CANADA

THE AGRICLIMAT INITIATIVE TO IMPROVE WATER MANAGEMENT AND LIMIT SOIL LOSS

Presenter

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Description

Like many northern regions, Quebec's climate is changing very rapidly. The main impacts expected in Quebec vary according to the season:

- During the summer, rising temperatures will increase water demand for plants and animals.
- Heat waves will be more common, potentially exposing animals and crops to heat stress more often, with consequences for their productivity, fertility and even survival in some cases.
- High temperatures could also be detrimental to spring cereal yields and to the productivity of several cool-climate vegetable and fruit crops (crucifers, autumn strawberries, etc.).
- Increased precipitation expected in autumn, winter and spring, is likely to worsen soil erosion and water quality degradation.

The Conseil pour le développement de l'agriculture du Québec (CDAQ), together with the Union des producteurs agricoles (UPA), has set up the "Agriclimat " initiative. Deployed throughout the province of Quebec, the Agriclimat project has involved a large number of farmers in order to develop tools and training to help agricultural businesses improve their resilience, strengthen food security and preserve biodiversity as well as to draw up a detailed picture of the major risks for farmers and the best ways to prevent them. Producers highlighted the importance of interventions to improve soil health and priority actions have been identified.
First, reducing tillage, planting cover crops and adjusting machinery to limit compaction are actions to be considered as a starting point. Secondly, to significantly improve water management in the field, drainage, levelling and hydro-agricultural developments are interesting solutions, when applicable.

Lastly, to complement the fight against climate change at the field level, producers stressed the importance of establishing effective riparian buffers to limit soil loss caused by erosion and to stabilise riverbanks.
The Agriclimat project, improving the ability of farmers to combat climate change, contributes to the balance and resilience of agricultural production. Resilient businesses help not only biodiversity, but also revitalize farming villages by providing jobs and quality local products. Training, webinars and documentation were used to circulate information and encourage producers to adopt the proposed practices tailored to the reality of their farm.
Nevertheless, the aforementioned situation deteriorated considerably during COVID-19. Several production sectors have been affected by restricted access to inputs and markets to sell of their products. In other cases, one or more links in the food chain have been destabilised to the point of making the financial situation of many producers precarious. Many have used patience and creativity to change their cropping patterns and adjust input use.
The agricultural stakeholders worked hard to stay in close contact with the producers and to support them in their respective actions and projects. Agronomic support, particularly in projects related to the fight against climate change, was deployed and adapted by the organisations offering advisory services.

Results

1. These actions improve soil water retention and limit the effect of water stress on plant productivity. They also aim to promote water infiltration into the soil and reduce the risk of soil erosion. In addition, these actions reduce greenhouse gas emissions, improve water quality and increase carbon sequestration.
2. These actions allow to avoid water accumulation and to favour infiltration to limit soil surface erosion. In addition, a reduction in greenhouse gas emissions and an improvement in the quality of the soil stem from these measures.
3. These actions also improve water quality, biodiversity and carbon sequestration.

Climate smartnes

From the CSA perspective, this case address three major and interrelated elements (soil health, water management and biodiversity conservation) that ensure direct and indirect benefits to adaptation and mitigation while reaching sustainable yield increases. Additionally, attention should be drawn to the seeds and animal breeding systems, to articulate research community or governmental programs that emphasize in the development of local seed varieties and animal breeds adapted to heat stress, drought, and at the same time to thinner snow layers during winter, strengthening food and nutritional security and adaptation capacity of local farmers. The proposed soil and water management practices (including water efficient irrigation and storage systems) not only deliver benefits in terms of soil physical-chemical and biological characteristics, but also contribute to reduce emissions from fossil fuel consumption and promote carbon sequestration in healthy soils. Planting riparian forest, and shrubs and trees as windbreaks typically provide shade for animals in summer and protect crops in place during winter —as snow is a natural insulator against extreme cold—, harbours auxiliary species such as pollinators promoting biodiversity. If these practices are implemented on a community basis, it facilitates shared maintenance activities during the establishment stage. Where possible, it is relevant to direct efforts to adequately measure and monitor the mitigation and adaptation benefits of the practices —integrating decision-support tools and methodologies— in order to inform National policies such as National Determined Contributions (NDCs) and National adaptation Plans (NAPs) processes or other initiatives, in articulation with private and public institutions involved in these areas.