

## Water and Agriculture

CropLife Asia, 24 March 2005

Water is a precious resource, plentiful but widely abused. Some 2.4 billion people have no toilets or sewers, and 1.1 billion do not even have drinkable water. Every day, an estimated 22,000 people, half of them children, die of diseases borne by polluted water, such as typhoid, cholera, malaria and diarrhea.

This year has seen the Asia-Pacific region afflicted by drought. In countries stricken by shortage, the start of the UN water decade – coinciding with the annual World Water Day -- took on special significance.

In Thailand, King Bhumipol Adulyadej personally supervised a cloud-seeding operation -- in which chemicals are shot at clouds to encourage rainfall -- to alleviate a drought that has afflicted 71 out of 76 provinces, drying up reservoirs and baking rice paddies. In Beijing, the city warned that a severe water shortage would prompt a further hike in water prices, by up to 20 percent, after an increase of 25 percent in 2004.



### Water & the Plant Science Industry

Water matters to the plant science industry. Agriculture accounts for some 70% of all water use, and water management is becoming one of the key collective challenges to achieving sustainable development worldwide. As the world population grows and pressure increases on natural resources, the plant science industry reaffirms its commitment to sustainable agriculture and its responsibility to protect water resources through the promotion of a range of agricultural techniques and technologies including improved land management systems, good agricultural practices, and biotechnology.

If agricultural production is to be sustainable, water resources must be used more efficiently and water quality maintained or improved, whilst still increasing agricultural productivity.

*Just a 1% increase in water productivity in food production could potentially make available 24 liters of water a day per head of population.*

### Examples

Some examples of crop management or crop research strategies to improve the efficiency of water use in the agricultural sector include:

**Limiting or eliminating soil tillage** in agriculture improves the land's ability to capture and retain moisture. This practice is enabled through the use of herbicides to manage weeds. As a result of no-till practices, farmers in many countries optimise their yields and are better off than farmers who did not use this practice. In Ghana, no-till farmers obtained maize yields that were 45% higher than farmers who did not use this technology during normal years. In a dry year such as 2000, the yield was 48% higher.



**Herbicides** also help increase a crop's access to water, by reducing the weeds that compete for moisture and use of scarce water resources - resulting in "more crop per drop." In the Philippines, new rice production systems enabled through innovative weed control has reduced water consumption by one-fifth. This is particularly critical as rice is the most water intensive crop, with as much as 5000 liters of water needed to produce 1 kilogram of rice.

**Enhanced crop varieties** also help plants economise water consumption. It is estimated that the accumulated damage to a crop from stresses such as drought and heat can reduce yields by 30-70 %. Drought tolerant plants may substantially decrease a crop's water needs and result in less water consumption. Both the public and private sector are involved in research to develop new crop varieties, bred traditionally or through plant biotechnology.

**Good agricultural practices** and product stewardship is fundamental to water protection and preservation. By engaging in partnerships, the plant science industry's stewardship activities seek to protect water quality by reducing soil erosion, avoiding run-off of crop protection products, and increasing wildlife habitat as part of a holistic farm or land management approach. Throughout Europe, for example, the plant science industry has teamed up with farmers and water utility companies to protect water areas and inform farmers regarding application timing, amount, and choice of a crop protection product.

### Water and Agriculture: What is the relationship?

Agricultural uses, primarily irrigation, account for almost 70% of global water withdrawals. This amount is expected to increase in the next thirty years to support the expected 20 % increase in the amount of irrigated land. Currently, irrigated land accounts for approximately one-fifth of the total arable area in developing countries – which also account for 75 % of the world's total irrigated areas.

Clearly, numerous changes in current water uses must be undertaken to ensure that today's water needs can be met without compromising the ability of future generations to meet their needs. Investments in irrigation and water management technology are central to the agricultural component of the water challenge, as well as adoption of advanced land management and farming techniques, investment in crop research and development, good agricultural practices and stewardship, and addressing the water needs of communities around the world that will help boost water productivity and the growth of crop yields.