Scientists seek new ways to feed the world amid global warming

AFP, *Los Banos*

On an agricultural research station south of Manila a group of scientists are battling against time to breed new varieties of rice as global warming threatens one of the world's major sources of food.

According to the International Rice Research Institute (IRRI) more than half the world's 6.6 billion people depend on rice for nourishment.

"Parts of the world will become drier and apparently that's already happening, and some parts will become even wetter," said Moroccan crop physiologist Rachid Serraj.

"But most importantly it's going to shift the rainfall distribution. It's going to become more unpredictable, and that is the problem for rice cultivation," he said.

Chinese scientist Peng Shaobing wraps his paddy fields with tarp and blasts them with cold air from air conditioners.

His colleague Indian plant geneticist Kumar Singh grows 2,000 rice varieties inside giant metal cabinets, the seedlings sprouting above styrofoam trays soaked with varying degrees of brine to simulate the seawaters that threaten to engulf rice-growing areas over the next century.

The three IRRI scientists are entrusted with ensuring that the half of mankind who depend on rice will not go hungry as rising temperatures and ocean levels threaten one of the world's most important crops.

The Intergovernmental Panel on Climate Change projects the globe will warm by 0.2 degrees Celsius every 10 years, far higher than the 0.6-degree Celsius rise in the past century, with serious consequences for food production.

IRRI, based in this university town south of the Philippine capital and a vital part of the "Green Revolution" that dramatically raised cereal yields in the 1970s, has gathered top experts to work on "new frontier projects" to meet the threat.

This is apart from more conventional research to further boost yields, make the plants more resistant to pests and disease, and make the grain more palatable.

Rice yields would fall by 10 percent for each one-degree rise in the minimum temperature at night, time spent by the plant for growth processes, said crop physiologist Peng, a pioneer researcher in this field.

Between 1978 and 2003 minimum mean nighttime temperatures rose by 1.5 degrees Celsius, suggesting a 15 percent production decline over 28 years, Peng told AFP.

Higher nighttime temperatures shorten the growing time for rice. "The yield is reduced because the plant doesn't have enough time to grow," Peng said. "Higher night temperatures also leads to poorer grain quality."

Drought and salinity are already a major problems. Twenty-three million hectares (57 million acres), or 18 percent of the world's rice farms are considered "drought-prone", Serraj said.

A dry spell in hot spots such as eastern India can push up to 15 million rain-fed rice farmers into poverty in a single year, he said. Even in China, demand for water from industry and elsewhere is putting pressure on high-yield irrigated rice grown there, he added.

The two countries account for nearly half the world's rice growing areas.

Next to drought, the influx of saltwater not only in coastal but also inland farms through careless irrigation practices is the number-two problem, said Singh.

Some 6.3 percent of the world's soil surface is already considered saline, and global warming or not, the problem affects most of the rice fields of South Asia and Southeast Asia, he told AFP.

Global warming is projected to cause sea levels to rise by between four and 34 inches over the next century, which would threaten key rice-growing areas in Vietnam, Indonesia, Bangladesh, and India among others.

For the IRRI scientists, the challenge is to produce new breeds and innovate crop management techniques to help farmers meet the triple threat of drought, higher temperatures, and soil salinity, along with the new pests and diseases that will crop up as rice is grown in radically new environments.

Peng said high-yield varieties developed by IRRI seem to have higher tolerance for warmer nighttime temperatures. His experiments seek to determine their yields in simulated cooler night temperatures.

AIDS virus attacks brain on two fronts: Study

AFP, *Washington*

The AIDS virus does not only destroy brain cells, it also inhibits the body from making new ones, according to a new study published in the United States.

"It's a double hit to the brain," wrote researcher Marcus Kaul in the study into the causes of the condition known as HIV-associated dementia published in the August issue of the Cell Stem Cell.

A protein known as gp120 which is found on the surface of the HIV virus is responsible for the damage, the researchers from the Burnham Institute for Medical research and the University of California at San Diego found.

"The breakthrough here is that the AIDS virus prevents stem cells in the brain from dividing; it hangs them up," said Stuart Lipton. "It's the first time that the virus has ever been shown to affect stem cells."

"The HIV protein both causes brain injury and prevents its repair," added Kaul.

The study found that gp120 in mice slowed down the production of new neurons in the hippocampus, the region of the brain which is vital for learning and memory.

It has been long known that HIV infection could lead to acute dementia, but the numbers of cases are rising as HIV patients live longer thanks to drug therapies.

Current anti-viral drugs cannot however easily penetrate into the brain tissue, thus leaving behind a reservoir of the virus.

Scientists believe the team's research could help determine a new course of treatment for HIV dementia.

"This indicates we might eventually treat this form of dementia by either ramping up brain repair or protecting the brain mechanism," Kaul said.

Mullah Omar calls on Afghans to unite against Western forces

AFP, *Kandahar*

The reclusive one-eyed Taliban leader Mullah Mohammad Omar yesterday made a rare public call for Afghans to unite with the militant insurgency to drive Western forces from Afghanistan.

The message, made to mark the 88th anniversary Sunday of Afghanistan's independence from Britain, was signed by Omar and emailed to news agencies, including AFP.

Its authenticity could not be verified.

The message called on Afghans to set aside their differences and wage "jihad," or holy war, against what it called colonialist forces, referring to all foreign soldiers in the country, including NATO and US-led troops.

"The enemies of the religion of Islam and the independence of the country have launched satanic propaganda under the slogans of democracy and freedom and are trying to disperse Afghans and benefit from it," it said.

"We must wake up and be careful. We have to put aside all of our internal, regional and linguistic differences and unite against the enemy."

The fugitive leader, a friend of al-Qaeda leader Osama bin Laden, sheltered the terrorist organisation in the face of a US-led invasion to oust the Taliban from power in Afghanistan after the 9-11 attacks on the United States in 2001.

His message said the regrouped militants were winning their war against the more than 50,000 Nato and US-led coalition forces currently in the country supporting the government of President Hamid Karzai.

"Everyone, members of parliament or provincial councils, government employees or those working for the army, police and intelligence, must all join the freedom fighters for their security and for Afghan unity and independence," the message said.

Omar, who has a 10-million-dollar bounty on his head, has rarely appeared in public even when he led the country, and seldom makes speeches.

Taliban militants have waged a bloody insurgency since being ousted from power in late 2001 by a US-led invasion of Afghanistan. The insurgency has claimed thousands of lives.

The militant group has recently added suicide attacks, roadside bombing and other guerrilla tactics to its strategy, apparently copying the methodology of insurgents in Iraq, which regularly result in high civilian casualties.

Omar has called on his fighters to try to avoid civilian casualties during attacks.