New types of crop rotation can help to stabilise or improve soil fertility and reduce greenhouse gas emissions

Geographical location:
European Union

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Farming practice
crop rotation
Plant production and horticulture
leguminous crop

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crop diversification

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Other EU research funds

Project acronym:
SOLMACC

Project type:
Research project

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2014

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2018

Project status:
Completed

Website:
SOLMACC Homepage

Title (in English):
New types of crop rotation can help to stabilise or improve soil fertility and reduce greenhouse gas emissions

Language:
English

Objective of the project (native language):

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Objective of the project (in English):

The goal of the SOLMACC project is to establish cultivation systems that can withstand climatic changes and to minimise harmful greenhouse gas emissions. Climate change and its environmental and financial impact pose major challenges for farmers who have to cope with crop failure and damage to natural resources due to floods, droughts, soil erosion etc. Future cultivation systems will need to cope with climatic changes on the one hand while producing less greenhouse gases themselves on the other. One possible approach could be the application of optimised crop rotations since the type of crop rotation has a direct impact on the greenhouse gas emissions of the farm. The SOLMACC project has demonstrated interesting crop rotation combinations that can benefit both the climate and the farmer.

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Further details

Links to other website(s):
bioland.de about SOLMACC [2]

Audiovisual material:
Optimised crop rotation - SOLMACC project (video; subtitles in English, German, Italian and Swedish) [3]

Additional information:

Conventional crop rotations usually consist of 2-3 crops, two of which are usually cereals. These crops are grown with a high level of synthetic nitrogen fertiliser, which requires a high energy input. The use of legumes in the crop rotation cycle, on the other hand, can help to stabilise or even improve soil fertility, bind carbon (C), fix N, and thus reduce greenhouse gas emissions.

The introduction of cover crops into crop rotation as green manure also increases the organic carbon content (SOC) in the soil without sacrificing yield.

Within the SOLMACC project, the cultivation of
• Grain legumes (such as soya, beans, winter peas and lupines into their crop rotation systems).
• Forage legumes (enriching the proportion of N fixing plant species in the current green manure mixture) and
• grass-legume leys
was introduced / expanded. The established cooperation models between livestock/biogas farms and stockless farms led to win-win situations for both farms - environmentally but also economically.

**Links**

[1] mailto:terez.maarova@ifoam-eu.org  
[3] https://www.youtube.com/watch?v=36cLQKT74ZI