## FAQ at Agritechnica 2023 – What are the governing factors regarding performance or limits?

### Laser power

Lasers treat single plants and not the whole area of the field. The necessary dose for a successful treatment depends on the growth stage and type of the weed. As plants are treated one after the other, higher weed density leads to less treated area per time. Higher available laser power enables shorter duration of the treatment per plant. Consequently, more plants can be treated in the same time span and the overall area performance (ha/h) increases for the same weed density. So, strong lasers support a high area performance.

### Target recognition

Automated laser treatment needs automated targeting. In general, Artificial Intelligence (AI) can recognize plants with a high accuracy. However, the AI needs a huge amount of training data for excellent performance and regional differences in the weed spectrum need to be appropriately covered by these datasets. So, generally, the AI needs to be retrained for each region or farm and the first commercial devices all specialize in one type of crop only. Increasing experience of the AIs are expected to lead to better recognition performance for similar regions even at the first run.

### Targeting

Furthermore, the precise aiming of the laser beam onto the recognized target is crucial for successful treatment. Speed is not a limiting factor for aiming. However, "hand-eye coordination" in the sense of hitting the plant exactly at the desired point of impact is challenging. Besides, unexpected movement of the mobile platform cannot yet be compensated in real time and can also lead to imprecise hits of the plants.

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