

MINISTRY OF AGRICULTURE, FORESTRY & FISHERIES

HERBICIDES AND ITS USAGE

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What are weeds?

There are many definition that are given to weeds but for our purposes, they are plant species that are growing in an area that they are not needed at the point in time.

For simplicity they may be classified as **broad leaves, grasses, perennials or annuals**

What are herbicides?

These are chemical compound that kills plants or inhibits their normal

Early chemical herbicides were inorganic compounds ashes, common salts etc. were used in ancient times.

In 1896 it was observed that Bordeaux mixture, a fungicide, provided control of certain weeds, which led to the use of copper sulfate as a selective weed killer to control wild mustard in cereals.

1900

Sulfuric acid
Iron sulfate
Copper nitrate
Ammonium salts
potassium salts



**Selective
herbicides**

Soon after the appearance of the previous compounds **sodium arsenite** solutions became the standard herbicides and were used widely until 1960.

Other inorganic herbicides include ammonium sulfamate, carbon bisulfide, sodium chlorate, sulfuric acid solutions, and formulations containing borate.

In 1932 Organic herbicides began to be produced with the base being dinitrophenol compounds

1940



2,4-D

Broad-leaved weeds

corn

sorghum

small grains

grass pastures

lawns

ornamental turf

Timing

This refers to the period of herbicide application with respect to the stage of crop or weed development. Timing depends on many factors, such as Climatic conditions, chemical classification of the material and its persistence, the crop and its tolerance to the herbicide, weed species, cultural practices, and soil type and condition. The three categories of timing are *preplanting*, *preemergence*, and *post emergence*.

Pre-planting - application that are made to control weeds in an area within a few days or weeks before the crop is planted. The set back here is that the protective film for controlling the weeds will be broken.

Pre-emergence – a herbicide applied to the soil during the period after planting and before germination. Preemergence herbicides, mixed into the soil, will kill germinating seeds and small seedlings. (usually 1-5 days after land preparation). e.g Gesaprim

Post-emergence – a herbicide applied to growing weeds after crop emergence or transplanting. Postemergence herbicides either hinder photosynthesis or inhibit growth e.g Fusilade, Gramoxone, Round-up.

Selectivity

Refers to the capacity of a herbicide, when applied at the proper dosage and time, to be active only against certain species of plants but not against others.

Selective – a herbicide that kills small weeds and seeds but leave the crop unharmed e.g Gesagard. N.B selective herbicides are specific for certain crops.

Non-selective- a herbicide that kills all plants sprayed. e.g Round-up.

Contact- a herbicide that kill only soft green parts of weeds sprayed with the herbicide. They are most effective against annuals, i.e weeds that germinate from seeds and grow to maturity or reaches the flowering stage each year. For this group of pesticides complete coverage is essential e.g Gramoxone.

Systemic- a herbicide that is absorbed into the plant after spraying, through its foliage or roots and is translocated where it causes death. They are effective against all weed types; however, their greatest advantage is in the control of established perennials, those weeds that continue their growth from year to year. Uniform application is needed for the translocated materials, whereas complete coverage is not required. e.g Round-up Translocated

Before and after spraying !!!

- ➡ Ensure that sprayers are in proper working condition before spraying. A good practice is to place some water in the can and test to see if nozzles are blocked.
- ➡ Remove the lid and leave the testing water in the tank.
- ➡ Use correct dosage rate in keeping with label
- ➡ Add the herbicide to the water in the sprayer. Rinse the measuring device and empty its contents in the spray equipment. Add water to the tank to complete the amount to be sprayed.

- ➡ Screw on the top, being careful not to cross the threads and tighten so that the pressure will not escape from the tank.
- ➡ Spray out all of the material in the tank. Don't leave any unused herbicide in the tank.
- ➡ Clean the empty tank over a dirt area, never over concrete or in a sink. Unused chemical may flow into waterways causing harm to fish and wild life.
- ➡ Rinse the tank three separate times, spraying clean water through the nozzle each time.

Tip for the use of herbicides

- ⇒ Spray weeds before they go to seed for best results.
- ⇒ Use a shield to avoid drift onto desirable plants.
- ⇒ Mix only the amount of herbicide required.
- ⇒ Where possible employ manual weeding
- ⇒ Always follow label directions.
- ⇒ Use protective gears
- ⇒ Do not use utensils from the kitchen to measure pesticides.