

# HARDI GeoSelect

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**Summary** In most agricultural, horticultural and viticulture practices, spraying is undertaken on a 'per area' process. For example, a broadacre paddock is usually sprayed with the same rate of chemical across the entire area, regardless of the variability of the intended target/s across that paddock. As weeds and other targets are rarely evenly distributed across areas and only makeup a fraction of the total area, there are large amounts of inefficiencies and wastage applying a blanket treatment. To combat this, various processes of selective spraying targets have been analyzed and refined. We have compared the ability of existing selective sprayers, and then refined the most viable into a working prototype. The various selective spraying technologies will be compared in the following parameters.

- Target detection rate (percentage of actual targets)
- Treatment efficiency of target (percentage of actual targets)
- Speed of treatment (area per hour)
- Other strategic advantages

- Disadvantages
- Cost of technology

Our results show there are significant disadvantages in the existing selective spraying technology, most of which comprise of some type of camera or image sensor directly mounted to the sprayer. As the sprayer passes over the intended target, the system records a detection and then actuates the spray for that area. Our newly refined system to remotely fly the image sensor over the area prior to the sprayer negates the need for multiple image sensors, speed of treatment limitations and provides an overview of the area so that strategic decisions can be made with up-to-date information. This study emphasizes the need for a broader look into how weeds and other targets are treated from a workflow practice perspective in agricultural, horticultural and viticulture settings. Furthermore, what limitations there are with existing selective spraying systems and how they can be improved.

**Keywords** Selective spraying, spatial data, geoselect, Hardi, sprayer