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Climate Change Poses Special Problems for Agriculture

Scientists estimate overall decrease in agricultural productivity
Sub-Saharan Africa most vulnerable

The steady warming of the earth's surface temperature has enormous implications for agriculture, the head of the Intergovernmental Panel on Climate Change (IPCC) said today. Even a small increase in temperature will mean a decrease in agricultural production in many tropical and sub-tropical countries, and Sub-Saharan Africa is the most vulnerable.

Dr. Robert T. Watson, IPCC Chair, spoke today to hundreds of scientists and researchers of the Consultative Group on International Agricultural Research (CGIAR), which is holding annual meetings in Durban this week. The IPCC's latest assessment report projects that the earth's average surface temperature could rise by 1.4 – 5.8 degrees Celsius (2.5 – 10.4 degrees Fahrenheit) over the next 100 years. The panel has concluded that this would result in:

- Severe water stress in the arid and semiarid land areas in southern Africa, the Middle East and southern Europe.
- Decreased agricultural production in many tropical and subtropical countries, especially countries in Africa and Latin America.
- Higher worldwide food prices as supplies fail to keep up with the demand of an increasing population.
- Major changes in the productivity and composition of critical ecological systems, particularly coral reefs and forests.
- Tens of millions of people at risk from flooding and landslides, driven by projected increases in rainfall intensity and, in coastal areas, rising sea levels.

"With its low per capita fossil energy use, Sub-Saharan Africa has the lowest emissions of the greenhouse gases that are the major cause of climate change. Yet Sub-Saharan Africa (along with low-lying small island states) is the most vulnerable to climate change because widespread poverty limits its capabilities to adapt to a continuing changing climate," Watson said. *"Particularly at risk are the arid and semi-arid regions and the grassland areas of eastern and southern Africa, and the areas already threatened by land degradation and desertification."*

At a news conference preceding his presentation, Watson was joined by Ian Johnson, CGIAR Chairman and World Bank Vice President and Pedro Sanchez, Director-General of the CGIAR's International Center for Research in Agroforestry (ICRAF) in Kenya and. The news conference released the new CGIAR report, *The Challenge of Climate Change: Poor Farmers at Risk.*

"A warmer world will surely impact yields of staple crops, increase the incidence of pest attacks, and exacerbate drought, all with profound effects on the well-being of small farmers in developing countries," Johnson said. *"As an international public research organization, the CG's challenge is to mobilize the best of science for poor farmers at risk."*

"International agricultural research can help develop a coherent, systemic response to the potential effects of climate change on agriculture and play a critical role in helping poor farmers adapt to the consequences of climate change and mitigate its deleterious effects," said Sanchez, who heads the CGIAR's Inter-Center Working Group on Climate Change.

Agriculture is the economic mainstay in most African countries, contributing 20 – 30 percent of GDP in sub-Saharan Africa and 55 percent of the total value of African exports. About 70 percent of Africa's poor live in rural areas.

Crop yields and changes in productivity as a result of climate change will vary considerably across regions and among localities. In the tropics and subtropics, where some crops are near their maximum temperature tolerance and where dryland, non-irrigated agriculture dominates, yields are likely to decrease even with small increases in atmospheric temperature. Overall agricultural productivity in Africa could decrease during the next century, leading to hunger and malnutrition in vulnerable areas, especially in drought-prone regions of Africa.

Climate change's impact on the availability of water in Sub-Saharan Africa is also of concern to scientists. At present 1.7 billion people live in areas where water resources are scarce. This number is expected to increase to about 5.4 billion over the next 25 years. In general, rainfall is projected to increase slightly over much of the continent, but a decline in rainfall is projected for southern Africa, especially in winter. These changes in rainfall and higher temperatures are projected to exacerbate water shortages in Southern Africa and in African countries around the Mediterranean Sea. The predominance of rain-fed subsistence agriculture and, across southern Africa, high dependence on water-demanding maize means that food security for most of the continent is inextricably linked to the amount of rainfall. In dryland regions, crop and livestock production are also extremely susceptible to seasonal rainfall variability. Increased droughts resulting from climate change could seriously impact the availability of food, as was the case in the Horn of Africa and southern Africa during the 1980s and 1990s.

According to the IPCC, the main challenges facing Africans will emanate from tropical storms, floods, droughts, landslides, abnormal sea-level rises, and other extreme weather expected as a result of climate change. These events will exacerbate problems of pollution, sanitation, waste disposal, water supply, public health, infrastructure, and production technologies.

The CGIAR is an association of 58 public and private members supporting a system of 16 Future Harvest research centers around the world. More than 8,500 CGIAR scientists work in more than 100 countries to reduce hunger and poverty, improve human nutrition and health, and protect the environment. South Africa has been a CGIAR member since 1996.

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