

Preliminary competitive analysis of the WeLASER solution

Competitive analysis

To detail a business plan, it is important to identify existing and potential competitions. Given the diverse approaches of weed control, we classified the existing approaches into three main categories namely chemical, mechanical, and physical weed control based on their main weed killing method. Based on this generic classification, we conducted a preliminary competitive analysis amongst categories and the WeLASER solution.

Some key remarks in each weed control category

- Chemical control: Herbicides save production costs due to their cost and availability. However, there are increasingly strict policies and regulations on their use due to their negative impacts on environments.
- Mechanical control: The main drawback of the conventional mechanical weeders is that this machinery oftentimes cannot precisely target the weed (especially in-row weeds) and cause soil compaction.
- Physical control: There is a wide range of approaches, but flaming is most common and fully commercialized. The drawbacks of the flaming technique are energy-consuming and not precisely targeting weeds.



Practical recommendation

WeLASER is a physical weed control approach that aims to achieve an accuracy of $\pm 3\text{mm}$ of the laser treatment. This high level of accuracy can be a unique selling point for the WeLASER application as other weed control applications mostly have lower accuracy levels, especially when they do not have supports from AI sensors or precision seeding. Based on this preliminary competitive analysis, an assessment framework for weed control will be detailed to help farmers decide which solution (or composition of solutions) is the best fit for their production.

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