



AGROECOLOGY FOR WEEDS

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AGROECOLOGICAL WEED MANAGEMENT REPOSITORY

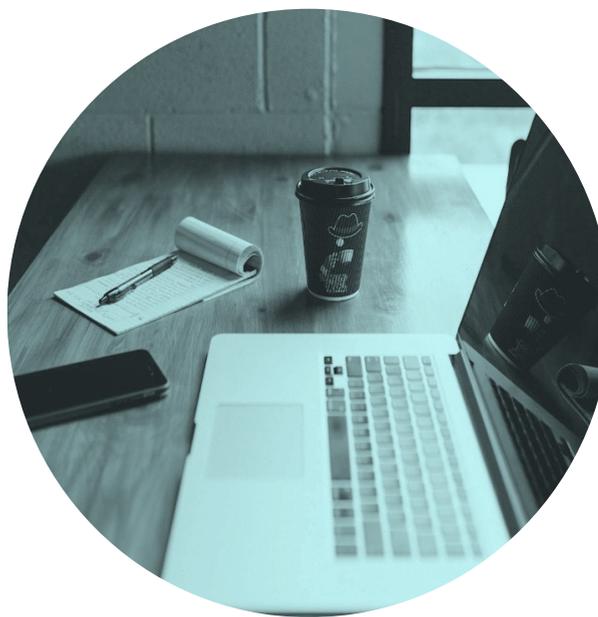
The Agroecological Weed Management (AWM) Repository (<https://www.goodhorizon.eu/platform/awm-practices/>)

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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DECISION SUPPORT SYSTEMS

DESCRIPTION & BENEFITS

Decision Support Systems (DSS) are digital tools that assist users in making decisions about crop production and protection, input management and agroecosystem design among others. DSS integrate various data sources (e.g., field and crop history, weather and soil conditions, maps, weed species and their growth stage etc.) and provide recommendations/alert messages/tips to:

- **reduce costs and input** for sustainable crop production and weed management through precise applications which is facilitated by the exploitation of (real-time) data
- **optimize weed management** through the recommendation of optimal timing for herbicide application with reduced rates, cultivation practices, or other weed management practices and their combinations
- **provide tailor-made solutions to farmers** for agroecological weed management according to their capabilities, needs and barriers

STRENGTHS



- Enhancement of efficiency in weed management through evidence-based decision support that enables optimized treatments
- Utilization of diverse data sources (e.g., weather, real-time biophysical indicators) for integrated weed management planning
- Use of data-driven decision-making combined with user knowledge that increases the likelihood of using the systems and user confidence in them

WEAKNESSES



- Data accuracy, availability and reliability issues in DSS when these have not been validated and tested in different scenarios and by different actors
- Continuous training of users (e.g., farmers) is needed to train them to effectively utilize DSS as these tools are dynamic and improve with new technologies
- Complexity in the implementation of the advice that the DSS generate, especially in case farmers (and other users) face technical challenges or other constraints

OPPORTUNITIES



- Potential reduction of chemical inputs (e.g., synthetic herbicides and pesticides, fertilizers) through data-driven approaches
- Cost-effective weed management solutions that are tailor-made to users' capabilities, needs, available machinery and equipment
- Enhancement of farm productivity, sustainability and resilience through the real-time advice from DSS that could potentially limit erroneous decisions

THREATS



- Reliance on technology and technology providers for decision making, which can lead to increased costs of purchasing, licensing and training or even render existing DSS ineffective
- Adaptation challenges for farmers (e.g., habits) undergoing the transition to smart farming and decision support technologies
- The increasing application of Artificial Intelligence (AI) in various DSS may lead to the abandonment of traditional techniques and practices if the DSS provider has developed the tool to promote industrialized production



TIPS

- **cooperate with technology providers and academia** to make use of the data that they can provide to you and share your knowledge and experience with them. This process will allow the development of DSS that provide regularly accurate recommendations based on reliable data and up-to-date information about your field conditions, weed flora, and crop and weed growth stages
- **try to combine different weed management practices** using the DSS to guide you to **achieve effective weed management with less inputs, costs and environmental impact**
- **apply site-specific treatments based on DSS's recommendations** taking advantage of DSS' ability to provide specific advice based on the soil type and microclimate variations in your fields and tailored weed management solutions based on your needs and capabilities
- **Test the DSS on a small parcel for one growing season** to gradually build up trust and reduce any risk of failure

LIABILITY DISCLAIMER

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