



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.

The **Agroecological Weed Management (AWM) Toolbox**, our Decision Support System that supports the user to reduce the use of synthetic herbicides and/or improve weed management by combining different Agroecological Weed Management (AWM) strategies with cover crops is LIVE !

<https://dss.goodhorizon.eu/>



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DESCRIPTION & BENEFITS

Drones + site-specific spraying combines UAV-based field monitoring with targeted herbicide application. Drones equipped with RGB, multispectral or other sensors can detect weed patches, estimate weed density and generate maps that guide spot spraying, patch spraying or variable-rate application by drones or ground sprayers. This practice can:

- **reduce herbicide use by treating only infested areas**
- **improve knowledge of weed distribution** across the field
- **reduce spraying on weed-free zones**
- **support more precise and timely interventions**

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DRONES + SITE-SPECIFIC SPRAYING

STRENGTHS

- Reduces herbicide use by identifying weed-infested zones and avoiding unnecessary spraying on weed-free areas.
- Improves field monitoring by providing spatial information on weed patches, weed density and areas requiring follow-up control
- Could reduce input costs and environmental pressure when weed distribution is patchy and targeted spraying maintains adequate control

OPPORTUNITIES

- Could support pesticide-reduction objectives by replacing horizontal spraying with more targeted, need-based applications
- Integration with Decision Support Systems, GPS-guided sprayers, robotics and farm records can improve long-term site-specific weed management
- Service providers and cooperatives can make drone mapping and targeted spraying more accessible to farms without their own equipment

WEAKNESSES

- Requires accurate weed detection, image processing, prescription mapping and sprayer compatibility; errors can lead to missed weeds or unnecessary spraying
- Effectiveness depends on crop stage, weed size, canopy cover, light conditions, sensor quality, algorithm performance and field validation
- Requires investment in drones, sensors, software, data processing, technical skills, maintenance and operator training

THREATS

- Missed weed patches caused by poor detection, low image quality or inaccurate maps may survive, compete with the crop and replenish the weed seedbank
- Regulatory restrictions, safety requirements or local limitations on drone operation and aerial spraying may restrict practical use
- Over-reliance on targeted herbicide application without crop rotation, cover crops or mechanical control may still increase herbicide-resistance risk

TIPS

- **use drones** when weed patches are visible and the crop-weed contrast is sufficient for reliable detection
- **choose the right** flight height and image resolution according to crop, weed size and mapping objective
- **validate drone maps with field scouting** before spraying
- **create accurate prescription maps** and check compatibility with the sprayer or drone-spraying system
- **calibrate** nozzles, spray volume, droplet size, pressure and forward speed carefully
- **avoid spraying under unsuitable** wind, temperature or rainfall conditions
- **monitor treated and untreated zones after spraying** to check weed control, missed patches and crop injury
- **rotate herbicide modes of action** and combine targeted spraying with non-chemical AWM practices

LIABILITY DISCLAIMER

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