

Press release**Laser Zentrum Hannover e.V.****Michael Botts**

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<http://idw-online.de/en/news368521>Research projects
Zoology / agricultural and forest sciences
transregional, national**Fighting Weeds with Laser Technology**

No more chemicals for fighting weeds in professional gardening! A fully automated unit drives over a field, a camera recognizes weeds sprouting up and a laser beam takes care of the rest. This science-fiction scenario is actually being researched at the Zentrum Hannover e.V. (LZH) and the Institute for Biological Production Systems (IBPS) at the Leibniz University Hannover.

The main goal of the project supported by the German Research Foundation (DFG) is non-chemical weed control, one of the main goals of ecological and effective plant production. The basic idea is similar to flame weeding, in which heat is used to eliminate the weeds. However, this method burns out everything under the flame, and it is neither precise enough nor can it be automated. In comparison, a laser beam is precise and can be used to hit a sprouting weed, not affecting the plants around the weed. And "laser weeding" can be automated.

„The plant and laser experts have already carried out first feasibility studies concerning laser-assisted weeding” explains Christian Marx from the LZH. “The laser prevents the young weeds from growing, but the reasons for this effect are not yet fully understood.”

That is the reason why researchers in this project will first develop a weed damage model, in which the effects of the laser beam (output, wavelength, energy, beam form etc.) on different kinds of weeds will be investigated. Based on this information, a laser system will be set up. In the next step, an image processing system will be developed, which recognizes weeds on different terrains, and defines where the laser beam should be aimed, to be most effective.

Following this, the laser system and the image processing system will be integrated into a pilot unit, which will first be tested under simple, controlled laboratory conditions. Then the system will be tested in a greenhouse, before field experiments are carried out. Laser safety is also a concern, for the lab, greenhouse and field investigations.

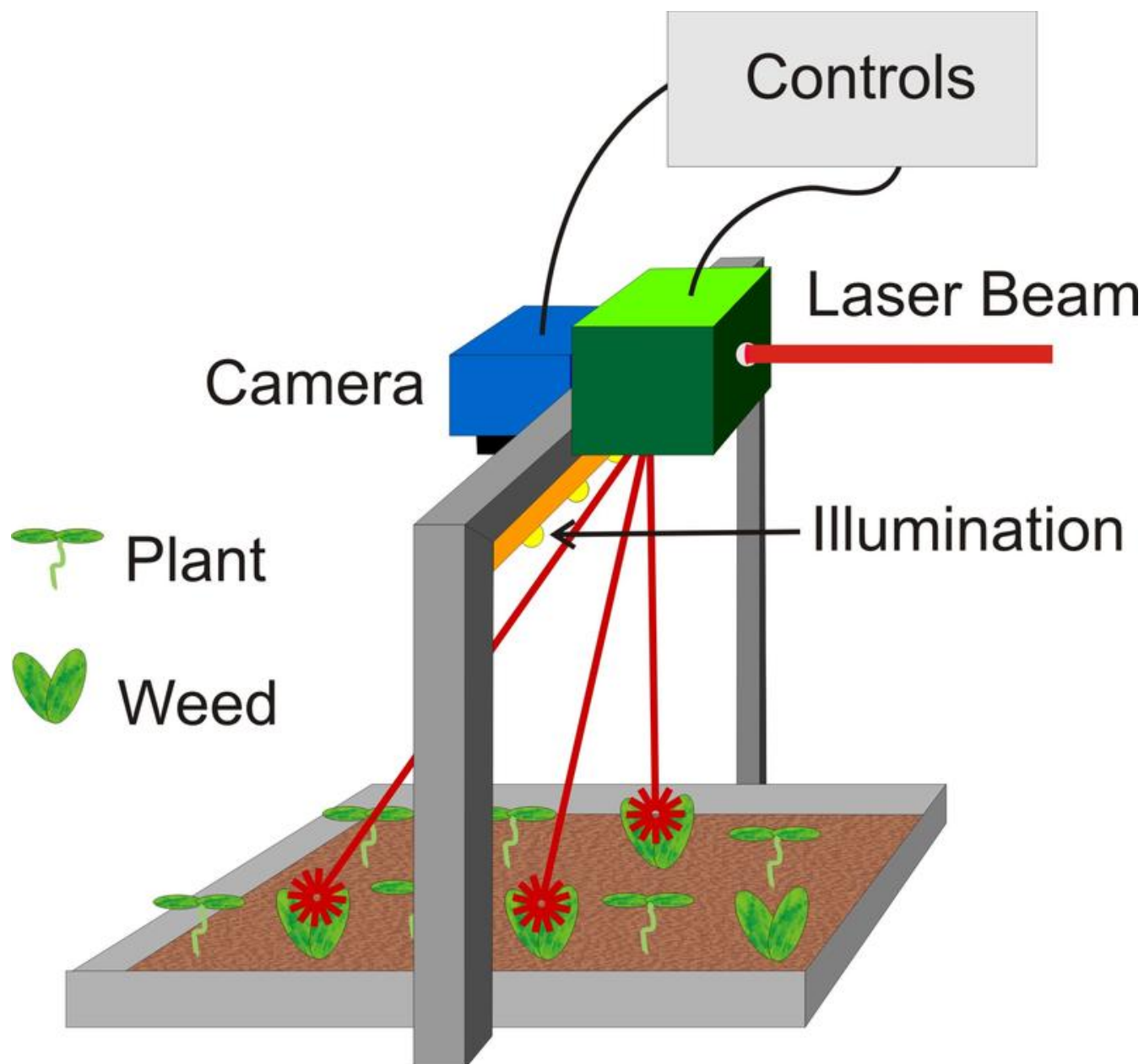
The project will run until the beginning of 2012, and aims at weed control without the use of chemical for professional gardening. “The system is too complicated for use at home,” adds Marx. “I’ll still have to pull weeds up by hand in my own garden.”

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The Laser Zentrum Hannover e.V. (LZH) carries out research and development in the field of laser technology and is supported by the Ministry of Economic Affairs, Labour and Transport of the State of Lower Saxony (Niedersächsisches Ministerium für Wirtschaft, Arbeit und Verkehr).

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Working sketch of the laboratory set-up for weed control using the laser. Image processing recognizes which plants are weeds, and aims the laser only at the weeds.

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