Ministry of Higher Education
Salahaddin University
College of Agricultural Engineering Sciencies
Plant Protection Department

Weeds and Weed Control
Fourth Grade
Spring Semester (2021-2022)
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Lecture 3

1

Methods of weed control

1- Prevention:

means stopping a new weed from invading an area or limiting weed buildup in a field. Prevention is practiced by:

2

Weed control: Prevention

a. Preventing weeds from setting seeds.

b. Use of clean crop seed for planting.

c. Use of clean machinery.

d. Controlling the movement of livestock.

e. Quarantine laws services.

f. Stopping the spread of vegetative reproducing perennial weeds..

3

Weed control: Mechanical

2- Mechanical weeding.

Targeting weeds with physical or nonchemical methods to achieve preemergence or post emergence suppression.

Mechanical weed methods include:

4

Weed *control*: Mechanical

1- Tillage :

Tillage removes weeds from the soil resulting in their death. It may weaken plants through injury of root and stem pruning, reducing their competitiveness or regenerative capacity. Tillage also buries weeds. Tillage operation includes plowing, disking, harrowing and leveling which is used to promote the germination of weeds through soil turnover and exposure of seeds to sunlight, which can be destroyed effectively later. In case of perennials, both top and underground growth is injured and destroyed by tillage.

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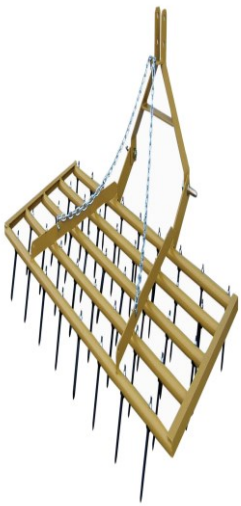

10

Weed control: Mechanical

- **As tillage increases, incidence of perennials increases: Why?**

Tillage breaks vegetative structures into pieces that can regenerate into new plants, potentially spreading the infestation within or between fields. Perennials may require either repeated efforts more a combination of management tactics to achieve adequate control.

11

Weed control: Mechanical

2- Mowing:

a. Cutting of weed foliage at a specified height.

b. May kill weeds or least prevent seed production.

c. Depletes underground food reserves of perennial weeds.

d. Most effective on tall growing plants and annual broadleaf weeds.

12

Weed control: Mechanical

3- Hand hoeing and pulling:

Hand hoeing and pulling are the earliest (historically) and simplest types of weed control, it is still a practical and efficient method of eliminating weeds in cropped and non-cropped lands. It is very effective against annuals, biennials and controls only upper portions of perennials. Hand pulling/hoeing is effective only when the weed infested area is small.

13

14

Weed control: Mechanical

4- Burning:

Burning or fire is often an economical and practical means of controlling weeds. Burning the weeds will control the weed problem in sugarcane widely spaced field crops and orchards.

15

16

Weed control: Mechanical

5- Flooding:

Deprive weeds of oxygen – kill existing weeds.

- Can be an effective when water is plentiful and/or a flood tolerant crop is grown.
- Controls herbaceous perennial weeds.

17

Weed control: Mechanical

- Flooding will not significantly affect viability of dormant annual weed seeds in soil.
- Generally need 6-10 inches of standing water for 3-8 weeks during summer.
  - For rice this is very effective because the crop thrives under flood conditions.

18

Weed control: Mechanical

6- Mulching:

Mulching has smothering effect on weed control by excluding light from the photosynthetic portions of a plant and thus inhibiting the top growth. It is very effective against annual weeds and some perennial weeds like *Cynoden dactylon*. Mulching is done by dry or green crop residues, plastic sheet or polythene film. To be effective the mulch should be thick enough to prevent light transmission and eliminate photosynthesis.

19

Weed control: Cultural

3- Cultural weed control:

Several cultural practices are used; these practices if used properly help in controlling weeds. Cultural methods, alone cannot control weeds, but help in reducing weed population. They should, therefore be used in combination with other methods.

20

Weed control: Cultural

1- Field preparation:

The field has to be kept weed free, flowering of weeds should not be allowed. This helps in prevention of buildup of weed seed population.

21

Weed control: Cultural

2- Summer tillage:

The practice of summer tillage is one of the effective cultural methods to check the growth of perennial weed population in crop cultivation.

22

Weed control: Cultural

3- Grazing: Use of animals such as sheep or goats that will eat weeds and weed seeds.

4-Sowing/planting time and crop spatial management.

5- Crop genotype choice.

6 -Fertilization and irrigation.

23

Weed control: Biological

4- Biological weed control:

Refers to the use of biological agent – pest, predators, pathogen and parasites to control weeds. It involves the control or suppression of weeds through the action of one or more organisms by natural means, for manipulation of the weeds.

24

Weed control: Biological

Bio control is often viewed as a progressive and environmentally friendly way to control pest organisms because it leaves behind no chemical residues that might have harmful impacts on humans or other organisms.

25

Weed control: Biological

- Biological control is not well suited for weed control in crops because:
- (1) They affect one weed species only, cropland almost always contains a complex of weeds.
- (2) The effect of biological control slowly.

26

Weed control: Chemical

5- Chemical weed control:

Chemicals that are used for killing weeds or suppress the plant growth are called herbicides. The practice of killing the undesirable vegetation (that is weeds) with herbicide is called chemical weed control.

27

Weed control: (IWM)

6- Integrated weed management (IWM):

IWM may involve combinations of cultural plus chemical, cultural plus biological, cultural plus preventive, biological plus chemical or combinations of three or more of these systems.

28