TREES IN AGRICULTURAL LAND: OVERVIEW OF FAST-GROWING TREE RESEARCH IN LATVIA

Arta Bārdule, Kristaps Makovskis, Andis Lazdiņš, Andis Bārdulis and Dagnija Lazdiņa
Latvian State Forest Research Institute 'Silava' (LSFRI Silava), Salaspils, Latvia
Contact: arta.bardule@silava.lv

Introduction. The latest international policy, strategies and plans underline that the role of trees in agricultural land and other lands outside the forests will increase mostly to contribute environmental and climate change mitigation purposes as tree introduction in agricultural and other lands outside forest land may contribute significantly to atmospheric carbon dioxide (CO_2) removals. Additional benefit of tree introduction in agricultural land, especially in territories around drainage systems and natural streams, is reduction of surplus nutrient leaching currently presenting one of the main surface water quality issues in the Baltic Sea Region. For instance, new EU forest strategy for 2030 states that "research and innovation on agroforestry systems and other trees outside the forests will be reinforced". The Common Agricultural Policy (CAP) 2023-2027 Strategic plan regulation points out that "the framework definition for 'arable land' should be laid down in a way that allows Member States to cover different production forms, including system such as agroforestry and arable areas with shrubs and trees".

In Latvia, agroforestry systems were not defined in national legislation and opportunities to grow trees on agricultural land without land use change were limited, so far. Agroforestry systems as land use management practice are for the first time mentioned in Latvia's CAP Strategic plan for 2023-2027. Thus, in addition to scientific interest, the interest of landowners and managers in tree introduction in agricultural lands and other lands outside the forests is expected to increase.

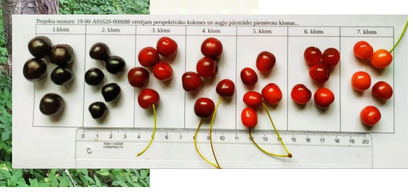
Latvian State Forest Research institute "Silava" has initiated the implementation of several research projects aimed to evaluate the impact of tree introduction in agricultural land with both marginal mineral soil and drained organic soil and in other lands, such as buffer zones around drainage systems and territories surrounding the protective belts of natural streams. The main studied processes are carbon (C) cycling at ecosystem level and greenhouse gas (GHG) fluxes from soil. Studies also include evaluation of factors affecting GHG emissions reduction potential and elaboration of new technologies and methods for land management. The overall aim of studies is to identify the most efficient climate change mitigation measures and to develop recommendations, and to quantitatively evaluate their potential impact.

Study sites in Latvia

Hybrid aspen agroforestry system in agricultural land with mineral soil in Skriveri

Agroforestry system combining fast-growing Poplars with perennial grass in agricultural land with organic soil in Rucava

Scots pine, black alder and birch introduction in organic soil fertilized with wood ash (Kaigu Mire)



Native sweet cherry in forest stand and selection of perspective clones of wild cherry

Willow garden in Kalsnava

Biomass production in buffer zones. Photo: A.Šmits

The largest white willow in the Baltic States in former shelter belt

Ongoing research in Latvia (Acknowledgement)

Andis Bārdulis contribution was supported by European Regional Development Fund, support for post-doctoral studies in Latvia "Evaluation of climate change mitigation potential of agroforestry systems with mineral and organic soils" (No. 1.1.1.2/VIAA/4/20/684). Andis Lazdiņš contribution was supported by European Regional Development Fund, support for post-doctoral studies in Latvia "Economic and environmental assessment of biomass production in buffer zones around drainage systems and territories surrounding the protective belts of natural water streams" (No. 1.1.1.2/VIAA/3/19/437).

European Regional Development Fund's projects "Elaboration of innovative White Willow – perennial grass agroforestry systems on marginal mineral soils improved by wood ash and less demanded peat fractions amendments" (No. 1.1.1.1/19/A/112), "Climate change mitigation potential of trees in shelter belts of drainage ditches in cropland and grassland" (No. 1.1.1.1/21/A/030), and "Evaluation of factors affecting greenhouse gas (GHG) emissions reduction potential in cropland and grassland with organic soils" (No. 1.1.1.1/21/A/031).

European Innovation Partnership programme project "Wild cherry (Cerasus avium Moench. syn. Prunus avium L.) propagation technology development and selection of perspective clones for the establishment of productive roundwood plantations under the climatic conditions of Latvia" (No. 19-00-A01620-000088).

PostDoc Latvia
NACIONĀLAIS ATTĪSTĪBAS PLĀNS 2020 | EIROPAS SAVIENĪBA Eiropas Reģionālās attīstības fonds
IEGULDĪJUMS TAVĀ NĀKOTNĒ
NACIONĀLAIS ATTĪSTĪBAS PLĀNS 2020 | EIROPAS SAVIENĪBA Eiropas Reģionālās attīstības fonds
IEGULDĪJUMS TAVĀ NĀKOTNĒ
NACIONĀLAIS ATTĪSTĪBAS PLĀNS 2020 | EIROPAS SAVIENĪBA EIROPA INVESTĒ LAUKU APVIDOS Eiropas Lauksaimniecības fonds lauku attīstībai
Atbalsta Zemkopības ministrija un Lauku atbalsta dienests