

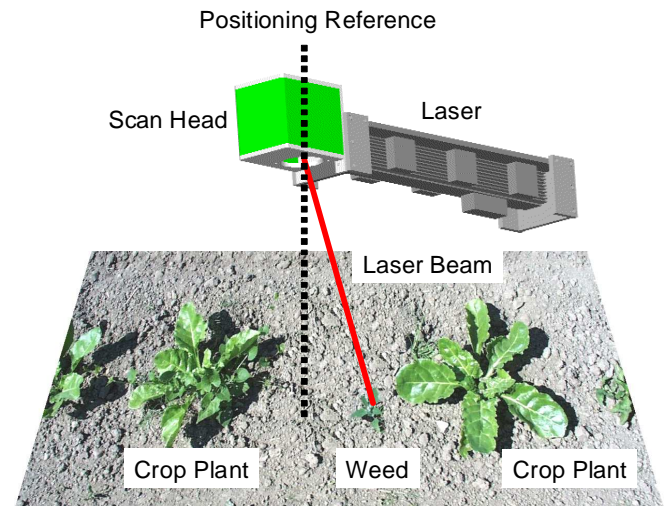
## Why always killing all Weeds?

### MSc Project Proposal

#### Selective Weeding Strategies by using Thermal Laser Treatments

To substitute chemical inputs (herbicides) by physical methods in weed control, new technologies have to be developed. One option is to use a CO<sub>2</sub>-laser for thermal weed control. The idea is not to use the laser for cutting but for heating the weed plants up and hence to damage them.

Furthermore, due to the possibility of treating individual plants it is possible to target only those weeds which have a negative influence on the crop yield. This opens completely new strategies in weed control: Only selected weeds are removed from the field and others can be tolerated and will remain on the field (selective weeding strategy).



The objectives of the project are to

- determine and investigate selective weeding strategies
- describe the ecological effects on crop production systems
- explore actuators based on different principles being able to treat individual weed plants
- explore the photo-thermal effects on plant tissue when exposed to far infrared (FIR) radiation from a CO<sub>2</sub>-laser
- generate dose response curves for selected weed species
- estimate the required energy and effects compared to other weeding strategies and
- propose and design a weeding machine based on the findings and results.

The objectives can of course be modified and adapted to individual interests!

Keywords: weed control strategies, plant responds on photo-thermal treatments, lab experiments, data analyses and machine design.

Supervisor: Prof. Hans W. Griepentrog (hw.griepentrog@uni-hohenheim.de)