



SOIL HEALTH RELATED PROBLEMS ON SITE



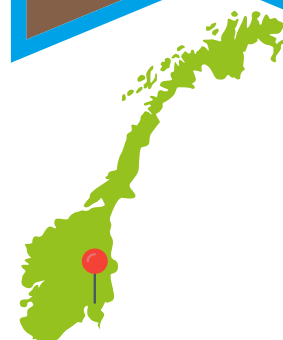
Compaction



Erosion



Nutrient loss



SOIL-IMPROVING CROPPING SYSTEMS FOR INCREASING SOIL HEALTH AT AKERSHUS

The following Soil-Improving Cropping systems (SICs) were tested in Akershus, Eastern Norway, to address the main soil threats identified above:

1. **Compaction alleviation through cover crops, including biological compaction release**
2. **Soil-improving crops (cover crops and catch crops)**
3. **Precision agriculture**

The SICs above present important practices that might benefit soil health if widely taken up. The main aim of this study was to formulate policy alternatives and actions and to facilitate the adoption of SICs.

Evidence gathered through desk research, interviews and a stakeholder workshop show that several factors affect SICs uptake. These include:

- Weak financial incentives
- Lack of explicit soil objectives in existing legislation/soil-specific legislation
- Low coherence between policies
- Land tenure
- Lack of knowledge sharing/dissemination
- Climate change impacts

COVER CROPS FOR COMPACTION ALLEVIATION AND TO IMPROVE SOIL QUALITY

Factors encouraging the adoption of cover crops:

- Longer growth season due to climate change impacts
- Farmers have already experienced damages caused by compaction
- Positive experiences with advisory services and farm visits
- Cover crops are already incentivised by the Regional Environmental Programme
- Access to the right information

Barriers preventing the adoption of cover crops:

- Costs associated with purchasing of seeds and financial risks
- Lack of information about the use of cover crops
- Design of subsidy schemes limiting use of certain types of seeds, methods and dates for sowing
- Lack of experience with using cover crops under Norwegian conditions

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POLICY SHORTCOMINGS AND OPPORTUNITIES FOR FACILITATING THE UPTAKE OF SICS

The existing policy framework in Eastern Norway already promotes the SICS covered by the SoilCare project through a range of existing regulatory, economic, and voluntary policy instruments and measures. The analysis shows that several economic policies promote the use of cover crops, the SICS tested at the study site, a practice which is relevant to alleviating compaction, halting erosion, and generally improving soil health. The same instruments incentivise reduced tillage practices which also reduce compaction and erosion while smart residue and controlled traffic management, which could address the same soil threats, are not incentivised, or regulated by existing policies.

Blue circles= SICS identified as potentially beneficial to the main soil threats and subsequently tested in the study site; Red circles = Other SICS promoted through existing mandatory, economic, or voluntary policy instruments in the Eastern Norway

	CROP ROTATION	GREEN MANURES, COVER CROPS, CATCH CROPS	INTEGRATED NUTRIENT MANAGEMENT	EFFICIENT IRRIGATION	CONTROLLED DRAINAGE	REDUCED/NO TILLAGE	INTEGRATED PEST MANAGEMENT	SMART WEED CONTROL	SMART RESIDUE MANAGEMENT	CONTROLLED TRAFFICKING	INTEGRATED LANDSCAPE MANAGEMENT
Regulations on subsidies for regional environmental measures in agriculture	●	●	●			●					
Regulation on water management framework (FOR-2006-12-15-1446 Forskrift om rammer for vannforvaltningen)		●	●				●				
Regulation on organic fertilisers (FOR-2003-07-04-951 Forskrift om gjødselvarer mv. av organisk opphav)		●	●								
Regulation on plant protection products (FOR-2015-05-06-455 Forskrift om plantevernmidler)		●					●				



Based on the results of this study, the following policy recommendations can be made:

REVISE THE EXISTING POLICY FRAMEWORK



AMBITIOUS, LONG TERM TARGETS

REWARD FARMERS FOR THE BENEFITS THEY DELIVER TO SOCIETY



MAKE ECONOMIC INSTRUMENTS MORE FLEXIBLE

MAINSTREAM SOIL OBJECTIVES AND GOOD SOIL MANAGEMENT PRACTICES IN EXISTING LEGISLATION



OTHER SECTORAL OR ENVIRONMENTAL POLICIES

ESTABLISH MECHANISMS FOR EFFECTIVE KNOWLEDGE DISSEMINATION AND EXCHANGE



AWARENESS RAISING EXCHANGE OF PRACTICES GUIDANCE

REWARD FARMERS FOR THE BENEFITS THEY DELIVER TO SOCIETY



MAKE ECONOMIC INSTRUMENTS MORE FLEXIBLE

Design a more flexible system of economic incentives: Voluntary financial incentives are the main driver for the adoption of agricultural practices beneficial to soil in Eastern Norway. There is a need to consider the different conditions in which farmers operate (such as differences in tenure) to ensure funding is accessible without creating additional administrative burden. Furthermore, incentives must be adapted to changing conditions such as inflation, so they do not lose their attractiveness over time.

Revise the existing policy framework to include ambitious, long-term targets: Certain policies, most notably economic policy instruments are successful in encouraging farmers to adopt SICS. To expand these positive outcomes, policies may be adapted to accommodate a wider range of farm types and to include more ambitious targets. In addition, experience shows that changes to the policy framework and subsidy schemes, such as the Regional Environmental Programme, could act as a barrier to implementation. Providing sustained funding and legislative security will be crucial in motivating farmers to adapt their practices.



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MAINSTREAM SOIL
OBJECTIVES AND GOOD
SOIL MANAGEMENT
PRACTICES IN EXISTING
LEGISLATION



OTHER SECTORAL
OR ENVIRONMENTAL
POLICIES

Mainstreaming of soil objectives and good soil management practices in existing legislation: Many benefits to soil health are achieved through other sectoral or environmental policies. While this is not considered a barrier to SICS adoption, there is a risk that key soil threats are not addressed if they do not fall under legislation for other sectors.

ESTABLISH MECHANISMS
FOR EFFECTIVE KNOWLEDGE
DISSEMINATION AND
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AWARENESS RAISING
EXCHANGE OF
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Establish mechanisms for effective knowledge dissemination and exchange: There is anecdotal evidence that awareness raising, exchange of practices, guidance from farm advisory services will have an influence in changing farmers' practices by increasing their awareness about the potential benefits of SICS. To this end, research findings should be made accessible and widely disseminated and educational activities should be encouraged. Knowledge should be disseminated via multiple channels, through the provision of guidance document but also farms visits and demonstration days

