

Italian farmers struggle against sea water

In the dry coastal regions of southern Italy an increasing number of farmers are faced with sea water encroaching in their soil. Scientists from Wageningen UR and the Italian Irrigation Institute are trying to get to grips with this problem. Better irrigation scheduling and the introduction of salt-tolerant crops seem to be the solution.

Increasing salinity of groundwater is a widespread phenomenon in the Mediterranean. Virtually every fresh groundwater reservoir along the Mediterranean coast of Spain is contaminated with sea water. In Italy the island of Sardinia is particularly badly affected. Here large tracts of farmland have become unusable as the result of salt water intrusion. Recently though the Italian mainland

has also started to receive its share of salt water problems, as agriculture and tourism put more pressure on the groundwater reservoirs. As fresh water is pumped up more space is created for sea water to seep in. This is happening in the southern Italian province of Salerno, near Naples. Dr Anna Tedeschi of the Italian Irrigation Institute (ISPAIM) and Dr Massimo Menenti of Alterra highlight this problem in the spring edition of the journal Agricultural Water Management.

“There are already areas, such as the Volturno watershed, where salt water intrusion is happening on a large scale. If this is not brought under control it will have irreversible consequences on crop production and soil properties,” says Tedeschi. What worries her is that there are no restrictions on the amount of groundwater farmers are allowed to

pump up. As the freshwater reservoir in the ground dries up, more salt water is drawn in from the sea. In practice this means that many farmers end up irrigating their vegetables and fruit trees with salty water.

“The continuous use of saline water leads to degradation of the soil structure, which then means that less rainwater can infiltrate. A crust forms, which prevents some crops from germinating. The combination of salt and bad soil structure leads to lower crop yields.” Tedeschi thinks that farmers could limit the detrimental effects of saline irrigation water by irrigating their fields more efficiently. By alternating salty water with fresh water once in a while crops are given a chance to recover from the overload of salt.

Tedeschi also points to the use of more salt-tolerant crops. Plant scientists all around the world are working on the development of salt-tolerant varieties of tomato, eggplant and other crops. Scientists at Plant Research International have identified the part of the tomato genome that is responsible for salt-tolerance. And last year scientists at the University of California managed to develop a genetically modified tomato plant that grows well in salt-laden soils.

It may take a long time however before Italian farmers can grow transgenic salt-tolerant tomatoes. At the moment the Italian government forbids the use of genetically modified crops or seeds. Tedeschi: “Before we use these crops we have to be sure they are not dangerous to consumers in the long term.” | **H.B.**