

More crop per drop in Africa

The challenge...

Many regions in Africa are vulnerable to climatic variability and frequent droughts. Freshwater resources are shrinking rapidly and water quality is declining as it is often polluted with sediments, fertilizers and pesticides that leach out from the fields due to traditional irrigation methods and poor soil management.

Agriculture is the largest consumer of freshwater, using more than 70% of available resources. An ever-expanding population means that it is necessary to grow more crops but to use less water (the 'more crop per drop' principle). The introduction and adaptation of irrigation, especially small scale irrigation, is a key factor in increasing crop production while saving freshwater, reducing vulnerability to food deficits and for contributing to income generation for resource poor farmers in the semi-arid areas of Africa. Nuclear techniques offer a unique tool to assess soil moisture (using neutron probes), to assess water requirements by plants (through ^{13}C analysis), and to assess fertilizer needs (using e.g. ^{15}N labelled fertilizer).

The project...

This regional technical cooperation project aimed to develop and pilot test appropriate irrigation systems for small scale farmers in order to increase crop yields, improve the quality of high value crops and enhance farmer incomes. Nuclear and isotopic techniques were used to assess different irrigation approaches by obtaining quantitative data on water and nutrient use efficiency and determining uptake and losses in different high value crops.

Counterparts from 19 African countries (Algeria, Benin, Botswana, Burkina Faso, Côte d'Ivoire, Ethiopia, Ghana, Kenya, Libyan Arab Jamahiriya, Mali, Mauritius, Morocco, Niger, Nigeria, Sudan, United Republic of Tanzania, Uganda, Zambia and Zimbabwe) participated.

The impact...

Field experiments and socioeconomic studies carried out by the participating Member States showed that drip irrigation increased crop yield and saved up to 30% of irrigation water in comparison to sprinkler irrigation. The project generated tremendous interest from smallholder farmers who were eager to adopt the technology. Several field days were held in different countries to create further awareness and enhance technology transfer to local smallholder farmers. The field days focused on aspects such as soil moisture measurement and fertilizer use by plants. Some 150 farmers have already learned about small scale irrigation technologies and best agricultural practice through the project field days. This number is expected to reach 500 by 2012.

