



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.

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SITE-SPECIFIC SPRAYING

DESCRIPTION & BENEFITS

Site-specific weed management and spraying utilizes advanced technologies (e.g., drones, remote sensing and cameras, machine learning, robots) to create weed infestation maps or detect weeds in real-time allowing for targeted spraying of herbicides and bioherbicides or mechanical removal based on their location. This strategy:

- **minimizes herbicide use** and its subsequent impact on environment, humans and animals by targeting weeds more effectively
- **allows the combination of reduced herbicide rates with other weed management strategies** leading to a gradual transition towards zero-herbicide farming systems
- **optimizes resource use** as tractors and labor are deployed only when it is necessary, reducing fuel consumption

STRENGTHS

- Precise applications of herbicides and targeted weed removal that reduces the dependence on herbicides and minimizes environmental impact
- Minimization of crop damage due to less and site-specific treatments targeting only the weeds
- Optimized resources use if site-specific weed management is executed in parallel with precise fertilization and irrigation

OPPORTUNITIES

- Advancements in data analytics, machinery, sensors and GPS that enhance the accuracy of site-specific weed management
- Reduction of costs for new technologies and increase support of farmers to invest in them (e.g., subsidies)
- Integration of site-specific weed management into a broad plan of agroecological weed management strategies leading eventually to zero-herbicide farming systems

WEAKNESSES

- Specialized software, skills and personnel is needed to handle big data and this may increase the costs for site-specific weed management
- Initial investments in technology, machinery and equipment that may prevent smallholder farmers from adopting this strategy
- Varying effectiveness depending on weed species selection and field conditions requiring continuous monitoring and validation of efficacy

THREATS

- Over-reliance on technology could pose a risk of abandoning traditional and local knowledge and practices for weed management, increasing dependence on technology providers
- Market fluctuations in price and available technologies that could render certain site-specific weed management practices unaffordable in the long-term or without technical support
- Potential regulation changes and restrictions on the use of Artificial Intelligence and smart farming tools

TIPS

- **test site-specific weed management on a small scale** to build trust in it, understand its functions and gradually expand the operation once you have validated that this strategy is cost-effective and reliable
- **be trained** in new technologies and practices used in site-specific weed management in order to become more familiar with technical issues, operational capacity and maximize effectiveness
- **start by monitoring the field and then expand into site-specific weed management** which will allow you to know where the weed-infested areas are and where you should take action first
- **regularly update the equipment & seed advice and collaboration from experts and researchers** to stay informed of best practices and new advancements in site-specific weed management

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