

STRATEGIES FOR STIMULATING THE TRANSITION INTO AGROFORESTRY IN QUEBEC, CANADA

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Abstract

A task force was set up in order to identify the strategies to put in place to stimulate the adoption of agroforestry practices in Quebec, Canada. An inventory of the resources available to farmers and landowners who wish to use agroforestry practices was made out: availability and accessibility of practical knowledge, advice, technical services, materials, training and education resources, research, and institutional and policy support. An analysis of the current situation in view of the challenges faced by the agroecosystem led to six recommendations: the recognition by the public authorities of the potential of agroforestry; an increased technology transfer; the provision of financial support to producers; the creation of new knowledge through research activities; the development of adapted plant material; and an increased dialogue between the various actors of the agriculture, forestry, environment and rural development sectors. The implementation of these recommendations should help the scaling-up of agroforestry in Quebec.

Keywords: agroecosystem; financial support; knowledge; policies; technology transfer

Introduction

In the province of Quebec, Canada, the rate of adoption of agroforestry is still low, although a growing interest toward agroforestry practices is easily observable among various stakeholders of the agricultural, forestry, environment and territorial planning sectors. Such an interest led to the creation, in December 2008, of an Agroforestry Committee supported by the Quebec Reference Center for Agriculture and Agri-food (CRAAQ), a network of experts and organizations aiming at sharing of information and knowledge management and dissemination. The mandate of the Agroforestry Committee, which comprises representatives from Ministries (Agriculture, Forestry), Farmers' and Foresters' Unions, agricultural and forestry advisory groups, universities, and research centers, is to contribute to the development of agroforestry systems offering solutions to the issues of rural territories in Quebec by fostering networking, sharing of information and knowledge transfer.

In the last few years, the Agroforestry Committee organized various events, among which a Forum on Agroforestry (CRAAQ 2010) and a Workshop on Research and Development in Agroforestry (CRAAQ 2013), whose participants identified the absence of recognition at the political level and the lack of financial and technical support as some of the most important constraints to adoption of agroforestry. Thus, a working group stemming from the Agroforestry Committee was set up in February 2014 in order to reflect on the strategies to put in place to stimulate the transition into agroforestry in the province of Quebec. The reflection process, comprising regular meetings, writing sessions and round of comments from the members of the Agroforestry Committee, led to the drawing up of a document entitled "*Une agroforesterie pour le Québec. Document de réflexion et d'orientation*". This 73-pages document was adopted by all members of the Agroforestry Committee in November 2016 and published, in French, together with an executive summary (*Résumé analytique*), in June 2017 (Anel et al. 2017). The present paper focuses on the main results of this process and the most important lessons that can be drawn from it.

The main issues of Quebec's agroecosystem

A few countries have already developed policies or strategies in order to stimulate the scaling-up of agroforestry systems. For the working group, however, it quickly appeared that the strategies for the development of agroforestry in Quebec should not be based on the international literature on the subject, but on the specific challenges faced by the agroecosystem in the Quebec context.

A consultation process led to the identification of six main issues of the agroecosystem in Quebec: soil health, biodiversity, water quality, climate change (mitigation and adaptation), rural landscape and profitability of agricultural land exploitation. All the reflection on the contribution of agroforestry was thus structured in relation to these six issues.

What is agroforestry?

An effort was made in order to define what agroforestry looks like in the Quebec context. Forest farming systems were excluded from the analysis since the challenges faced by these systems are quite different from those encountered in the agricultural landscape. Agroforestry systems were classified in two main groups, agroforestry hedges (trees and shrubs around the fields) and intra-plot agroforestry systems (trees and/or shrubs in the agricultural plot), with an additional category for silvopastoralism.

Synthesis of the knowledge of agroforestry in relation to the issues of the agroecosystem

The possible contribution of agroforestry to the resolution of the six main issues of the agroecosystem was assessed, based on the scientific literature available from studies realised in Quebec or, when necessary, in the neighbouring provinces or other temperate countries. This literature review pointed out the very beneficial effects of agroforestry, in general, for five of the six challenges.

Agroforestry systems are great tools for: maintaining and restoring soil health, since trees are allies for the soil; conserving and restoring biodiversity, through new habitats and beneficial organisms; enhancing water quality; mitigating climate change and adapting to such a change; and making the rural landscape more attractive. However, although the profitability of agroforestry is high for society as a whole, it remains uncertain at the plot or farm level.

Portrait of the presence of agroforestry in the agricultural landscape

The current extent of agroforestry hedges and intra-plot agroforestry systems (including silvopastoral systems) in the agricultural landscape was described. Both individual and collective initiatives coexist. In general, it can be said that initiatives are few, but emerging.

Available resources to support agroforestry

An inventory of the resources available to farmers and landowners who wish to use agroforestry practices was made out. The availability and accessibility of practical knowledge, through documentation and demonstration sites, were estimated. Human resources, technical services, and materials available to farmers were assessed. An evaluation of existing education and training opportunities was performed. Research expertise, experimental designs, scientific events and publications were also described, as well as networking organizations and events.

The study then focused on institutional and policy support. The involvement of different ministries in agroforestry was described, and an inventory of both incentive tools and restrictive

policies was made. Support programmes were also studied. Results show that in general, farmers who wish to plant tree rows are still eligible for the main support programmes. However, the level of support can decrease because of a smaller cropped area in favour of trees.

Analysis of the situation

The analysis of the current situation in view of the issues faced by the Quebec's agroecosystem showed that agroforestry offers great solutions to most issues. However, although agroforestry is highly profitable at the global scale, its profitability is still uncertain at the plot or farm level. A financial support is therefore essential. Practical knowledge is sufficient to foresee agroforestry development, but applied research is needed to determine the best options, and cultivars adapted to the agroforestry context should be developed in order to optimize the productivity and profitability of agroforestry at the farm level. The study also points out that only a small proportion of future farmers and their advisors are educated and trained in agroforestry. Active actors work in a diversity of structures and are not associated to a specific professional order. While many documents on agroforestry are available, there is a lack of technical information intended for farmers and a need for a demonstration network at the farm level. Finally, while a number of ministries see agroforestry as a pertinent tool, the Ministry of Agriculture, Fisheries and Food is the only one to deploy concrete means. However, these means are oriented towards agro-environmental aspects only. Moreover, there is no pooling of means nor common vision on agroforestry development.

Conclusion

This analysis brought the working group to make six recommendations: 1) the recognition by the public authorities of the potential of agroforestry and its integration in policies and action plans of the main organizations related to agriculture, private forest, protection of the agricultural environment and rural territory planning; 2) an increased technology transfer through the setting up of a network of agroforestry advisors, the development of information tools, the creation of a network of demonstration sites and the integration of agroforestry in the education of future farmers and advisors; 3) the provision of financial support to producers through a program specifically dedicated to agroforestry, applied to all agroforestry systems, and including all activities from plantation to maintenance of trees, a support that could be reinforced by the integration of the space occupied by trees as agricultural surface eligible for insurance and financial aid programmes; 4) the creation of new knowledge through applied research focusing on productivity and profitability of agroforestry systems, as well as fundamental research regarding the functioning of the systems, their use of resources and their social and environmental impacts; 5) the development of plant material (trees and crops) specifically selected to perform well in agroforestry contexts; and 6) the setting up of a provincial agroforestry networking group comprising representatives from the main institutions related to agriculture, forestry, environment and territorial planning sectors.

The implementation of these recommendations should help the transition into agroforestry in Quebec. In view of the contribution of agroforestry systems to the resolution of the challenges of the agroecosystem, indeed, such a transition is highly advisable.

References

- Anel B, Cogliastro A, Olivier A, Rivest D (2017) Une agroforesterie pour le Québec. Document de réflexion et d'orientation. Comité agroforesterie, Centre de référence en agriculture et agroalimentaire du Québec, Québec. 73 p.
- CRAAQ (2010) Forum sur l'agroforesterie. Compte rendu du colloque tenu à Québec le 3 mars 2010. Comité agroforesterie, Centre de référence en agriculture et agroalimentaire du Québec, Québec. 33 p.
- CRAAQ (2013) Atelier sur la recherche et développement en agroforesterie: « Parcours comparés du Québec et de la France ». Compte rendu du colloque tenu à Drummondville le 8 février 2013. Comité agroforesterie, Centre de référence en agriculture et agroalimentaire du Québec, Québec. 18 p.