CLIMATE CHANGE AND AGRICULTURE

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WHAT WILL BE THE CONSEQUENCES OF CLIMATE CHANGE FOR AGRICULTURE ?

Uncertainties in predicting

- Extent of <u>temperature increase</u> and its geographic distribution.
- Changes likely to occur in the <u>precipitation</u> <u>patterns</u> that determine the water supply to crops, and to the evaporative demand imposed on crops by the warmer climate.
- Extent of increase in levels of <u>Carbon</u> <u>dioxide</u> in the atmosphere.

The Impact of Climate Change on Agriculture

Influenced by the complexity of the impact on:

- agricultural systems
- socioeconomic factors
- Political-economy governing world food supply/demand market prices and trade

Observed & Anticipated Changes

- Higher temperatures
- Changes in availability of water
- Elevated levels of CO₂

Possible Impacts

- Soil fertility & erosion
- Pests & diseases
- Sea-level rise coastal erosion
- Extreme weather events hurricanes
 & storms; droughts



Predicted effects of climate change on agriculture over the next 50 years

Climatic element	Expected changes by 2050's	Confidence in prediction	Effects on agriculture
Temperature	Increase from 360 ppm to 450 - 600 ppm	Very high	Good for crops: increased photosynthesis; reduced water use
Precipitation	Rise by 10 -15 cm Increased in south and offset in north by natural subsistence/rebound	Very high	Loss of land, coastal erosion, flooding, salinisation of groundwater

Source: Climate change and Agriculture, MAFF (2000)

Predicted effects of climate change on agriculture over the next 50 years

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Storminess	Increased wind speeds, especially in north. More intense rainfall events.	Very low	Lodging, soil erosion, reduced infiltration of rainfall
Variability	Increases across most climatic variables. Predictions uncertain	Very low	Changing risk of damaging events (heat waves, frost, droughts floods) which effect crops and timing of farm operations

What impacts are already being experienced?



Hurricane Dean Damage (2007)

- Livestock Ja\$ 73.45 million
- Domestic Crops Ja\$ 904.9 million
- Crops in greenhouses Ja\$ 52.5 million

TOTAL Ja\$ 1.03 billion

Source: RADA

Damage from Hurricane Dean contd....

- Cacao 2007-08 crop wiped out
- Coffee severe damage to Blue
 Mountain and other varieties
- Bananas 85% standing crops down 95% suckers damaged
 Poultry - 20% loss by small farmers
 Sugar - 2007-08 crop reduced by 21%

Adaptive Strategies

- Minor Change cropping patterns sewing/harvesting etc
- Major Change crops with (existing or new) climate resistant crops - Considerable investments may be neede

Where do we go from here?

RESEARCH

Different scenarios need to be modeled and costs & benefits evaluated

PUBLIC EDUCATION

Preparing the public, especially farming communities, to be flexible in farming patterns and promote agrodiversity MOBILIZATION OF RESOURCES Caution . . .

Avoid rushing into simplistic 'solutions'

The End