xarvio Zone Spray protects the right acres

By Doug Mackay, P.Eng. - doug.mackay@xarvio.com

Digital Farming Specialist

xarvio® Digital Farming Solutions – powered by BASF

xarvio® Digital Farming Solutions is the global brand of BASF's Digital Farming offering. Since 2016, xarvio has been developing the Field Manager web-based and mobile app that allows growers to treat the areas of the field that have the greatest opportunity for economic return and saving yield from disease. The xarvio solution uses satellite imagery of fields collected during the growing season to show the highest biomass areas of the field with the highest disease potential and those with lower biomass that may not be economical to treat. The grower or their advisor can select which parts of the field to treat to optimize their fungicide use.

In Western Canada, canola is a popular oilseed crop, reaching 22.9 million acres in 2017 (Source: Canola Council of Canada). The seed is used for cooking oils, animal feed, and biofuels. A fungal disease called sclerotinia stem rot (white mold) plagues the crop during the flowering period via the infection of the plant by fungal spores. There are fungicide solutions that can help suppress the disease but they must be applied preemptively before infection begins, normally at 20%-50% flowering. Once the fungal infection appears, it is too late to treat and yield losses of 50% or more can potentially occur.

Aerial application is a popular way for growers to apply fungicides to allow timely application, less compaction and yield loss caused by wheel tracks from ground sprayers. In 2017, xarvio began testing Zone Spray prescriptions by aerial application in conjunction with Provincial Airways of Moose Jaw, Saskatchewan and AG-NAV. After successful initial tests and advancing on what was learned, in-crop application was tested in 2018.

On the morning of July 20, 2018, the first aerial Zone Spray prescription was applied to canola in Canada. The prescription file for the plane was created by Doug Mackay with xarvio, using the xarvio Field Manager web software and sent to Cheryl Denesowych of Yorkton Aircraft Service to test the file format for the Satloc© GPS system. The prescription was wirelessly transferred to the Satloc G4 system in the Thrush 510P aircraft, owned by Darren Tiede of Target Airspray near Strathmore, Alberta, Canada. Pilot Cody Rockafellow tested the prescription with a partial fill of water to calibrate the timing of the auto boom shutoff and began his field application.

The field used for this application was 280 acres (113 Ha) in size with two grassed waterways dividing the field into three parts. While the Ag Pilot would usually manually turn the spray boom on and off over these areas, the guidance controller automatically performed the shutoff from the prescription file with high accuracy. After calibration, the system appeared visually accurate in turning the fungicide on and off over the correct part of the field. A DJI drone recorded the flight from the side of the field and a GoPro was mounted on the underbelly of the aircraft to visually confirm both the crop density and timing of the on and off cycles. Zones 4 through 7 were selected by the grower to apply fungicide to as shown in Figure 1. Zones 1 through 3 are the lower biomass areas and were left untreated. The north and east parts of the field were not treated and left as a check for the trial.

Figure 1 – xarvio Field Manager zone map

A job report is created from Field Manager that tells the operator how much water and fungicide are required to complete the field. This takes the guesswork out of how much product and water are required for the last fill on the field, reducing waste or not having enough product to complete the job. Field Manager considers the area of the field, zones which are turned on or off, the water rate and product rate. A grower who creates their own Zone Spray prescriptions through the web-based software could provide this job report to the applicator before starting the field, so the applicator would know exactly how much water and product are required for the job.

About 20% of the field was not treated due to lower biomass, disease risk and potential economic returns on the fungicide application, leading to savings for the grower on fungicide costs and more efficiency for the Ag Pilot through covering more acres per fill. By protecting the right acres, there are benefits and efficiencies to both the grower and applicator through sustainable practices. Figure 2 shows the as-applied map recorded by the navigation controller. The as-applied data can be easily downloaded and laid over the prescription map and Google Earth background imagery. The shapefile data can be given to the grower for his records. The white patches in the background image are saline areas where the crop has lower biomass and would usually not justify a fungicide application.

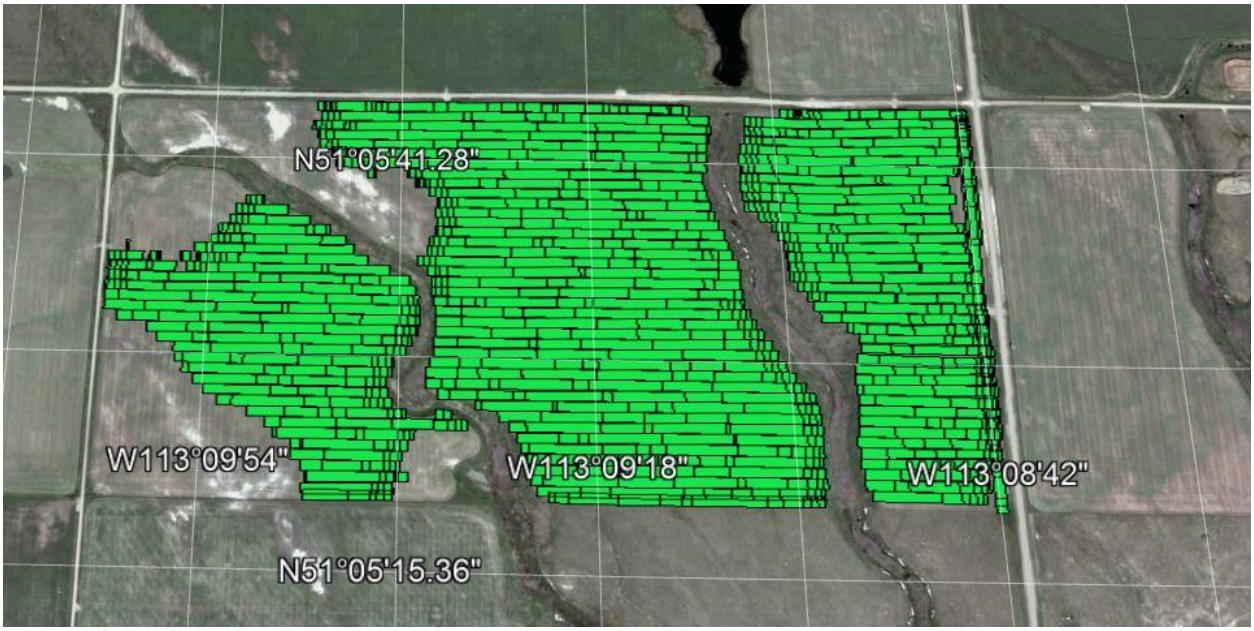

Figure 2 – Zone Spray as-applied map

The grower, Spencer Hilton of Hilton Ventures near Strathmore, Alberta, Canada shared his impressions of xarvio Zone Spray and aerial fungicide application, “I was really impressed how well the Zone Spray prescription was applied by the plane. The on and off zones matched up with the crop conditions and shut off over the grassed waterways very accurately. The shutoff resolution is not as fine with a plane as with a ground sprayer with section or individual nozzle control, but we were able to pick out large enough areas in the zone map to turn the spray off over to make it worthwhile. We prefer to use aerial application for our canola fungicides for the amount acres they can cover in a day, the timeliness of getting our fields done and there are no tracks left in the crop that can reduce yields.”

Field Manager Zone Spray by xarvio is available to growers and Ag Pilots in Canada who want to protect the right acres and make the most efficient use of their fungicide application. It is an easy to use tool that simplifies the grower’s decision of when and where to spray canola fungicides and makes the Ag Pilot’s job easier to treat the right acres.

Visit www.digitalfarming.ca for further information on xarvio Field Manager.

A video of Zone Spray in action is on our YouTube page.
https://www.youtube.com/channel/UCSEbEwfJNpRP5K9slXm3GDw

Search “xarvio North America Digital Farming” on YouTube.