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Center for Smart Agriculture

Organic Farming



Module 5: Organic management of field

Session4: Weed management



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- The primary weed control strategies for organic systems are **cultural and mechanical, focusing on prevention, crop rotation, crop competition and biological methods.**
- To plan an effective weed management program in organic systems following point should be consider: historical pest problems, soil management, crop rotation, machinery, markets, weather, and time and labour.



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Some preventive measures can be classified as:

- Removing or destroying weeds in fields or near fields before they flower and release weed seed. Weed seeds can live for a number of years, depending on the species and whether the seed is exposed or buried beneath the soil surface.
- Weeds can also be introduced into fields through manure, compost, hay, straw, animal feed, contaminated crop seed, or other materials.



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Cultural weed control:

Crop rotation

Organic growers should plan **rotations** so that weed species favoured in one year or season will not be favoured in another year or cropping sequence.

Planting date

The planting date will influence the type and number of weeds present. Delaying planting of spring-seeded crops is common among organic producers.



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A **stale seedbed** is a technique used in vegetable production systems where the seedbed is tilled several weeks before planting. The weeds are allowed to emerge and then they are killed, while still small, by shallow cultivation, flame weeding, or other nonselective methods.



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Crop competition is another important component of cultural weed control and an effective way to control weed growth that allow the crop to establish quickly and dominate will help reduce the impact of weeds. Use high quality, vigorous seed, adapted varieties, uniform proper placement of the crop seed, optimal soil fertility, and plant populations that lead to vigorous crop growth and canopy closure.



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Mulches and cover crops

The mulch provides a physical barrier on the soil surface and must block nearly all light reaching the surface so that the weeds which emerge beneath the mulch do not have sufficient light to survive.

Cover crops can provide an opportunity for crop rotation and rapid turnover of weed seedbanks. In addition, cover crops can provide some weed control by competing with weeds for light, moisture, nutrients, and space



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Herbicides

Chemical weed control is generally not allowed in organic crop production systems. The USDA National Organic Program (NOP) rule does allow certain non-synthetic soap-based herbicides for use in farmstead maintenance (roadways, ditches, building perimeters) and in ornamental crops.



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Table 1. Herbicides listed by the Organic Materials Review Institute (OMRI) for use in organic production as of May 2004. All products listed are classified as Regulated.

PRODUCT	ACTIVE INGREDIENTS	MANUFACTURER
Alldown	Citric acid plus garlic plus acetic acid	Summerset Products www.sumrset.com 952-820-0363
Corn gluten meal	Corn gluten meal	Numerous—for more information see www.iastate.edu/~isurf/tech/cgmwebsite.html
Ground force	Citric acid plus garlic plus acetic acid	Abby Laboratories www.abbylabs.com
Herbicidal soap	Various salts of fatty acids	Several brands—may be synthetic and used for nonfood crops only
Matran II	Clove oil	EcoSmart Technologies, Inc. www.ecoipm.com 888-326-7233
Xpress	Thyme and clove oil	Bio HumaNetics www.biohumanetics.com 800-961-1220



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Biological Control of Weeds:

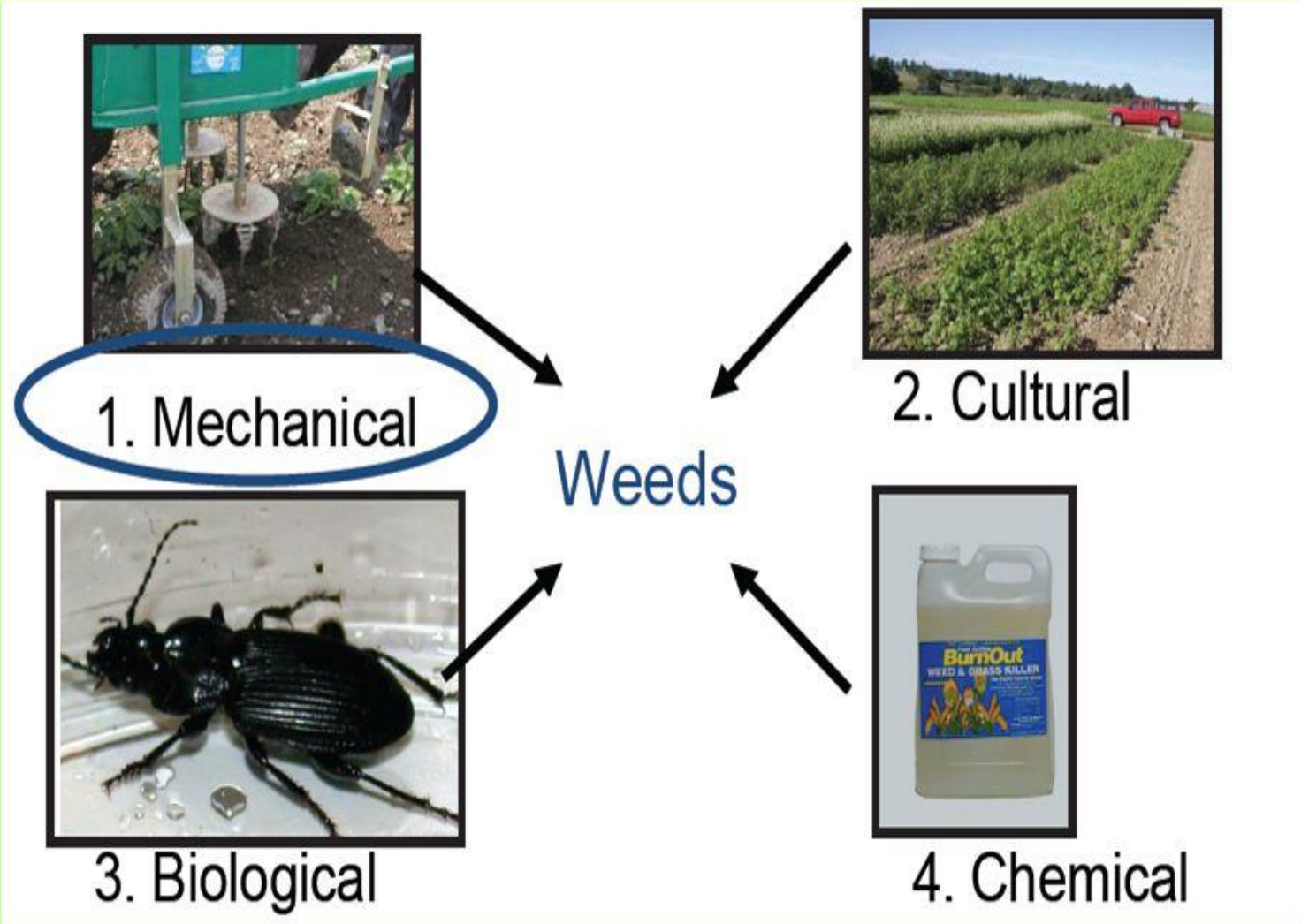
The soil-borne fungus *Fusarium oxysporum* (different isolates from Burkina Faso, Mali and Niger) is very effective in reducing the witch weed (*Striga hermonthica* and *S. asiatica*) in different cereal crops, leading to yield increases in scientific trials. Other *Fusarium* species found in Sudan and Ghana are very effective.



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Methods of Weed Control





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MECHANICAL METHOD OF WEED CONTROL



Mowing



Spudding



Soil solarisation



Burning



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THANK YOU