

DEFINITION OF WEED

Source	Definition
Blatchley (1912)	A plant out of place, or
Emerson (in	growing where it is not
Blatchley, 1912)	wanted.
	A plant whose virtues have
	not been discovered.
Harper (1944)	A plant that grows
	spontaneously in a habitat
	that has been greatly modified
	by human action.

- Harmful aspects

- I. Reduction in crop yields

- II. Reduction in crop quality. E.g. red rice in rice.

- III. Reduction in quality of animal products. E.g. seeds of *Boerhavia diffusa* in animal wool.

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CLASSIFICATION OF WEEDS

- Weeds are classified in different ways that include

I. Life cycle

II. Habitat

III. Growth habit

IV. Morphology

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Morphology

Weeds are classified into:

- I. Broadleaf weeds
- II. Narrowleaf weeds
 - I. Grasses
 - II. Sedges

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- Sedges: these weeds are also monocotyledonous plants with leaves having parallel venation.

Propagation is through modified rhizomes. E.g. *Cyperus esculentus*.

- It also affects the competitiveness of the weeds in crop grown in that location
- Long bush fallow period promotes fewer weed seeds
- Short bush fallow period promotes more weed seeds
- High human population decreases the length of fallow period

In short bush fallow, it means the weed seeds are

- May germinate when they are moved to or near the soil surface during land preparation
- Some of the weed seeds that are on or in the top soil may be killed by heat during preplanting bush burning and by mulching
- Germinating weed seeds may also be killed by pre-emergence herbicides.

2. Weed seed dispersal

- Weed seeds are dispersed in space and in time
 - ü Seed dispersal in space involves the physical movement of seeds from one place to another
 - ü Natural agents for spatial dispersal of weed seeds are water, wind, animals and humans

- A safe site may be defined as a zone which provides
 - The stimuli required for breaking of seed dormancy
 - The conditions required for the germination processes to proceed
 - The resources which are consumed in the course of germination
 - Absence of hazards
 - Proper seed placement
 - Adaptations that can enable the seed to survive hazards

- The concept of safe site is not limited to weeds
- Humans provide safe sites to crop seeds by
 - proper placement of crop seeds in the soil
 - providing a seed bed that is weed-free
 - treating seeds with pesticides prior to planting

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- Factors affecting weed seed germination
 - Temperature requirement
 - Optimum temperature for germination of non-dormant weed seeds is quite specific for given weed species. Generally, soil temperature is more relevant to seed germination than air temperature.
 - Soil moisture
 - An adequate amount of moisture in the safe site is essential for weed seed germination. The critical moisture requirement for radicle emergence is less than that for seedling growth.

- Alternate wetting and drying of soil
 - The importance of alternate wetting and drying of the soil relates to the removal of inhibitory substances associated with seed dormancy. Weeds such as *Digitaria spp.* germinate better when subjected to such changes in soil moisture.
- Depth of seed burial
 - Tillage operations affect depth of weed seed burial. Seedlings of small-seeded (< 2 mm) weeds are unable to germinate from soil depths greater than 5 cm.

- One of the characteristics of the weed-crop ecosystem is that it is a dynamic system, subject to selection pressures that vary in amplitude from the more natural and subtle changes such as those seen in natural fallows, to the more drastic changes as could be caused by the continuous use of a given herbicide in a given cropping system.

- Weed control research should therefore be aimed at understanding the biology of weeds that colonize these agricultural lands, discovering their survival mechanism and relating these findings to crop production practices imposed on the system by humans. Weeds have to adjust their growth habits to monocropping as well as various forms of multiple-cropping systems.

Factors affecting weed persistence

- Weed persistence will be affected by climatic, soil (edaphic) and biotic factors. The impact of any of these factors on weed persistence will vary with weed species and with the prevailing conditions in the habitat. The major climatic factors are light, temperature, water and wind.

Water

- Water reaches most habitats naturally in the form of rain, dew and fog. Seasonal distribution of water affects weed species distribution, and a shortage of water at critical times in the life cycle of weeds may affect seed production. If the water shortage becomes a recurrent event the survival of some weed species may be threatened.

- Hardly any vegetative propagule of weeds can tolerate prolonged desiccation. Drying out of the soil, which occurs naturally or is aided by tillage to expose these propagules to desiccation, has adverse effects on the persistence and spread of many perennial weeds.

Talinum triangulare

