

Clean Resources

Smart Agriculture and Food

Performance and cost benefits of optical spot spraying technologies in conventional dryland farming in Western Canada

The future of agriculture, including cropping practices, is evolving very quickly. Digital technologies are playing an increasing role in improving efficiency, reducing losses, supporting environmental stewardship and minimizing farming input costs. Optical sensors are being used commercially in some parts of the world to selectively apply herbicides early in weed development, in the right amount and exactly where it is needed — only on weeds! In addition to the broad benefits mentioned above, optical spot spraying technologies may help enhance soil health by minimizing the build-up of chemical residue in the soil, as well as inhibit the evolution of herbicide-resistant weeds.



FUNDING DETAILS



RECIPIENT:
Olds College



PARTNERS:
Agriculture and Agri-Food Canada
Agrimetrix
Croplands
Saskatchewan Wheat
Western Grains
Research Foundation



TOTAL BUDGET:
\$351,000



AI FUNDING:
\$72,000



PROJECT DATES:
February 2020 –
March 2023



PROJECT TRL:
Start: 7
End: 9

APPLICATION

An optical spot spraying technology, WEED-IT Quadro Precision Sprayer, distributed and supported by Croplands, is being evaluated at Olds College Smart Farm. Evaluation will focus on field strip trials to compare impacts of precision spraying and conventional spraying on yield. We will also evaluate the effect of precision sprayer operating conditions (travel velocity, weed pressure, soil conditions) and equipment settings (sensitivity, spray mode, bias) on functionality and performance of the technology. The effects of precision spraying will be assessed independently on two crops, namely canola and wheat, in 2021 and 2022, respectively.



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PROJECT GOALS

- Test the performance and ability of optical spot spray technology to effectively control the presence of weeds in field crops in central Alberta.
- Determine how easy, efficient, timely and reliable it is to use optical spot spray technology compared to a conventional spraying system.
- Determine the economic benefits of using an optical spot spray technology for broad-acre crop production in Alberta.

BENEFITS TO ALBERTA

- Targeted application of crop inputs directly where they are required (e.g., herbicide application directly on weeds) is a common form of ‘precision farming.’ Precision farming helps reduce unnecessary, wasteful, environmentally damaging over-application of herbicides and reduces cropping costs for farmers.
- Not all commercially available technologies are effective and reliable in meeting farming needs. An independent evaluation of optical spot spraying technology by Olds College will be valuable to Alberta farmers who may want to invest in this technology.



1 Publication



>100 Students
Trained



6 Project Jobs



1 New Product/Service

CURRENT STATUS

November 2021

Since acquiring WEED-IT Quadro Precision Sprayer, the Olds College research team has been continually gaining experience with the technology, and accessing its functionality and performance in consultation with industry sales partner Croplands Equipment Pty Ltd. During the 2021 growing season, Olds College evaluated WEED-IT Quadro’s ability to distinguish weeds from barley stubble in the spring, and the effects of precision spraying versus conventional spraying on canola yield.