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AGRICULTURE & INNOVATION



Soil salinisation

How to maintain agricultural productivity by preventing, reducing or adapting to soil salinity?

Soil salinisation reduces yields and can affect the provision of many other ecosystem services. The problem is produced by salts naturally present in soils or brought in by sea water intrusion in coastal areas. Soil salinisation is often not noticed, and is worsened by unsuitable agricultural and water management practices. Actually, the land area affected by salinisation is increasing under the current climate and land use changes. It is essential to map and monitor soils which are prone to salinisation risk so as to prevent it with tailored management practices. Yet, although there are data available, these are difficult to integrate due to differences in measuring and monitoring methodologies. In addition, salts dynamics in soils and their effects are complex and depend on site conditions and the type of crop.

The EIP-AGRI Focus Group on Soil salinisation produced the following recommendations to tackle soil salinisation:

- ▶ Create soil salinity measuring standards and data sharing schemes to map the problem.
- ▶ Develop decision support systems and models to assess the effects of agricultural management practices on soil salinisation and provide advice to farmers.
- ▶ Consider possible off-site effects and impact on ecosystem services of agricultural practices to prevent salinisation.
- ▶ Explore marketing opportunities for halophytes or for crops with special properties when grown under saline conditions that can increase their market value.

"Salinisation is a threat to our farms but also to the ecosystems we contribute to preserving through our farming practices."

- Marcela Otamendi (Spain), rice farmer of the Ebro Delta interviewed during the study visit in the 2nd meeting of the EIP-AGRI Focus Group on soil salinisation -

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Ideas for Operational Groups

- ▶ Fine tune water, crop and soil management practices to prevent soil salinisation using data obtained with new monitoring techniques.
- ▶ Determine salt leaching requirements for different soil, crop and water conditions.
- ▶ Test salt-tolerant crops' performance in specific regions and explore marketing opportunities to increase farmers' revenue.
- ▶ Test biofertilisers' (bacteria and fungi) performance to reduce salt stress in plants.

Research needs

- ▶ Develop affordable good quality water harvesting techniques for leaching salts and implement tools to determine the correct amount of water for this purpose under different conditions.
- ▶ Analyse soil biota effects on plant resistance to salinity under different conditions and agricultural management practices.
- ▶ Analyse on-site and off-site effects on ecosystem services of management practices to prevent soil salinisation.
- ▶ Develop new methods to map soil salinisation using available satellite data and their integration with proximal sensors
- ▶ Collect long-term data from environments under saline conditions to increase accuracy of decision support systems and models.
- ▶ Profile salt tolerance genetic traits to improve breeding of salt-tolerant crop varieties.
- ▶ Identify genetic and environmental factors that confer special qualities to crops grown under saline stress which can increase their commercial value to compensate yield loss.

More ideas for Operational Groups and research needs available in the Focus Group report



More information

Focus Group webpage	Operational Groups in the EIP-AGRI database
Focus Group report	EIP-AGRI Inspirational ideas
EIP-AGRI videos - AGRI challenge: soil salinisation - New ways to deal with soil salinisation in farming	- Making rice cultivation resistant to soil salinisation - Preserving soil organic matter and protecting water sources - From great soil comes great food - a farmers' story

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