



## Challenges to Near East agriculture

**In a region where paying for water is perceived by many as anathema, irrigated agriculture faces growing pressure for "cost recovery", while introduced pests jeopardize access to exports markets**

A meeting of senior agriculture officials from 13 countries of the Near East has endorsed action aimed at improving water productivity in agriculture and strengthening plant protection systems in the region. Meeting in Sana'a in March, delegates to FAO's Agriculture and Land and Water Use Commission (ALAWUC) reviewed reports on the declining availability of water for agriculture and the need to upgrade phytosanitary standards both to protect domestic production and guarantee market access for agricultural exports.

Stretching from Mauritania to Afghanistan, the Near East is predominantly arid or semi-arid, and just 4.5% of the total surface area is cultivable. Agriculture is mainly rainfed, with extreme fluctuations in rainfall often resulting in 30% drops in food production. The region's population of nearly 700 million is among the world's fastest growing and is expected to reach almost 900 million within 10 years.

"Increasing demand for food and fibre means agriculture has to achieve higher yields from limited cultivated land and with less water" says Mohamed Bazza, senior water specialist at FAO's Near East regional office in Cairo. "In most of the region, expansion of the cropping area is not possible, and increases in yields will have to come from intensification."

**"Water mining"**. Boosting crop production in the Near East will depend primarily on making better use of existing water resources, especially on irrigated land. An estimated 280,000 sq km - or one third of the region's arable area - is under irrigation, and in many countries irrigated agriculture claims more than 80 percent of available water, at a time when urban centres and industry are demanding a bigger share. Countries are consuming most of their renewable water resources and are relying increasingly on desalinated water or treated wastewater, and on mining non-renewable "fossil water" in aquifers.

While water productivity gains are generally achieved through higher yield from the same volume of water, the options also include using less water for the same yield, or obtaining higher economic returns per unit of water by growing high-value crops. Whatever the strategy, FAO says, improving the generally low productivity of irrigation will require "fundamental changes in attitudes, policies and



practices as well as investments and willingness to take and implement decisions."

Among the "pathways" to higher productivity proposed by FAO is irrigation management transfer, which often involves devolution of responsibility for irrigation from government to farmers. Experience in other regions has shown that making water users responsible for operation and maintenance of irrigation infrastructure reduces the burden on government budgets and can lead to more productive water use.

In the Near East, this approach has been adopted most notably in Turkey where, in just three years, responsibility for canal systems on 1.1 million ha of irrigated land was transferred to water users' associations (WUAs). An alternative being explored in Egypt is a hybrid of government control and user management, in which WUAs function at tertiary level and WUA federations are being formed to manage secondary level branch canals. An FAO report to ALAWUC cautions, however, that Near East countries "need to be clear about the implications and benefits of pursuing management transfer, particularly where water is considered to be free and paying for it is anathema".

**Capacity building and water charges.** A "softer" option for productivity increases is capacity development - not only technical training in using infrastructure but also assistance in building strong institutions and organizations for successful irrigation

development. Recovering the cost of water services is another promising avenue for action. Although water is still treated as a "public good" in the Near East, and governments are reluctant to introduce tariffs that reflect real costs, an FAO review found that changes are being driven by water scarcity, increased demand and the need for funds to maintain irrigation works.

The problem is identifying the cost recovery system that works best. The FAO report says that, with a few exceptions, water charges in many countries have not covered operation and maintenance costs. One constraint is the expense of collecting payments, which requires measuring and recording relatively small water volumes delivered to numerous small farmers, and a system for preparing and delivering invoices. Clearly, the report says, water charging is not a "silver bullet" that can solve all problems. Rather it should be part of a larger package of measures that promote a virtuous cycle, in which farmers are willing and able to pay for good service and revenue is invested in improved service delivery.

"Soft" solutions for improving Near East water productivity - mainly institutional and financial reforms - should not overshadow the need for technical improvements in irrigation. "Modernization," says the report, "requires a re-think that allows the new institutions to determine the kinds of technology needed, or possibly vice-versa." While new technologies such as sprinkler and trickle irrigation are being promoted to replace surface irrigation, the latter is still the most important method of applying water to crops, accounting for about 93% of land irrigated in the Near East.

Needed may not be a fundamental change in technology but a significant improvement in the capacity of farmers to manage water on the farm and in the capacity of the services that support them. This could entail refinements in irrigation scheduling and the introduction of demand-oriented systems that respond quickly to farm requirements.

Finally, the Commission considered the potential for using desalted water in agriculture. Desalination is a well-established technology in the Near East and is the main source of drinking water in the Gulf countries. But an FAO report to ALAWUC said applying desalted water to agriculture "is generally cost-ineffective and much less economical than the reuse of treated wastewater". At present, desalination costs using reverse-osmosis membrane technology range from around 50c per 1,000 litres of brackish water to more than \$1.50 for seawater. While

preferred, wastewater reuse carries potential health and environmental risks. Hybrid solutions - blending wastewater and desalinated water - may therefore have a place in urban and peri-urban agriculture.

**Trade agreements.** ALAWUC also called on Near East governments to strengthen their plant protection and quarantine systems. The Commission noted that countries of the region are liberalizing their agricultural sectors and entering into regional, subregional and global trading agreements. At least 15 of them are in the process of joining the World Trade Organization, and nine Mediterranean countries have trade agreements with the European Union (about 80% of the region's agricultural exports - mainly fruits, vegetables, olive oil, fish and cotton - go to the EU).

Along with new trade opportunities, however, come strict international phytosanitary standards that can represent major non-tariff barriers to farm produce. "Competitiveness in regional and international markets is often hindered by the failure to comply with the sanitary and phytosanitary requirements of importing countries," an FAO report to ALAWUC says. "Increasing trade and travel have also increased enormously the potential for the introduction of new plant pests into the region."

Introduced pests, diseases and weeds not only cause damage to major crops and force farmers to apply expensive control measures, but can also jeopardize access to exports markets. For example, infestations of the Peach Fruit Fly from Southeast Asia are now reported in six Middle Eastern countries. Were it to spread to other countries of the region, direct damage and incurred costs - from insecticides use, quarantine restrictions and loss of export markets - could total hundreds of millions of dollars. The Near East's citrus industry, an important source of export earnings, may also be threatened by the Citrus Tristeza Virus whose main vector, the brown citrus aphid, was recently discovered in Portugal.

While several countries have updated their plant quarantine legislation to comply with international trade requirements, much remains to be done, FAO says. To win the trust of trading partners, Near East countries should revise their quarantine pest lists, review their phytosanitary measures, and ensure that laws are enforced. They also need to go further in regional harmonization of phytosanitary regulations and find synergies in the areas of food safety, animal and plant health.