



Background information of the Pilot area

In Morocco's Mediterranean coastal zone, farmers are likely to face more frequent heatwaves, reduced rainfall, and prolonged dry periods. These climatic changes, paired with rapid population growth and land fragmentation, could reduce agricultural viability and exacerbate rural poverty. Future projections highlight the need for soil conservation, water harvesting, and the revival of agro-silvopastoral systems to build long-term resilience and retain youth in rural areas.

REACT4MED

Land degradation such as soil erosion and desertification, along with climate change, are serious threats to agriculture in the Mediterranean. In order to restore degraded soils, we need solutions that pay off and which are good for the people and the environment.

The REACT4MED project aims to improve agricultural productivity, promote innovation, restore soils, and thus improve livelihoods in Mediterranean communities.

In eight pilot areas situated in Turkey, Morocco, Israel, Egypt, Cyprus, Greece, Spain, and Italy, large-scale land restoration actions are initiated and monitored. These actions include combating soil erosion through conservation agriculture, terracing, cover crops, reforestation, mulching and improved irrigation practices.

Stay in touch through our website:

www.react4med.eu

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Project duration:

May1 2022 to October 31 2025

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List of links to further information

<https://www.inra.org.ma/fr/content/project-prima-react4med-kickstarts-extensive-agro-ecosystem-restoration-actions>

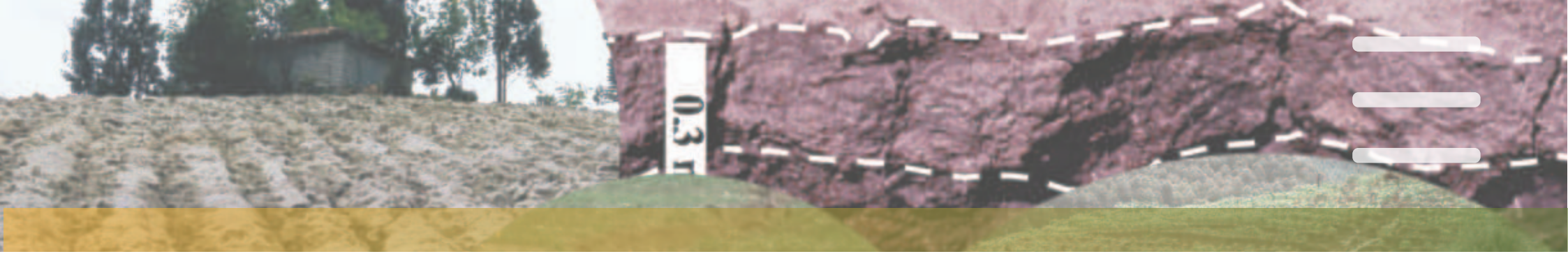


**Tradition meets the future:
Conservation agriculture
for healthy soils and
healthy livelihoods**



PRIMA

PARTNERSHIP FOR RESEARCH AND INNOVATION
IN THE MEDITERRANEAN AREA



Implementation story from the pilot area

Morocco's agricultural sector faces pressure from a growing population and land degradation. Intensive farming and climate change worsen issues like soil erosion and desertification. The Zaër region, while suitable for agriculture, is particularly vulnerable to these challenges. To combat this, Conservation Agriculture is being promoted as a key strategy in Morocco's "Generation Green 2020-2030" plan to increase food production and stabilize the country's food systems

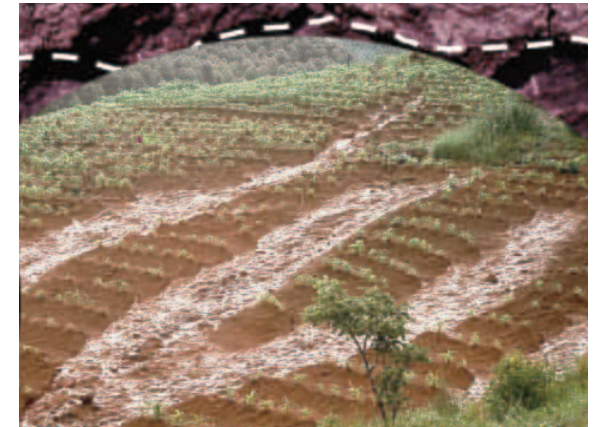
The role of the research institute in the Pilot Area

INRA Rabat, a public institution under Morocco's Ministry of Agriculture, is a central partner in the REACT4MED project, which focuses on restoring Mediterranean agro-ecosystems. Specifically, INRA Rabat's team, led by Dr. Rachid Mrabet, is responsible for the pilot area in Merchouch, Morocco. Their work involves systematically assessing and implementing measures to enhance sustainable land and water management, support agricultural productivity, and reverse land degradation. This aligns with Morocco's national agricultural strategies, such as "Generation Green 2020-2030," which aims to expand the use of conservation agriculture

Implementation requirements

At the core of the No-Till Technology is a specialised no-till drill that simultaneously seeds and fertilises annual crops. This machine carefully cuts through existing crop residues, opens a 20 cm wide slot, places the seeds and N/P fertilisers, and reseals the soil to ensure optimal seed-soil contact. Row spacing can be adjusted to suit different crops – 20 cm for wheat and barley, and 40 cm for lentils and chickpeas. By avoiding ploughing, harrowing, and other aggressive tillage methods, soil disturbance is minimised, protecting its natural structure. In fact, minimising disturbance and maintaining a protective mulch mimics natural processes, creating healthier, more resilient, and productive agricultural systems. Common rotations in the region, such as leguminous crops (lentils, chickpeas) with cereals (soft wheat, durum wheat), are readily integrated into Conservation Agriculture systems. Other wheat crop rotations include barley and fodder species, with fallow periods. Rather than tillage, farmers are using special herbicides to control weeds, allowing for an 18-month fallow period (a 'chemical fallow') following two crop cycles. Fallowing is essential for water conservation in this semi-arid area.

The no-till drill ensures minimal soil disturbance and precise phosphate fertilisation. Residue management varies depending on the site, ranging from low residue maintenance (stubble with controlled grazing) to medium surface cover (stubble/straw maintenance, forage crops with exclusion of grazing). Key outcomes include reduced erosion and evaporation, improved water retention, lower runoff, and enhanced infiltration. While herbicides are used for weed control, they can be reduced over time, focusing on environmental sustainability. Maintaining crop residues in the fields increases soil organic matter, enhances ca



Benefits

Adoption in regions like Zaër demonstrates significant economic advantages, with cost savings of 90-120 Euros per hectare and profit margin increases exceeding 55 percent. Long-term studies confirm that Conservation Agriculture can maintain and improve crop yields, providing greater stability for farmers. Enhanced soil biological activity ensures long-term soil fertility and health, supported by research linking no-till practices to increased soil carbon sequestration.

Direct seeding offers operational advantages including enhanced work efficiency, reduced labour costs, and lower fuel consumption through minimised tillage. Farmers consistently report reduced costs, improved yields, and effective soil conservation.

Environmentally, direct seeding promotes efficient water use, increases infiltration, reduces water loss, and mitigates erosion. Maintaining soil cover protects against rainfall impact and fosters pest-resistant crop varieties.