



## Managing Weeds in An Eco-Friendly Manner – An Essential Guide

S.Swetha\*

\*Assistant Professor (Agronomy), Vanavarayar Institute of Agriculture

<https://doi.org/10.5281/zenodo.10951017>

### Eco-friendly farming

Organic agriculture or eco-friendly farming is a method of production that depends on natural processes, biological diversity, and depends on health of the soil, ecosystem, human population and customized to the environment rather than using inputs that have negative consequences. It covers a range of techniques, including homestead farming, humus farming, biodynamic farming, and natural farming.

### Eco - friendly weed management

Reducing weed competition and multiplication to a level that the farmer can tolerate is the main objective to keep in mind when managing weeds in an organic system (Barberi, 2002). This won't always entirely get rid of all weeds. However, by stopping the growth of weed seeds and perennial propagules (plant parts that have the ability to form new plants) weed management should lessen competition from present and future weeds. Regular weed control can lower weed control expenses and support a financially viable crop production system. Up until now, the main emphasis has been on the mechanical and yearly techniques of controlling weeds through the creation of various tools and implements. This traditional and constrained method undervalues efficient crop production systems and ignores the holistic aspect of organic agriculture.

The major types of eco - friendly weed management techniques are

1. Cultural method
2. Mechanical method
3. Thermal method
4. Biological method

### Cultural method

#### 1. Crop rotation

Crop rotation is the practise of planting and harvesting several crops on the same plot of land



in a planned order. It is a crucial tactic for creating a reliable, long-term weed control programme. Similar crops to their own tend to be ideal for weed growth, and cultural methods intended to support the crop may simultaneously promote the creation and proliferation of weeds. growth the same crop in the same field year after year is known as monoculture, and it leads to the accumulation of weed species that are suited to the crop's growth environment. When different crops are grown in a rotation, the cultural practices associated with each crop (tillage, planting dates, crop competition, etc.) vary, which disrupts weed germination and growth cycles.

## 2. Cover crop

The crop's quick growth and thick ground cover will keep weeds at bay. Weed development can be inhibited by include cover crops in the cropping system, such as rye, red clover, buckwheat, and oilseed radish, or by overwintering crops, such as winter wheat or forages. Short-term "smother" crops in the rotation can be very competitive crops. Furthermore, by cooling and shading the soil, cover crop residues on the soil's surface will inhibit weed growth. The way a cover crop will impact the next crop should always be taken into account when selecting one. Furthermore, the breakdown of cover crop leftovers can release allelo compounds, which prevent weed seeds from germinating and growing.

## 3. Intercropping

Growing a crop in between rows of the primary crop is known as intercropping. Vegetables have the ability to inhibit weeds. However, care should be used when implementing intercropping as a seed control method. If competition for water or nutrients arises, the intercrops have the potential to significantly lower the main crop's yields.

## 4. Mulching

By obstructing light transmission, mulching or covering the soil's surface might stop weed seeds from germinating. Mulch containing allelopathic substances may also physically impede the sprouting of seedlings. Mulches come in several varieties. Living mulch is the usage of a plant to act as ground cover. It helps in suppressing the weed growth without affecting crop yield. Organic materials such as leaves, straw, bark and composted material also provides active weed control once spread on the field evenly.

## 5. Agronomic measures

Weed control can be achieved by managing and properly implementing a variety of agronomic practices such as providing proper spacing, choosing the suitable variety, following proper tillage practices and sanitation of farm implements regularly. Additionally, water and weed management is a key measure where irrigation and nutrient application has to be concentrated on crop rows instead of the entire field.



### **Mechanical weed control**

Although mechanical weed removal requires a lot of time and labour, it is the most efficient way to manage weeds. The crop's form and structure as well as the kind and quantity of weeds will determine the best course of action, as well as when and how often to apply it. Killing weeds as they emerge or burying recently shed weed seeds below the depth at which they grow are examples of cultivation. It's critical to keep in mind that the soil seed bank is where any ecological strategy for managing weeds starts and finishes. The stockpile of weed seeds found in the soil is known as the soil seedbank. Farmers can manage weeds more effectively by observing the seedbank's composition.

### **Thermal weed control**

These are helpful in controlling weeds. Using burning apparatus to create direct contact between the flame and the plant is the method of thermal weed management. When the sap in plant cells grows quickly, the procedure bursts the cells. Sometimes weeds must be burned completely in order to achieve temperature control. Flaming can be applied either after the crop has emerged or before it does to give it a competitive advantage. But at this stage of the crop's life cycle, burning could harm the crop. Flaring may be less expensive than hand weeding for weed control, despite the potentially expensive initial equipment cost.

### **Biological method**

#### **Allelopathy**

Allelopathy is the chemical effect of one plant, either direct or indirect, on the germination, growth, or development of nearby plants. It is now well accepted that it is a part of biological control. Crop and weed species alike demonstrate this capacity. Barley, rye, annual ryegrass, buckwheat, oats, sorghum, sudan sorghum hybrids, alfalfa, wheat, red clover and sunflower are examples of allelopathic crops. Certain vegetables, like radish, horseradish, and carrot, emit extremely potent toxins called allelopathic compounds from their roots.

#### **Organisms**

Just like crops, weeds can get attacked by diseases and insects. In range or non-crop regions, biological control of weeds predominates.

### **Conclusion**

The problems caused due to the usage of chemicals are in an increasing trend. Hence, it is high time to switch our crop protection methods to eco – friendly means which also improving productivity. Since weeds are the major reason for reduction in crop yield, adopting organic weed control measures go a long way sustainably.