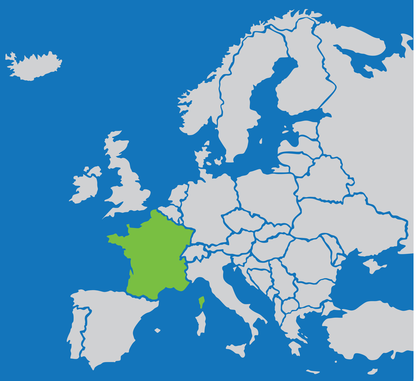
Soil: fertility, biological life and fighting against erosion



AGRI Innovation summit 2019

Operationnal Group

GONEM: Operational Group for root-knot nematode management on sheltered vegetable production in South East France

GONEM : Groupe Opérationnel sur la gestion des nématodes à galles en maraichage en région PACA, France

Calendar

Start: 01/01/2018
End: 31/12/2021

Budget

Total amount: €283,625

Practical problem

How can market-gardeners be helped to build and implement innovative cropping systems able to limit the development of root-knot nematodes?

Partners

GRAB, APREL, INRA, CTIFL, CETA Durance Alpilles, CETA du Soleil, Agribio84, farmers (research, experimentation, advisory, production).

Objectives of the project

Root-knot nematodes (RKN) cause severe diseases on sheltered vegetable production due to intensive crop rotations, climate change and the banning of most nematicides. RKN management practices have been studied in the last years (genetic resistance, introduction of non-host species in crop rotation, intercropping with nematicidal plants, soil solarisation, organic amendment…). Their combination was previously assessed by the OG partners. The aim of the OG is to co-design with farmers new cropping systems and co-assess their performances, as regards RKN control, other pests and diseases, soil fertility, economic performances, and operational feasibility.

Main activities

Sharing various types of knowledge: RKN development, techniques to control them, farmers' constraints and leeway. Co-designing innovative cropping systems among 10 farmers, experimenters, technical advisers and scientists: combination of commercial crops and intercropping practices, each combination adapted to each farm's condition (soil characteristics, labor force, available machinery, existing market outlets…) and optimizing the natural regulating service. Experimenting during 3.5 years on the farms involved in the OG by comparing the new cropping system to each farmer's traditional cropping system. Sharing the new knowledge acquired and identify room for further progress.

Expected results

For organic and conventional market-gardeners of South-East France: dissemination of a range of agro-ecological cropping systems limiting RKN development and economically efficient; For both farmers and technical advisers: a simple method to estimate the level of RKN contamination of soils based on visual observation of roots and adequate sampling of the plots. For technical advisers: a participatory methodology to be used with farmers, individually or in a group, to build tailor-made cropping systems and favor technical innovation. A contribution to the regional Agricultural Knowledge and Innovation Systems to favor the agro-ecological transition at large scale.

Results so far/first lessons

RKN diagnosis in soil of all plots involved in the project. Deeper knowledge on the capacity of RKN females to lay eggs on some diversification plant species and weeds. Difficulties for farmers to implement some promising agro-ecological techniques by lack of machinery (e.g. to spread large amounts of fresh organic matter) or commercial outlets (e.g. to introduce spring onions in crop rotations). A delicate balance in cropping systems co-design: how to simultaneously take into account each farmer's constraints and goals and scientific requirements to precisely assess the systems experimented?

Who will benefit

The farmers and technical advisers involved in the project become more aware of the risks and learn how to manage RKNs. Other farmers and technical advisers of the area will become aware thanks to meetings and intermediation from the OG members. The experimenters and scientists will gain information on the performances of the management strategies previously studied on a very limited number of farm plots and produce more robust knowledge on RKN control.

Supported by:

UNION EUROPÉENNE
Fonds Européen Agricole pour le Développement Rural
L'EUROPE INVESTIT DANS LES ZONES RURALES

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