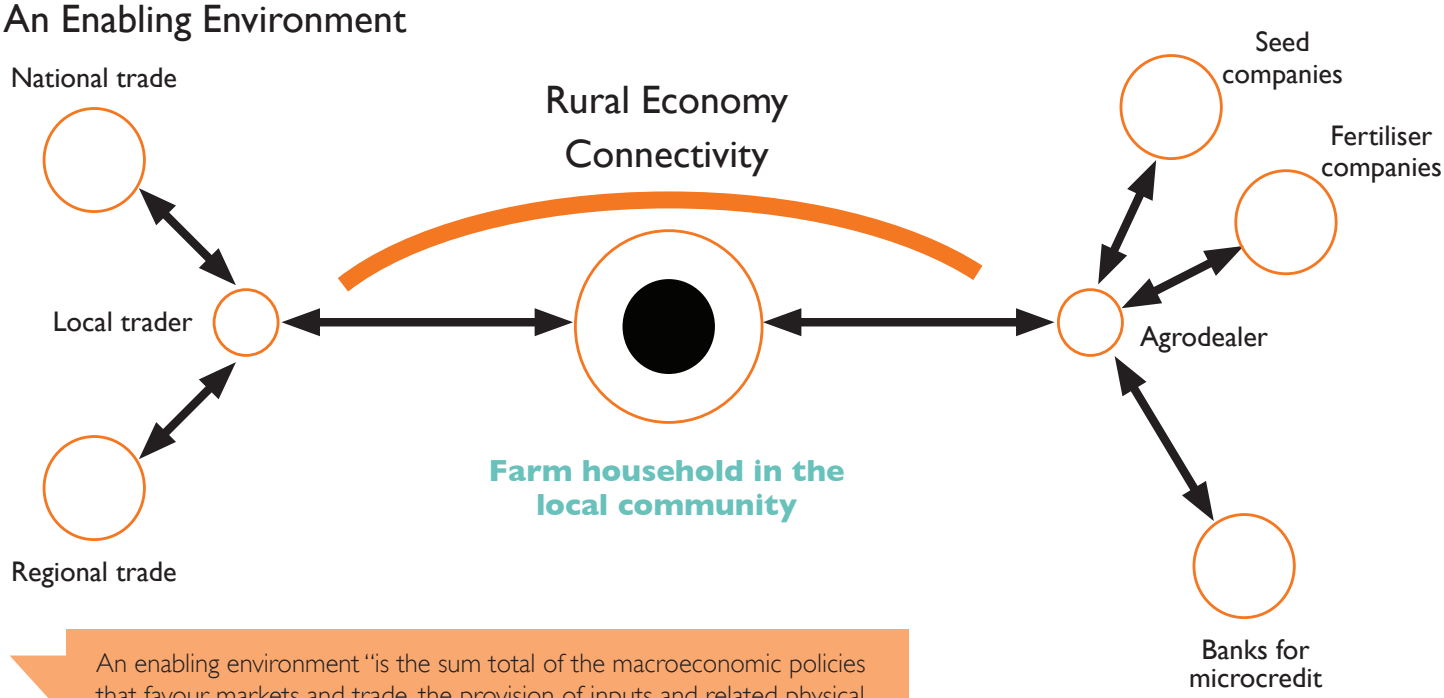
A doubling of investment in public agricultural research in Sub-Saharan Africa would increase growth in agricultural output by 0.5% to 1.1% and reduce poverty by 282 million.

Public spending on agricultural research in Africa is 0.7% of agricultural GDP. Developed countries spend an average of 2.5% of agricultural GDP.

Conventional	Traditional
Technologies from industrialised countries developed through the application of modern physical, chemical and biological knowledge and delivered as products in packaged form for a regional or global market	Technologies that have been developed usually over an extended period of time by communities in developing countries to meet local needs
Synthetic fertilisers and pesticides	Home gardens, scarecrows, rainwater harvesting techniques
Intermediate	**New Platform**
Traditional technologies that have been improved in appropriate respects by their integration with modern conventional technologies	New scientific 'platforms' for innovation based on advanced sciences, that have the potential to be developed simultaneously for the needs of the industrialised and the developing world
Intercropping, traditional treadle pump improved by engineers	Genetically modified drought-or pest-resistant crop varieties, mobile phones

CREATING MARKETS

An Enabling Environment



An enabling environment "is the sum total of the macroeconomic policies that favour markets and trade, the provision of inputs and related physical infrastructure and social infrastructure, together with the accompanying institutions and regulations."

International markets are opening up to smallholder farmers but domestic markets, at present, offer more opportunities:

- African urban market - value of $17 billion for smallholder producers in 2002
- African export market - value of $4 billion for smallholder producers in 2002

Proportion of processed food exports as a share of total world food exports:

- About 4% in 1980
- Over 60% in 2006

Microinsurance reaches an estimated 15 million people with low incomes.

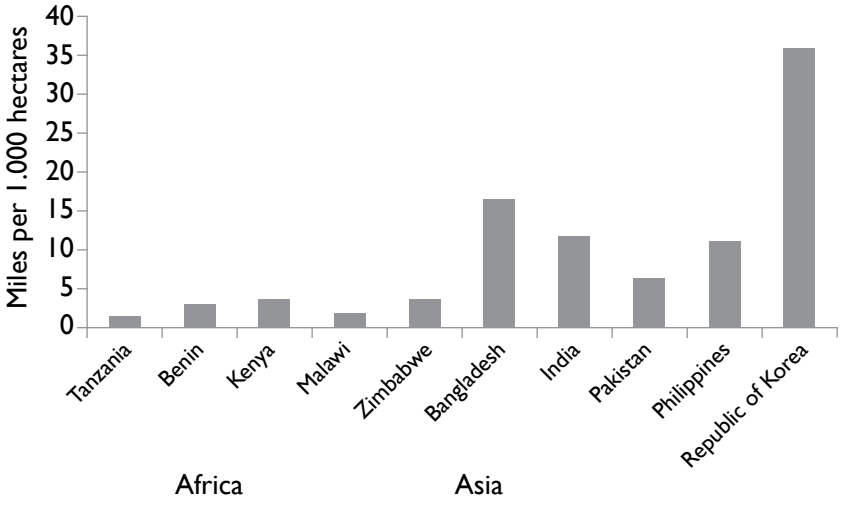
In India, every additional million rupees spent on rural roads during the 1990s was found to lift 881 people out of poverty.

Transportation costs in Benin, Madagascar and Malawi are 50% to 60% of the total marketing costs. In Tanzania, improvement of 530 miles of rural roads and construction of 107 bridges reduced transportation costs by an average of 40%.

One way for smallholders to access benefits from value chains is to be a part of a producer association. E.g.:

- Cooperatives
- Contract Farming
- Fair Trade

Miles of Road and Rail per 1,000 Hectares of Agricultural Land



DESIGNER CROPS

Limitations of conventional breeding

- Random: The crossing of two parent plants, each with desirable characteristics, is essentially a random process. While some desirable characteristics may emerge, others may be lost
- Limited: Traits a breeder wishes to incorporate in a plant or animal may not be present in any variety, breed or species with which a cross can be made
- Slow: A relatively slow process occurring over multiple generations, which can, in the instance of some cash crops, mean decades

Power of Biotechnology

Breeders can deliberately design and engineer new plant and animal types speedily and with much less reliance on random processes.

Three Practical Techniques

Marker-assisted selection	Cell and tissue culture	Recombinant DNA
Based on the ability to detect the presence of particular DNA sequences at specific locations in an organism and link these to the presence of genes responsible for particular traits.	Permits the growth of whole plants from a single cell or clump of cells in an artificial medium.	Also known as genetic engineering or genetic modification, enables the direct transfer of genes from one organism to another.
Deepwater and submergence-tolerant rice	Disease-free bananas and New Rices for Africa (NERICAs)	Golden rice

Economic Benefits

19 of 29 countries growing biotech crops are developing countries. 90% of biotech growers are resource-poor farmers.

Economic gains at the farm level since 1996 are $65 billion: 44% from reduced production costs, 56% from substantial yield gains.

The Hazards

Human health: We must hold GM food crops to the same standards for food and feed products produced by other technologies and methods.

The environment: We must continue to set up regulatory bodies and conduct closely monitored trials to try and identify the likely risks before GM crops and livestock are released to the environment.

The power of multinational seed companies: We need greater investment in biotechnologies by the public sector, ensuring that the technologies and their products are readily available to developing countries and to poor populations.

THE LIVESTOCK REVOLUTION

Increase in Food Consumption of Meat, Milk, Fish and Cereals from 1971-1995

	Consumption increase (in million metric tons)		Value of consumption increase (in billion 1990 US$)		Calorie value of consumption increase (in million kilocalories)	
Commodity	Developed	Developing	Developed	Developing	Developed	Developing
Meat	26	70	37	124	38	172
Milk	50	105	14	29	22	64
Fish	5	34	27	68	4	20
Major cereals	25	335	3	65	82	1,064

Between 1980 and 2007 China increased its production of meat more than six-fold and Brazil four-fold.

Livestock contribute 40% of the global value of agricultural output and support the livelihoods and food security of almost a billion people.

The Diversity of Livestock Systems

Grazing Systems	Mixed Systems	Industrial Systems
Occupy some 26% of earth's ice-free land surface Typically support ruminants on communal or open-access rangelands Owners may sometimes be nomadic Collectively support most of the developing world's population of cattle, sheep and goats	Combining livestock and crops (rain-fed or irrigated) Mutual utilisation of waste Progressive evolution from grazing toward mixed farming systems in recent years Great diversity of systems	Livestock in buildings or pens Strong tendency towards vertical integration of supply chain Purchase at least 90% of their feed from other enterprises Mostly intensive and found near large urban centres
Masai pastoralism in Kenya	Operation Flood - Dairy cattle in mixed farms in India	Rapid increase in production of chickens in China for meat and eggs

FARMERS AS INNOVATORS

Participatory Learning and Action (PLA)

Participatory Analysis and Learning Methods (PALM)

Méthode accélérée de recherche participative (MARP)

Participatory Rural Appraisal (PRA)

Agroecosystem Analysis (AEA)

Rapid Rural Appraisal (RRA)

"Participatory research and extension consists of a range of methodologies, which have evolved according to local needs and customs, and reflect local ingenuity."

Agroecosystem Analysis

Series of extended field trips, employing direct observation and interviews with farmers to produce a set of maps and other diagrams that summarise patterns of events and activities in local agroecosystems

→

Diagrams used in intensive multidisciplinary workshops to identify and discuss key agroecosystem issues: productivity, stability, resilience and equitability

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Out of the workshops come a set of key questions and hypotheses requiring further investigation, providing a basis for a programme of research targeted at the needs of the farmers

Analyses aimed at understanding the ecological and socioeconomic nature of local agroecosystems and creating genuine dialogue in which experience and knowledge are shared

Diagrams include: transects, map overlays, seasonal calendars, impact flow diagrams, Venn diagrams, preference rankings and decision trees

Applications in both developing and developed countries have been designed to meet the needs of research stations, governments agencies, extension workers and NGOs

Farmer Field Schools (FFS)

A form of adult, non-formal education that not only teaches farmers biology, agronomy and land management but enables them to share knowledge within their community.

Developed in the Philippines in the 1970s, by the 1990s an estimated 2 million farmers had been trained through FFS in South and Southeast Asia.

FFS programmes now operating in over 12 African countries.

Participation in FFSs in East Africa increased income by an average of 60%.

"Far too often we assume agricultural research and development programmes are there simply to teach farmers methods of becoming more productive. But the practice of agriculture is intrinsically dynamic, requiring constant adaptation to changes in climate, in the resource and nutrient base, in pest and disease interactions, and the economy. Farmers know this and can articulate the challenges they face and be innovative in their responses. For the researcher and extensionist the task ahead is to help further develop this capacity."

CONTROLLING PESTS

Pests, pathogens and weeds cause an estimated 10% to 40% crop and livestock loss.

Pesticides may:

1. Be harmful to human health

   WHO estimates that as of 1990, 3 million severe pesticide poisoning episodes occur globally each year and of these over 250,000 die. 99% of cases are in low and middle-income countries. Recent evidence links severe pesticide poisoning with suicides.

2. Be damaging to wildlife

   Pesticides are responsible for hampering pollination and for the eradication of fish, shrimps and crabs in rice fields – important sources of protein for the poor and landless.

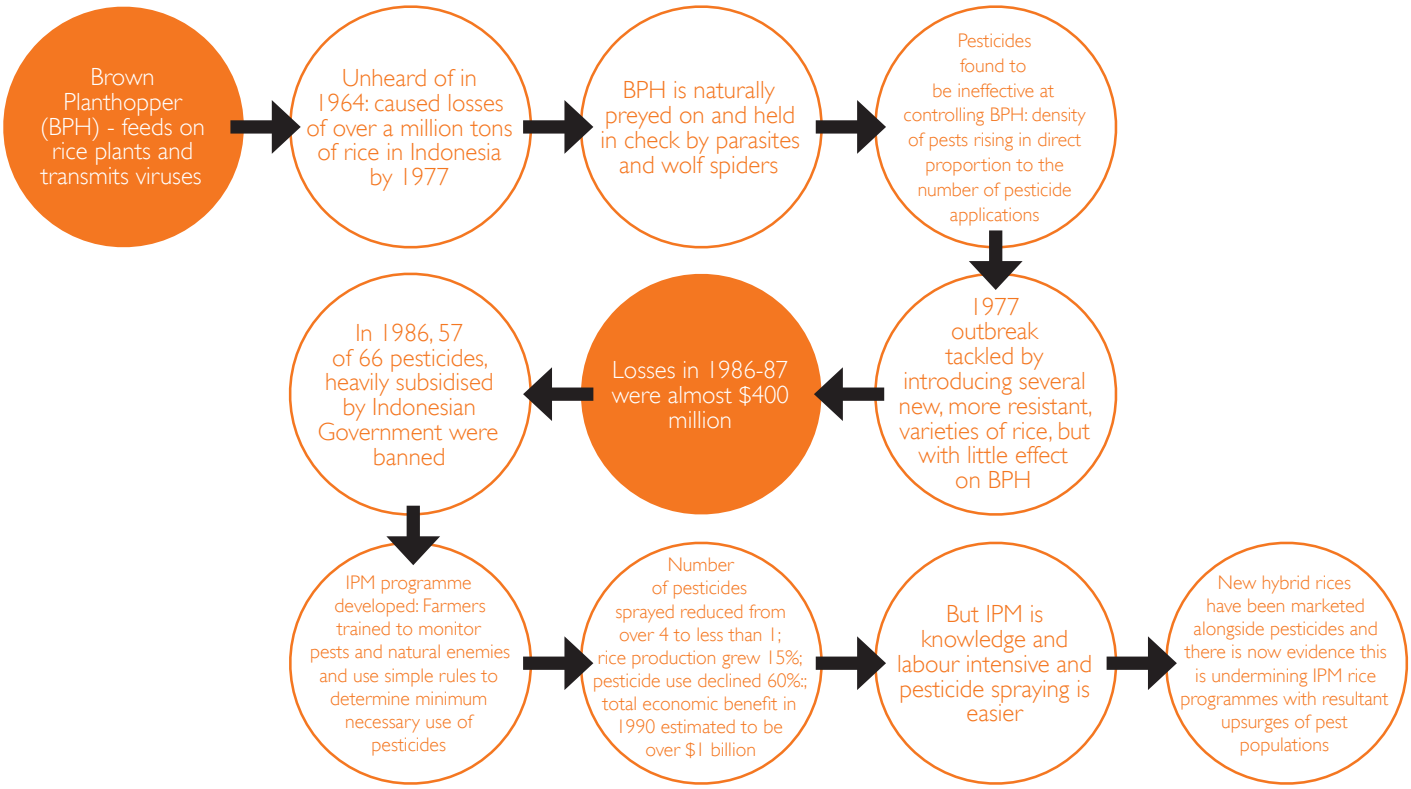
3. Be costly and ineffective at controlling pests
   - Pesticides must be sprayed repeatedly to maintain control.
   - Insect pests commonly become resistant to pesticides. Today over 550 insect pest species in the world are resistant to one or more insecticides and nearly 200 weed species are resistant to herbicides.
   - Pesticides can kill off natural enemies – the parasites and predators – that normally control pests.

4. Elevate secondary, minor pests to major pests that can be more destructive than the pests the pesticides were originally targeting.

"No one form of pest control is ideal."

Integrated Pest Management (IPM) combines modern technology, the application of synthetic, yet selective, pesticides, and the engineering of pest resistance, with natural methods of control, including agronomic practices and the use of natural predators and parasites.

Controlling the Brown Planthopper



ROOTED IN THE SOIL

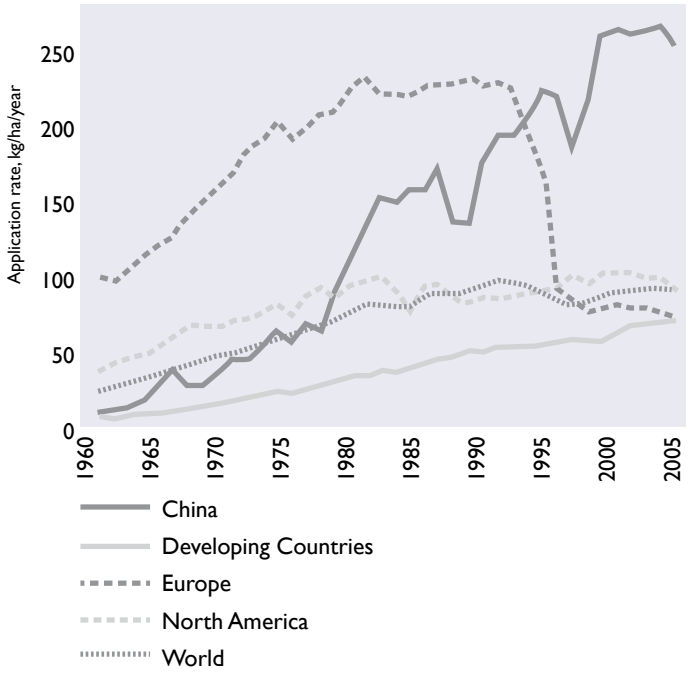
Within 60 to 70 years half of the world's phosphate resources will have been used up.

Less than half of nitrogen applied to crops ends up in the harvested products: of the 100 million tons of nitrogen fertiliser produced industrially in 2005 only 17% was taken up by crops.

Between 1960 and 2000, the efficiency of nitrogen use for cereal production decreased from 80% to 30%. To make up for the losses farmers tend to apply more fertiliser.

The percentage of nitrogen overuse in the Chinese provinces ranges from 50% to 100%, and it is estimated that China could halve nitrogen fertiliser use without impacting yield.

Growth of Synthetic Fertiliser use in Arable Land



Land degradation: a decline in the capacity of the land to supply human needs, whether of food or other products and services.

Between 1981 and 2003 a quarter of the global land area has been degraded, most notably in Africa, south of the equator, Indochina, Myanmar and Indonesia.

Globally land degradation affects 1.5 billion people and over 40% of the very poor live in degraded areas.

An increase of 1 ton per hectare of soil carbon in degraded croplands can increase maize yields by 200 to 300kg/ha, wheat by 20 to 40kg/ha and rice by 20 to 50kg/ha.

Conservation agriculture: comprises various systems of reduced or no tillage farming

Advantages	Disadvantages
Saving of labour used for ploughing	Requires learning new techniques
Protection of vulnerable soils from erosion	New challenges in weed control without herbicide
Improvement of soil fertility	Crop residues left on the soil can cause water drainage problems
Higher microbial content in the soil	Farmers may have to purchase new equipment e.g. specialist seed drills
Carbon emissions from agriculture reduced	

Organic Farming

In 2007, over 30 million hectares of certified organic farmland existed worldwide, about 1% of total world production. Non-certified organic agriculture may be practiced on another 10 to 20 million hectares in developing countries.

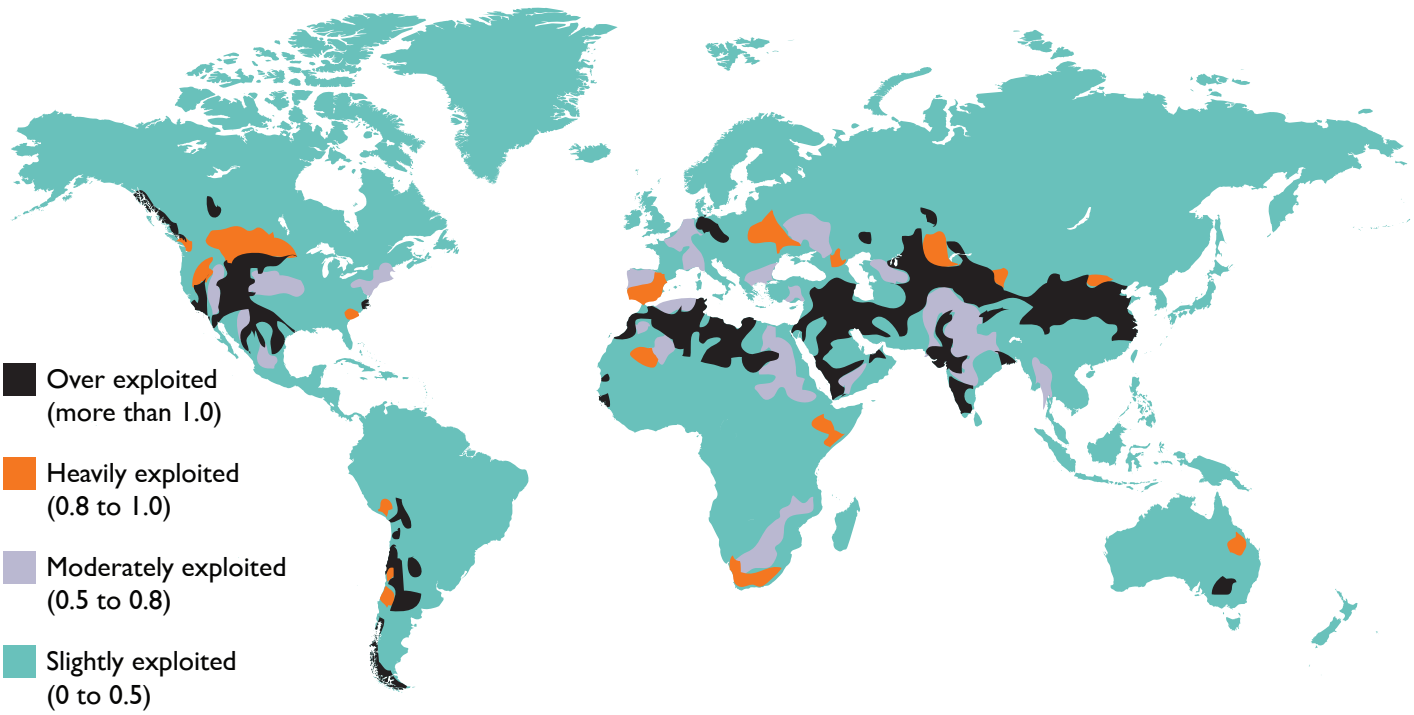
A wide range of experiments suggest organic cultivation yields 30% to 40% less wheat than conventional farming.

In drought affected areas and under subsistence conditions, conversion to organic farming may well improve yields where soils have been degraded over time.

The challenge is to breed organic crop varieties that are more efficient at making use of scarce resources.

SUSTAINED BY WATER

Water Stress in Major River Basins



For the developing countries, the amount of irrigated land has more than doubled over the past 50 years. Nearly all of this increase has been in Asia.

Water can also be extracted from the below ground water table through tube wells. In India the number of tube wells has increased from 90,000 in 1950 to over 20 million in 2010.

- Advantages: Can be relatively easy and cheap to install; occupy little land; create few environmental and social problems
- Disadvantages: Will only provide a sustainable supply of irrigation water if the rate of extraction is below that of the rate of re-charge (replacement) to the underground aquifers

In China, the groundwater overdraft rate exceeds 25%.

Corruption in the water sector can increase the cost of connecting a household to a central water supply by as much as 30%, which could mean an additional $48 million is needed to achieve the UN's Millennium Development Goals relating to water and sanitation.

Effective Water Management Solutions

Community control of irrigation
Nanotechnology for desalinisation
Small-scale water harvesting, e.g. treadle pumps and Zai system
Breeding for water efficiency, e.g. Water Efficient Maize for Africa (WEMA)
Integrated Water Resources Management (IWRM)

Water and Fisheries

For most of the world's fish stocks, the harvest is stagnant or declining. Catch per person dropped from an average of 17kg in the late 1980s to 14kg in 2003.

Fish provided about 19% of worldwide animal protein consumption in 2007.

In 2008, around 80% of world fishery production was accounted for by developing countries, with 75% of fishery exports from developing countries going to developed countries.

Aquaculture continues to be the fastest growing animal food producing sector. In 2008, aquaculture accounted for 46% of total food fish supply.

ADAPTING TO CLIMATE CHANGE

Without action, the overall costs of climate change will be equivalent to losing at least 5% of global GDP each year. The estimated annual cost of achieving stabilisation between 500 and 550ppm CO_2 equivalent, currently at just over 400ppm, is 2% of GDP.

In a survey of 59 Sub-Saharan Africa countries, 33 were classified as highly or moderately highly vulnerable to climate change. All 59 were ranked in the lowest quintile on their adaptive capacity to climate change.

Since preindustrial times, atmospheric CO_2 concentrations have increased from 280 parts per million (ppm) to 400ppm. They are predicted to reach 570-700ppm by the middle of the century.

Despite longer-term uncertainties, the following near-term consequences are highly likely.:

- Regions to be warmer
- Regions to be more prone to drought or flooding
- Higher sea levels
- More storm surges
- Greater variation in the weather and more intensive extreme events: hurricanes, tropical cyclones, floods and droughts

Impacts on Agriculture

A 6% reduction in global agricultural production by 2080.

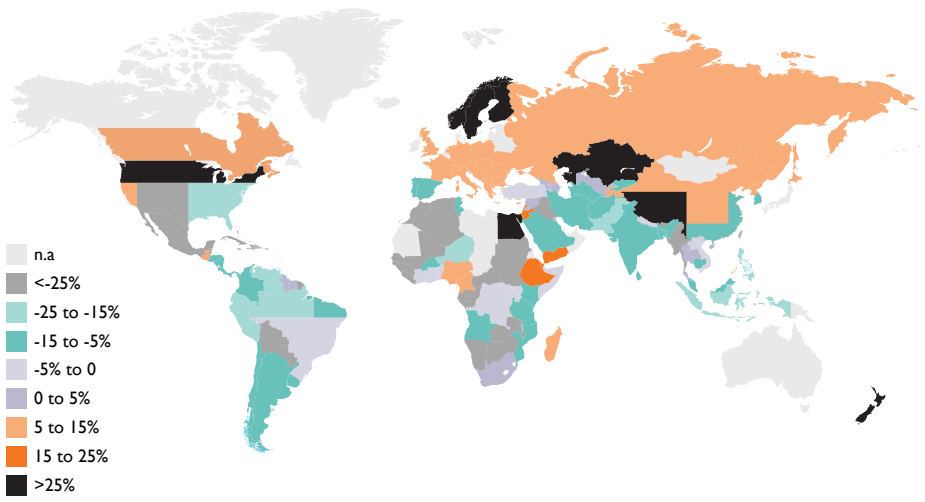
About ¾ of Africa's maize crop area will experience a 20% loss for a 1°C warming.

Just how severe the impacts on agriculture are will depend on the carbon fertilisation effect: rising carbon levels will increase crop yields.

Estimates predict a 3 to 4°C rise in temperatures, with carbon fertilisation, will result in yield losses of 18% for wheat in northern Africa and 22% for maize in southern Africa.

Parts of Africa and India are projected to suffer a 30% decline in food production under climate change.

Projected Impact of Climate Change on 2080 Agricultural Production Assuming a 15% Carbon Fertilisation Benefit



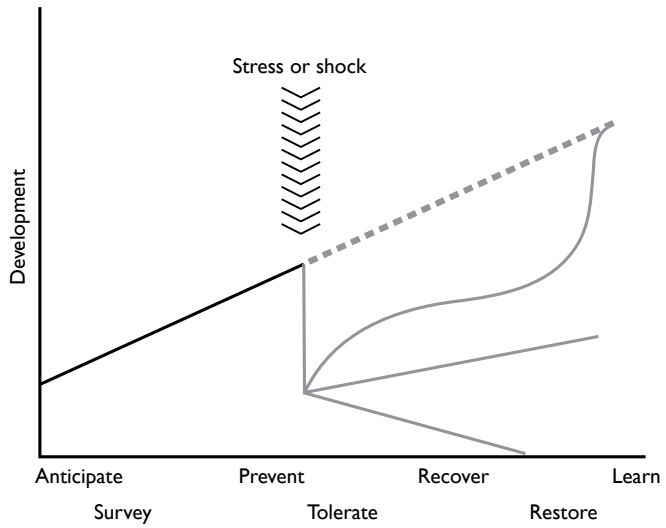
Adaptation and Resilience

Farmers are already adapting to climate change. In a survey of 11 African countries, farmers were reported as growing different varieties and modifying planting dates and practices to account for shorter growing seasons.

Climatic hazards generally come in two forms

Stresses	Shocks
Gradual buildup of adverse events	Usually dramatic, largely unexpected events
Increasing temperatures Rising sea levels Greater or lesser rainfall	Sudden floods Cyclones Earthquakes Tsunamis Disease outbreaks

The Range of Responses to Stresses and Shocks



International donor investment in adaptation for developing countries currently stands at $150 to $300 million a year, falling short of the tens of billions required.

It is estimated that to offset the negative impacts of climate change an additional investment of at least $7 billion per year is needed.

REDUCING GREENHOUSE GASES

"Agriculture is both a victim and culprit of climate change."

Global greenhouse gas emissions generated by the agricultural sector account for 10% to 12% of total global greenhouse gas emissions.

When emissions from agricultural fuel use, fertiliser production and land use change are included, the percentage increases to 30%.

Yet agriculture's share in global GDP is only around 4%.

The Three Main Greenhouse Gases Produced from Agriculture

Carbon dioxide (CO_2)	Nitrous Oxide (N_2O)	Methane (CH_4)
From: Microbial decay Fossil fuel combustion Fuel for transport and to produce fertilisers and pesticides Land clearing Burning of biomass, plant litter and soil organic matter	From: The soil following applications of manure, urine, nitrogen fertilizer 300 times as much warming potential as CO_2	From: Ruminant digestion Rice cultivation Anaerobic soils 21 times as much warming potential as CO_2

By 2030 agricultural N_2O emissions and CH_4 emissions will have increased by 35% to 60%, respectively.

How to Reduce Emissions

Prevent land use change: 6 million hectares of forest and 7 million hectares of other land were converted to agriculture and other uses each year in the last 4 decades. This trend is predicted to continue.

Sequester carbon in the soil: or the process of removing carbon from the atmosphere and storing it in the soil indefinitely.

The technical potential to sequester carbon in the soils of terrestrial ecosystems is estimated at around 3 gigatons of carbon per year, the equivalent of 50ppm of atmospheric CO_2 by 2100. This could increase annual food production of food grains in developing countries by 24 to 32 million tons.

Reduce nitrogen emissions: through composting, green manures, intercropping, application of livestock manure and precision application of synthetic fertilisers.

Reduce livestock emissions: livestock contribute 9% of total anthropogenic CO_2, 37% of CH_4 and 65% of N_2O. In general, extensive livestock rearing produces more greenhouse gas emissions per unit output while intensively reared livestock produce more emissions per-area, given the larger herd sizes.

Paying for Mitigation

Direct Incentives	Indirect Incentives
Farmers adopt mitigation measures because of other benefits (e.g. higher productivity)	A direct payment tied to a price set for the sequestration of carbon or other emissions

The Mitigation Potential

If the price set for carbon is high and there are no economic or other barriers, agricultural emissions could be reduced by 5,500 to 6,000 million tons of CO_2 equivalent per year by 2030.

- 70% of potential originates from developing countries, 20% from OECD countries and 10% from emerging economies
- 89% of the potential is linked to soil carbon sequestration
- 9% associated with lowering CH_4 emissions
- 2% linked with lowering N_2O emissions

Biofuels

Bioenergy currently accounts for 9% of global primary energy supply while biofuels, the conversion of biomass to a fuel before burning, account for 3.5%.

Global production of biofuels tripled from 18 billion litres in 2000 to around 60 million litres in 2008.

The Barriers

"Overall there has been little progress in implementing large-scale mitigation measures given the potential. Barriers include limited access to technology and resources as well as lack of appropriate political, institutional and economic policies."

Can we Feed the World?

Yes, if...

1. We recognise food security affects us all and the time to act is now.
2. We acknowledge the challenges we face are unprecedented and require concerted action.
3. The world's leading donors of aid implement their commitments to food security.
4. The Doha Round is completed with satisfactory outcomes for developing countries.
5. There is explicit attention to the creation of enabling environments.
6. The appropriate governance for food security and agricultural development is in place.
7. Fair and efficient output and input markets are created on a countrywide basis.
8. Greater attention is paid to gaining increased value for farmers through producer associations and widespread availability of microinsurance and microcredit.
9. We acknowledge the key role of agriculture in development.
10. We recognise the need for a new Doubly Green Revolution.
11. There is explicit recognition of the critical role of smallholder agriculture.
12. More attention is paid to agroecological research and development.
13. There is a major focus on getting poor rural people out of poverty.
14. Technologies for agricultural development are developed and applied, providing they are appropriate, whatever the source.
15. We accept that biotechnology is an essential tool in attaining food security.
16. There is more funding for improving mixed livestock systems.
17. We recognise the role of famers as innovators.
18. There is increased support for integrated pest management (IPM) systems building on pest and disease resistance utilising biotechnology.
19. There is widespread adoption, in appropriate environments, of systems of conservation farming.
20. We focus our investments on small scale water harvesting and community water.
21. There is significant investment in agricultural adaptation to climate change.
22. There is urgent attention to financing the reduction of greenhouse gas emissions from agriculture.
23. We invest in scaling up as a route to rapid success.
24. We recognise that crucial to the success of going to scale are public-private-community partnerships.

First published November 2012 by Agriculture for Impact.
For more information and references, please visit:
www.canwefeedtheworld.org

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