

Four fields in the Ebro Delta collaborate in the development of a variety of rice which is highly tolerant to salinity

- **Although planting rice without flooding delays the appearance of the apple snail it generates salinity problems.**
- **Flooding with sea water controls the presence of the snail, but it can bring with it salinity problems in crops if non-resistant strains of rice are used.**
- **The NEURICE project, which includes the participation of research centres from six different countries, is coordinated by the University of Barcelona and involves IRTA (Institut de Recerca i Tecnologia Agroalimentàries - Research and Technology Food and Agriculture), CRAG (Centro de Investigación en Agrigenómica - Agrigenomics Research Centre) and a number of Catalan companies.**

The NEURICE project has begun to monitor the salinity of four saline fields in the Ebro Delta in order to conduct trials of new salt tolerant varieties of rice being developed. For several months, the salinity of the water and the soil of the rice fields, the height of the water's surface and the salinity of the water flowing in and out of fields will be monitored closely. Next season, the new strains of rice are expected to be ready for planting, so that they can be evaluated in both saline and non-saline fields.

These field trials are being coordinated by IRTA-Ampostà and the *Càmara Arrossera del Montsià* (Chamber of Rice Cultivation of Montsià), and are part of the European funding project NEURICE, organised by the University of Barcelona (UB). The project also involves the Agrigenomics Research Centre (CRAG) and the engineering company IRIS, among other international participants. The objective of this project is to develop commercially valuable varieties of rice that can be cultivated in Mediterranean climates and that can grow in conditions of elevated salinity.

In the Ebro Delta, the apple snail plague has forced farmers to seek out strategies to keep the snails from devouring young plants. In addition to flooding with seawater, another strategy is to plant rice in dry ground, since the snail is inactive without water. One of the problems with this option, however, is that without water the salinity of the soil increases. The possibility of cultivating varieties with a high tolerance to salinity will help, not only to eliminate the apple snail by flooding fields with seawater, but it will also help to establish the strategy of planting rice in dry soil.

In addition to the presence of snails, a reduction in yields as a result of salinity is one of the producers' main concerns. This problem is mainly caused by the filtration of sea water into coastal terrain as a result of the Delta receding, caused by a lack of sediment combined with climate change. This makes areas for rice cultivation, particularly on the coast, very vulnerable. Trials with new varieties will also be conducted in rice-producing areas in France and Italy, where salinity is also a problem and farmers are preparing for the possible arrival of the apple snail.

Around one hundred salt-tolerant strains will be tested

During the first year of the project, thousands of rice strains from the Delta and salt-tolerant varieties have been crossed. The UB, CRAG and the Càmara Arrossera are already receiving around a hundred strains of seeds selected for their tolerance to salinity which will be evaluated this winter in hydroponic tests. The most successful will be tested in saline and non-saline fields during the 2018 and 2019 campaigns.

The UB is conducting a parallel protein study of the rice varieties that are most tolerant to salinity from around the world in order to determine the mechanism that allows these plants to grow in highly saline environments.



The new strains of rice are being developed in the University of Barcelona's greenhouses

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