Are Spot Sprays the Future for Pesticides?

A spot spray is similar to any other site-specific technology in its underlying principles: one applies the product only where needed, and only in the quantity needed. The basic hardware for spot sprays includes just four components. First, spot sprayers have individual nozzle shutoffs that can be turned on in milliseconds. Second, they have a sensor that can determine the characteristics of the area in front of it. Third, it requires an algorithm that can convert the sensed area into a decision. Fourth, a computer needs to process the information before the nozzle passes the target. The recent development of convolutional neural networks has greatly accelerated the accuracy of green-on-green spot sprays.

Ultimately, spot sprays will prolong the utility of pesticides in agriculture by making multiple effective modes of action affordable. But they can also reduce overall residue levels if pre-harvest weed control or desiccation can be targeted to just the green or weedy patches, or fungicides can be limited to areas of vigorous crop growth. Spot sprays are commercially used in Manitoba since 2020 and initial results are promising.