

Pest control and plant protection in grasslands

Goal

Sustainable grassland management regarding pest populations and weed control

Short description of the measure

The presence of plant species regarded as unproductive or undesired – frequently designated as weeds – is usually reduced through mechanical or chemical methods (herbicides). Reseeding is also used when a jagged sod is the reason for the spreading of undesired plant species. Both mechanical and chemical approaches may have negative impacts on biodiversity (Figure 1). Manual or mechanical approaches should be the priority. However, different approaches may be considered, depending on the region. In Central and Northern Europe, reducing the presence of weeds using mechanical measures has fewer negative effects on the environment compared to the use of herbicides. In Southern Europe, avoiding tillage and preserving the existing soil organic matter is necessary and frequently complemented with localized and precise use of agrochemicals (with lower persistence due to less tillage) (Basch et al., 2015).



Figure 1 – The application of herbicides may have negative impacts both on biodiversity and human health. Photo credits: © pixabay.com

Integrated Pest Management (IPM) is a cornerstone of the European Union's Directive on the sustainable use of pesticides (2009/128/EC) (EU, 2009). All available information, tools and methods must be considered so that the healthy development of crops is attained with the least possible disruption of agro-ecosystems and using natural pest control approaches, if possible. This way, IPM aims at keeping the use of pesticides and other associated approaches within the levels that are economically and ecologically justified, reducing or minimising health and environmental risks. Whenever sustainable, biological and physical (non-chemical) methods provide satisfactory pest control, they should be chosen.

The application of IPM includes measures such as:

- a) crop rotation;
- b) the adequate use of cultivation techniques;
- c) the reasonable use of resistant/tolerant cultivars and standard/certified seed and planting material;

- d) the use of balanced fertilisation, liming and irrigation/drainage practices;
- e) the adoption of hygiene measures (such as the regular cleansing of machinery and equipment) in order to prevent the spreading of harmful organisms;
- f) the protection and enhancement of important beneficial organisms (using plant protection measures or ecological infrastructures inside and outside production sites) (Figure 2).

The use of mechanical weeding is recommended in order to substitute pre-emergence herbicides. Pesticides which are dangerous to pollinating insects, such as bees, and other beneficial organisms must never be used.



Figure 2 – Ecological infrastructures, such as hedges, may allow for beneficial organisms, such as birds that prey on insect pests, to be present in the farm. Photo credits: © pixabay.com


Timeframe

(When to start a measure and anticipated time for implementation)

Measures should be applied when the undesired plant species is still in the growing stage and therefore more vulnerable. If the plant to be controlled is an annual, then it should be controlled at its smallest average size. Perennial species frequently have deep roots and therefore measures should be applied during the rosette stage (new growth).

How auditors can assess if the measure has been implemented with good quality?

- If no harmful chemicals (herbicides and/or pesticides) are used or exceed highly precise amounts estimated for very specific locations, high levels of biodiversity should be observed in the farm (including pollinating insects and other beneficial organisms);
- The nests of early breeding birds, expected to occur in the farm, are observable;
- Existing buffer zones, next to the water bodies, of at least 10 meters or higher (if the Member State requires so) where no fertilizer is applied, must be observable and measured;
- Hygiene protocols with measures for the regular cleansing of machinery and equipment should be available;
- Monitoring protocols should be available if the farmer frequently assesses the

	<p>presence of harmful organisms;</p> <ul style="list-style-type: none"> Monitoring protocols should be available if the farmer frequently assesses the success of the applied plant protection measures.
Additional information the auditor needs for verification (if any)	<ul style="list-style-type: none"> Water legislation restricts the application of some extensively used herbicides, and of those with high risks of leaching due to their application times. A careful application of pesticides is essential to minimize collateral damages. Therefore, evidence regarding frequent training, provided to the farm workers, on the adequate techniques and safety practices for chemical handling and application, should be verified.
Effects on biodiversity (ecosystems, species, soil biodiversity)	 <ul style="list-style-type: none"> Clean and healthy water bodies allowing for richer and more stable trophic webs of plant and animal communities; Higher Soil Organic Matter (SOM) allowing for richer soil and insect biodiversity; Trophic webs based on the floral diversity that is present and is not prejudicial (even if not part of the crops) are present and stable.
Indicator/key data	<ul style="list-style-type: none"> SOM measured in the soil; Soil biodiversity; Flora and fauna observed in local ecological structures and water bodies; Available reports regarding the monitoring of harmful organisms and the application of plant protection measures.
References	<ul style="list-style-type: none"> Basch, G., Friedrich, T., Kassam, A., Gonzalez-Sanchez, E., 2015. Conservation Agriculture in Europe, in: Farooq, M., Kadam, H.S. (Eds.), Conservation Agriculture. Springer International Publishing, Basel, Switzerland, pp. 357–390. EU, 2009. Directive 2009/128/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for Community action to achieve the sustainable use of pesticides. Off. J. Eur. Union L 309, 71–96.

Further information: [Knowledge Pool](#)

This Action Fact Sheet belongs to the training package for auditors of standard organisations and companies and was developed within the project LIFE Food & Biodiversity (Biodiversity in Standards and Labels of for the Food Industry). The main objective of the project is to improve the biodiversity performance of standards and sourcing requirements in the food industry by helping standard organisations to integrate efficient biodiversity criteria into their schemes and motivating food processing companies and retailers to include comprehensive biodiversity criteria into their sourcing guidelines.

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