GOOD
AGROECOLOGY FOR WEEDS

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AGROECOLOGICAL WEED MANAGEMENT REPOSITORY

The Agroecological Weed Management (AWM) Repository (https://www.goodhorizon.eu/platform/awm-practices/) is a virtual space where you can freely and openly find information and educational material on current and agroecological weed management practices in the European Union. You can browse and learn about several weed management practices and crops.

#@Agroecology is GOOD

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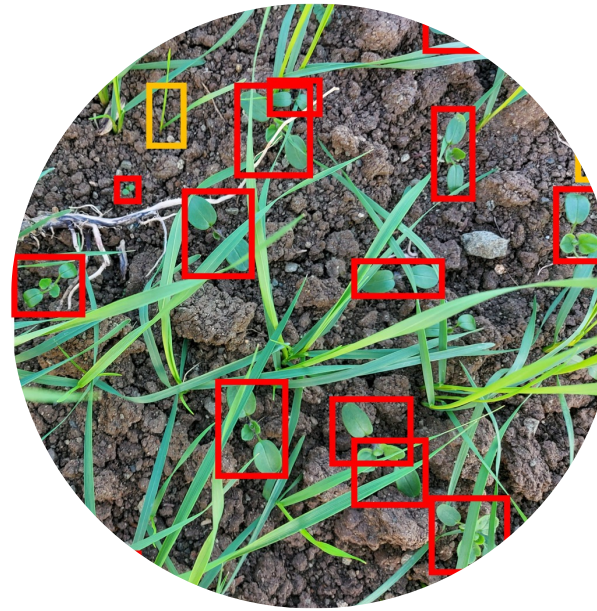
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LASER WEEDING

DESCRIPTION & BENEFITS

Laser weeding is an advanced technological practice for weed control that uses sensors, cameras and machine learning algorithms to detect weeds, allowing for precise targeting and elimination. This practice:

- has **high precision** by targeting only the weeds that must be controlled at the optimal growth stage, minimizing the crop damage and providing effective weed management

- can **be combined with other technologies** such as robotic systems for more autonomous site-specific weed management, less fuel consumption and less soil disturbance

- **drastically reduces the use of synthetic herbicides** offering a promising alternative for various farming systems

STRENGTHS ⊕

- Precise targeting of weeds, minimizing damage to crops
- High seedling control to reduce the competition with the crops in the first growth stages
- Reduced disturbance of soil, especially when the laser technology is coupled with robotic autonomous platforms

OPPORTUNITIES ★

- Expansion of applicability of laser weeding to more cropping scenarios and ongoing technological advancements
- Integration with autonomous weeding systems and combination with other precise site-specific weed management practices
- Gradual reduction of investment costs as demand is growing

WEAKNESSES ⊖

- Effectiveness against larger and perennial weeds
- Still significant initial investment costs for farmers
- Technical difficulties in optimizing laser weeding for specific crops and terrains (e.g., too narrow, broadleaf, sloping)

THREATS ⚠

- Regulations for laser weeding
- Competition with other precise practices (e.g., robotic mechanical weeding, electric weeding) due to emerging technologies
- Economic fluctuations in the markets (e.g., reduced investments in innovations, decreased financial capacity of farmers)

⋯ TIPS

- **optimize the timing of the treatments** to ensure that you use laser weeding when weeds are more susceptible to damage (i.e., early growth stages)

- **analyze the trade-offs and benefits** by tracking the expenses for fuel-energy and comparing with other weed management practices

- **collaborate with precision agriculture providers** to ensure the proper and regular maintenance of the equipment, as well as your training and knowledge on operation and safety issues

- **combine laser weeding with other practices** to reduce the chemical input and enhance overall effectiveness against weeds and resilience of the farm