



Theme 1 – Crop Water Productivity: A Time Of Change

Water is the source of life.

It is the most precious natural resource, a vital part of a socio-ecological system. Water provides life support for human beings and the environment.

Over the past century the world's population has tripled and water use has increased six-fold. The global demand for food and water is growing at unsustainable rates.

We must learn how to manage our water resources to improve food production and livelihood, in a way that is environmentally sustainable and socially acceptable.

This is the key vision of the CGIAR Challenge Program on Water and Food, an ambitious research and capacity-building initiative.

Agriculture is the largest consumer of water, the program aims to increase food production, achieve food security and alleviate poverty without using more water than was used for agriculture in the year 2000.

Strong partnerships bring together an immense pool of resources, knowledge and technologies to produce breakthroughs against the world's growing water crisis.

The program spans across the developing world to nine benchmark basins with projects that link to five research themes

Theme 1 is concerned with Crop Water Productivity Improvement. This research focuses on how poor farmers gain, use, and produce food with the existing water in their environment.

To ensure the farmers' quality of life is enhanced sustainably, Theme 1 approaches its research on four levels.

Millions of people living in the tidal ecosystem of the Mekong Delta in Vietnam are among the poorest and the most food insecure.

Their farms are situated where the fresh and saltwater meets so their crops are hindered by the seawater intrusion.

(Interview with Project 10 leader Dr. Tu Phuc Tuong)

We have several steps in research and dissemination. One of the issues we have to understand is: How do people rely on resources? And what happens to them? What happens to their livelihood and their income? What happens to their job if we change the environment? The second issue is that we can have a lot of intervention, but how do these effect the environment?

(Interview with rice- shrimp farmer Nguyen Van Phong)

Before, we grew only rice. But now we grow rice and shrimp. We harvest shrimp three to four times a year. We can also raise crabs and fish.

(Interview with rice- vegetable farmer Mrs. Sau)

Before when we didn't have fresh water it was difficult. We had to carry water over a great distance.

(Interview with rice-vegetable farmer Mr. Tran Van Sau)

When there is only little water, I can plant only half of the field.

Since 1990, the Yellow River has experienced continuous drought and no longer reaches the yellow sea. The lack of water threatens the traditional way of lowland rice production in Northern China.

(Interview with lowland rice farmer Liu Fu Min)

Before, this river was full of water, but now it has dried up. The people in this region are very poor. Because of the water shortage, people could not afford to invest money in growing rice. We have to use an electric pump for irrigation every three days. This cost about 1,350 Chinese Yuan per hectare.

Researchers have successfully developed high yielding lowland rice to be grown under aerobic conditions. At the China Agricultural University, the research challenge is to keep this yield high after years of continuous cropping.

(Interview with Project 16 Prof. Yang Xiaoguang)

The potential yield of aerobic rice under different levels of nitrogen and water is being studied using aerobic rice variety – Han Dao 297 developed by Professor Wang Hauqi.

(Interview with Project 16 Prof. Wang Hauqi)

In the past, this area and all of these areas are for planting the lowland rice. But today, this year, it is replaced by aerobic rice just because of the water shortage.

(Interview with aerobic rice farmer Iyu Kencheng)

It is our first time to plant aerobic rice here. We expect more income from planting aerobic rice than from other crops. The net income could reach about 3,000 Chinese Yuan per hectare. Planting aerobic rice is very good. It can save water and seeds.

The Indo-Gangetic Basin is one of the world's largest and most productive river basins.

Due to population growth, the natural resources have been overexploited. Now there are serious concerns for sustaining the irrigated agriculture and other water uses. Like the Mekong Delta, people living in the tidal ecosystem of the Gangetic Delta suffer major food security issues, as water and food productivity are low in the region.

(Interview with Project 10 researcher Dr. Manoranjan Mondal)

In this program, Challenge Program on Water and Food, what we intend to do here is to fine-tune these technologies we have developed in the past a project weve introduced the drum seeding instrument in the dry season so that production cost is reduced.

(Interview with rice farmer Birenda Nath Sarkar)

Salt water comes in February, this was always known to us. But with the help of researchers, we have escaped the salt water by transplanting the rice earlier, so that the crop has completed half of its life cycle by February. Then from February onwards, we use the reserve fresh water for irrigating the crops.

(Interview with Project 7 researcher Dr. M. A. Salam)

Material exchange will be done between Vietnam, Bangladesh, Egypt and Iran. So there is the same situation in the different countries, so all the countries will share their best materials so that we will know the best variety will be used for the increase of productivity for shrimp culture or the shrimp-rice conditions.

Tremendous challenges lie ahead, but the emergence of new science, the evolution of new approaches and dedicated researchers from around the world, can help farmers to sow the seeds of change and feed the world sustainably.