Linnaeus ECO-TECH 2022
Kalmar, Sweden, November 21-23, 2022

IMPACT OF WEED CONTROL TECHNOLOGIES ON GHG EMISSIONS IN WHEAT AND BEANS

Kristaps Siltumens [1,2]
Sindija Liepa [1,2]
Inga Grinfelde [1,2]
Jovita Pilecka-Ulcugaceva [1,2]
Viktorija Zagorska [3]

[1)] *Latvia University of Life Sciences and Technologies, Faculty of Environment and Civil Engineering, Department of Environmental Engineering and Water Management, Latvia*
[2)] *Latvia University of Life Sciences and Technologies, Scientific Laboratory of Forest and Water Resources, Latvia*
[3)] *Latvia University of Life Sciences and Technologies, Institute of Plant Protection Research "Agrihorts", Latvia*

Abstract
The use of pesticides in agriculture is one of the most actual environmental issues, and agriculture is closely integrated into natural ecosystems. Weed control may be carried out by chemical and mechanical techniques, each having a different impact on GHG emissions and the economic performance of the farm. The aim of this study is to clarify the impact of weed control technologies on GHG emissions from soil. The study was conducted in beans and wheat in 2021 during the growing season. Two weed-control technologies were applied to wheat. For beans used three weed-control technologies. Measurements of emissions of carbon dioxide, methane and nitrous oxide were carried out during the growing season in all 5 fields of the tests, with three iterations using Picarro G2508. The data were analysed using Kruskal-Wallis test and post hock test Steel-Dwass-Critchlow-Fligner. Emissions of carbon dioxide, methane and nitrous oxide vary significantly between mechanical weed control technology and herbicides. Mechanical weed control technologies show lower emissions of nitrous oxide.

Keywords: Weed control, sustainable agriculture, mitigation measures, GHG emissions.

ISBN: 978-91-89460-85-0