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Salt threatens Mekong rice - By Marwaan Macan-Markar

BANGKOK – With Vietnam's fertile Mekong delta threatened by rising sea levels and salt water ingress, the country's future as a major rice exporter depends critically on research underway in the Philippines.

Scientists at the International Rice Research Institute (IRRI) are working with Vietnamese counterparts in the town of Los Banos, southeast of Manila, to develop a strain of rice that can withstand submergence for over two weeks and resistant salinity. A flood-tolerant variety dubbed "scuba rice", which has the submergence (SUB 1) rice gene, already offers half the solution.

"IRRI is experimenting to find a rice variety to deal with both problems," says Bjorn Ole Sander, a scientist at the world's leading non-governmental research centre on rice. "Even if we have rice crops that are tolerant to floods they can die because of salinity."

Four dams built by China on the Mekong have already had an impact on the delta's rice farms. As the usual water flow ebbed, salt water raced inland and the alluvial soil dumped on the delta by the river during the annual monsoon floods also dropped, reducing the natural fertility.

But the dams have provided clues to the possible impact of climate change. Almost one-third of the delta, where nearly half of Vietnam's rice is grown, could be submerged by salt water if there is a one-meter rise in the sea levels, a report by the country's National Institute for Hydrometeorology and Environmental Science warned in 2009.

The search for this grain has its roots in the Indian state of Orissa, home to a flood-resistant rice variety that resumes growth after being underwater for even 14 days – unlike other rice varieties that die if submerged for just over a week.
"This has been achieved without genetic manipulation, by breeding the SUB 1 variety," Sander said in an interview. "It can be submerged for 17 days."

But the quest for a salinity-tolerant variety that could be blended with "scuba rice" is more daunting. "It will take at least four years to find a rice variety that will be tolerant to both – salinity and flooding," he said. "That would be the answer to the problems faced in the Mekong Delta from flooding and salinity from the rising sea tides."

Salt water from the South China Sea now spreads 40 kilometers into the delta, unlike the 10 kilometer inland reach of the sea 30 years ago.
"The future of the delta is at stake. That is why we are working with IRRI to develop a rice variety to deal with floods and salinity," says Nguyen Van Bo, president of the Vietnam Academy of Agricultural Science, a government-backed entity in Hanoi. "Seven percent of the paddy fields in the delta are affected by rising sea levels."
Already farmers have begun to change occupations, many going from rice farming to shrimp farming, he told IPS. "There is a very noticeable shift from the previous times when growing rice and shrimp farming were seasonal."

And Vietnam's fate – particularly on the delta – is going to worsen, warned Asian agriculture scientists and climate change specialists at a meeting in Bangkok this month. It would add to existing woes from erratic weather patterns that have hit the region's other major rice producers like Thailand, they added.

The delta accounts for nearly 50% of the 42 million tonnes of unmilled rice produced in Vietnam, which harvests three annual crops and is the world's second-largest rice exporter after Thailand. In 2011, Vietnam exported a record seven million tonnes of rice, mainly to the Philippines and other Asian markets.

For over 17 million of Vietnam's 87 million people, who call the flat, humid delta their home, the network of waterways has been pivotal to rice production. These arteries are fed by the Mekong River, Southeast Asia's largest body of water, which begins its 4,880-km route in the Tibetan plateau and flows through southern China, touches Myanmar and Thailand, and winds its way through Laos, Cambodia and Vietnam before flowing out into the South China Sea.

World Bank studies rank the delta as most threatened by sea level rise among coastal communities in 87 developing countries surveyed, if there is a rise in sea levels. Warnings in other reports that 21% of Asia's crops will be affected by the impact of climate change by 2050 are yet to push government leaders from the 190 countries who gather at the annual United Nations climate change summit to include agriculture in the negotiations.

"Agriculture and food production are mentioned in the UNFCC [United Nations Framework Convention on Climate Change] but they have not been translated into language that will initiate a specific work program on agriculture in relation to climate change," says Bruce Campbell at the Consultative Group on International Agricultural Research (CGIAR).

"There isn't a common voice on agriculture at the UNFCCC negotiations," said Campbell, a director at CGIAR, which is sponsored by the Food and Agriculture Organisation, the International Fund for Agricultural Development, the United Nations Development Programme and the World Bank.

"Climate change is impacting farming systems and it is endangering crops," Campbell told IPS. "Agriculture systems have to be transformed to make agriculture climate resilient."