

# **Seed Production and Diagnostics**

- By Prof. Emmanuel S. Ariga

# Contents

1. Problematic Weeds Of Target Crops



UNIVERSITY OF NAIROBI

SEED ENTERPRISE MANAGEMENT INSTITUTE

SEED PRODUCTION FIELD DIAGNOSTICS

PROBLEMATIC WEEDS OF TARGET CROPS

PROF EMMANUEL S. ARIGA

# WEED IDENTIFICATION

- ❖ Identification is important for successful control important for successful control
- ❖ Identify by Local name, common name and scientific name
- ❖ If in doubt collect intact samples and take to a herbarium for identification
- ❖ Include all plant parts (roots, shoots, flowers and fruits/dispersal unit)
- ❖ Identify where Herbarium is in your country

Common name	Scientific name	Description	Dissemination	Economic importance
Oxalis, wood sorrel	<i>Oxalis latifolia</i>	Broad leaf, tap roots bulb, perennial	Ploughing, eaten as salad	Alternate host <i>Puccinia sorghi</i> , ornamental
Double thorn	<i>Oxygonum sinuatum</i>	Tap root, net veined leaf, stem herbacious, annual, has thorns	Attachment to Animals, man	Fodder, mulch, thorn injury
Wandering jew	<i>Commelina benghalensis</i>	Tap root, succulent stem, parallel veins, trailing, perennial	Stem cuttings at ploughing	Fodder, vegetable
Thorn apple	<i>Datura stramonium</i>	Errect, grows to 1m, tap root, broad leaf,, oval fruit with hooks	Shattering, water, animals	poisonous
Black jack	<i>Bidens pilosa</i>	Tap root, dicot, hooks,	Animals, man, equipments	Crop/wool contaminant
Lion's ear	<i>Leonotis nepetifolia</i>	Errect, annual, dicot, tap root, woody stem, spikes	Animals, man, water	Source of necta,

Common name	Scientific name	Description	Dissemination	Economic importance
Mexican marigold	<i>Tagetes minuta</i>	Erect, grows to 2m, yellowish flowers, seeds in capsule, pungent smell, tap root, dicot	Shattering, water, wind	Controls nematodes
Sowthistle	<i>Sonchus oleracius</i>	Dicot, has latex, annual, erect, stem hollow, tap root, serrated leaves, tuft of hair on fruit	Wind, water	Vegetable, fodder, medicinal
Black night shade	<i>Solanum nigrum</i>	Erect, dicot, tap root, branched stem, annual	water	vegetable
Ground cherry	<i>Physalis peruviana</i>	Erect, dicot, branching, fruit encased in membrane, tap root, soft wooded stem	Water, wind, man	Ripe fruits eaten, jam. Sauce. Unripe poisonous
Pig weed	<i>Amaranthus hybridus, spinosus, retroflexus</i>	Errect, spines ( <i>spinosus</i> ), dicot, tap root, succulent stem	Animal, man, animals, water, medicine	Vegetable, fodder, green manure

Common name	Scientific name	Description	Dissemination	Economic importance
Galant soldier	<i>Galinsoga parviflora</i>	Dicot, tap root, erect, branches, soft stem, annual	Wind, cultivation	Fodder, medicinal
Devil's thorn	<i>Emex australis</i>	Prostate stem, dicot, tap root, has spines, seed propagation, leaves oval	Animals, man, water, implements	Fodder, green manure
Chinese lantern	<i>Nicandra physalodes</i>	Dicot, tap root, fruit encased in membrane	Water, wind	Green manure Aesthetic (Chinese)
Nogoora bur	<i>Xanthium pungens</i>	Tap root, dicots, rough green blotched purple leaves covered with stiff hair, fruits have burrs (thorns)	Animals, water, man	Contaminants in wool, poisonous to livestock
Fleabane	<i>Conyza sumatrensis, bonariensis</i>	Dicots, biennial, greenish stems with hair, erect, serrated leaves	Wind, water	Fodder, green manure
Kikuyu grass	<i>Pennisetum clandestinum</i>	Underground rhizomes, seeds, leaf blades, grass, perennial, roots at the node. roots fibrous	Cultivation, man as lawn	Lawn grass, fodder



Common name	Scientific name	Description	Dissemination	Economic importance
Couch grass	<i>Digitaria scalarum</i>	Perennial, grass fibrous roots, creeping grass, underground rhizomes, seeds	cultivation	Fodder, lawn
Love grass	<i>Setaria verticilata</i>	Annual, grass, linear leaf blades, has bristles	Animals, man, water, wind	Fodder, irritant
Purple/ Yellow nut sedge	<i>Cyperus rotundus/esculentus</i>	Sedge, perennial, stem with triangular cross section, produce seeds and tubers	Cultivation, water	Agar batties (sweet scented sticks)
Wild oat	<i>Avena fatua</i>	Grass, parallel veins, fibrous roots, mimicry oat, erect	Crop contamination	fodder
Wild finger millet	<i>Eleusine indica</i>	Grass, annual, stems & leaves hairy, fibrous roots, erect, mimicry millet	Crop contamination	fodder
Purple & Red Witch weed	<i>Striga hermonthica asiatica</i>	Parasitic on maize, sorghum, sugarcane, upland rice, tap root	Wind, Crop contamination, water, livestock	Green manure

# WEED CHARACTERISTICS

- High/some out put of seeds in good/bad environment
  - Crop mimicry (vegetative, seed, biochemical)
    - Seed dormancy (Striga up to 20 years)
  - Thorns, hairy, hooks, allergenicity, poisonous
  - High competitive ability (luxurious consumers)
    - Self compatibility
    - Power to regenerate
  - Wide tolerance to environmental condition
    - Allelopathy
- Dissemination capacity (Water, Wind, Animals, Shattering and Human activity)

# EFFECT OF WEEDS ON SEEDS

- Low marketable seed yield (yield loss due to weeds in your country?)
- Shriveled seeds, poor germination and emergence
- Low 1000 seed weight poor seed quality
- Weed/crop seed contamination- Quality criteria
- Alternate host to pests and diseases- indirect

## WEED CONTROL OPTIONS

- Preventive (quarantine/law, education, research)
- Mechanical/Physical (roguing, hoeing, mowing, flooding, mulching, burning/flaming, tillage)
- Cultural (crop competition, allelopathy, spacing, intercropping, fertilizer placement, irrigation and drainage, early planting, liming, crop rotation)
- Biological control: insects, pathogen, allelopathy
- Chemical weed control (herbicides- pre and post emergence)
- Integrated weed control (most recommended)