What Weeds Tell Us About Our Soil

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What is a weed?

It’s nothing more than a plant growing in the wrong place.

They grow abundantly wherever people have made mistakes!

Weeds are specialists-they will survive in circumstances where our cultivated plants cannot stand up against natures caprices.

For our discussion today, we will look at 3 major weed groups:

1. those that thrive in acid soil
2. crust formation and/or hardpan
3. those that follow human steps and cultivation

Plants that survive acid soil indicating increasing acidity include:

Sorrels
Docks
Fingerleaf weeds
Ladys thumb
Horsetail
Hawkweed
Knapweed

2nd group that survive in crust formation/ hardpan include:

Field mustard
Horse nettle
Penny cress
Morning glory
Quack grass
Camomiles
Pineapple weed

Hard pan is formed when wet soil is turned by the plough or standing water dries up in the surface layers.

Hard crust is formed when wet disking or soil dries up after having been cultivated before it has settled, or as consequence of too deep plowing.

Fields are planted too frequently to grow grain crops with insufficient root and manure crop rotation in between.

The third major group frequently spread out with compost, manure, and wherever people work the land.

These include:

Lambsquarter

Plantain

Chickweed

Buttercup

Dandelion

Nettle

Prostrate knotweed

Rough pigweed

Mallow

It is the increase of weeds of the acid or moist groups that is the most alarming sign.

Garden weed?

A plant that is:

1. Undesirable where it grows.
2. Causes economic losses or ecological damages
3. Creates health problems for animals or humans.

Noxious Weed:

Any plant designated by federal, state, or local government officials as injurious to public health, agriculture, recreation, wildlife, or property

What do weeds do to soil?

Not only do weeds protect bare soil; over time, they improve the soil.
Their roots break up soil to improve aeration and extract nutrients. As weeds' roots die, they, along with weeds' dead leaves and stems, decompose to enrich the ground with humus. Jul 13, 2021

The problem with weeds is that they are robbers.

They rob nearby plants of water and nutrients.

If large enough, they rob sunlight as they shade garden plants.

Another problem with weeds is they can harbor pests that spill over to your garden plants. Horse nettle, for example, is a relative of potato that gives potato beetles a start early in the season before they move onto potatoes.

Lambsquarters can host verticillium wilt, a disease that can also afflict tomatoes.

Some weeds secrete chemicals into the soil that inhibit growth of nearby plants. Lambsquarter is one of many weeds shown to depress growth of neighboring vegetables such as corn and tomato.

Noxious weeds of South Dakota:

American or common wormwood
Canada thistle
Field bindweed
Hoary cress
Leafy spurge
Perennial sow thistle
Purple loosestrife
Salt cedar

Canada thistle

Common wormwood

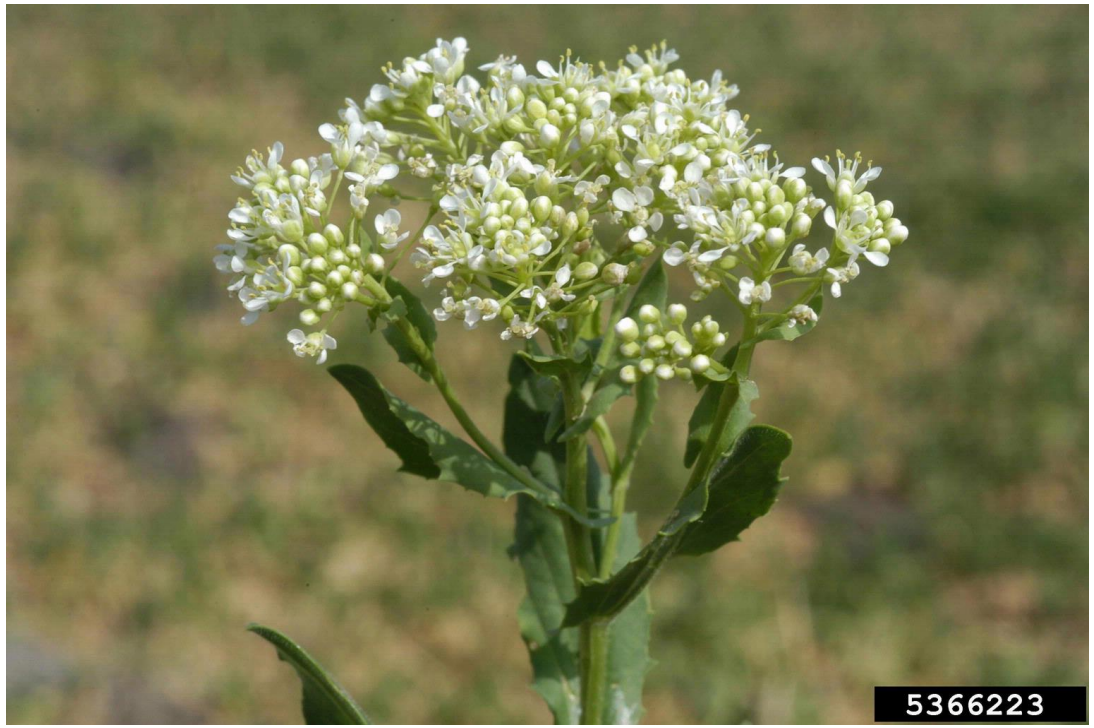
Once this gets established in a pasture or range area, it is very difficult to remove and can have significant impacts on the quality of forage for wildlife and livestock.

Outcompetes native plants species and can reduce crop yields. It forms an extensive root system, often climbing or forming dense tangled mats.

Field bindweed

Hoary Cress

Deep-rooted perennial mustard
Highly competitive and aggressive



Leafy Spurge

Poisonous to some animals and unpalatable to most.
Can cause blisters on humans.
Low levels of infestation will discourage cows from grazing in a pasture.

Infests croplands, withstands cultivation, may impact recreation areas.

Salt cedar

Low in nutritive value
Unpalatable to cattle

Field sowthistle

Can be controlled by hand pulling or cutting prior to flowering

Invasive weed:

Non-native invaders that lack natural competitors or enemies to curtail their growth. They can overrun native plants, displace species, and alter ecosystems.

English Ivy

Many weeds :

Stabilize the soil
Add organic matter

Some are edible
Provide habitat and food for wildlife

Weeds are an indicator of your soil's health.

If you have large patches of one kind of weed, your garden is trying to tell you something.

Weeds can tell us what is wrong (or right) with the sod.

Weeds with deep taproots, such as dandelions and burdock, indicate compacted soil lacking in water, air and nutrients.

Weeds are a symptom of a troubled system.

Before you pull a weed, consider what it is telling you:

- Is soil lacking nutrients
- Was excessive fertilizer used
- Is soil not draining well
- Is soil compacted

Bindweed

Grows in crusty or compacted soil

Common Chicory can be indicator of rich soil-high in nitrogen-will grow well in alkaline, compacted soil.

Chickweed grows well in compacted soil

Chickweed can produce large numbers of seeds under cold temperatures
Rapidly colonizes any cool, moist area before winter or spring crops can become competitive.
Can limit winter vegetable production by competing for space, light and nitrogen.

"If you have groundsel, you have good soil"

Groundsel's pyrrolizidine alkaloids are harmful if ingested or touched.

Common names include staggerwort, simson, common ragwort

Dandelions *(Taraxacum officinale)* generally indicate poor soil that is low in calcium and compacted. The dandelions' taproots, however, are doing the job of breaking up the soil!

Dock (*Rumex* spp.)
and **goldenrod** (*Solidago* spp.) grow in wet, poorly drained soil.

Fragile fern *(Cystopteris fragilis)* grows in near-neutral, dry conditions. This pretty fern is the weed of the fernery and will propagate and overpower all other plants.

Henbit *(Lamium amplexicaule)* indicates high nitrogen.

Knapweed indicates rich soil, high in potassium.

Knotweed (*Polygonum* spp.) grows where the ground is compacted.

Lambsquarters *(Chenopodium album)* indicates rich soil, high in nitrogen.

Moss of most kinds indicate soggy, acidic soil that is low in nutrients.

Mullein *(Verbascum thapsus)* grows in acidic soil with low fertility. May need to make your soil more alkaline.

Mustard (*Brassica* spp.) grows in dry, sandy soil, high in phosphorus

- **Ostrich fern** *(Matteuccia struthiopteris)* indicates an exceptionally fertile location.

- **Oxalis**, or **wood sorrel**, indicates low calcium and high magnesium.

Ox-eye daisies *(Leucanthemum vulgare)* grow in acidic, often soggy soil with poor fertility.

- **Pearly everlasting** *(Anaphalis margaritacea)* grows in acid soil that is low in nutrients.

Peppergrass *(Lepidium verginicum)* indicates sweet soil.

Plantain (*Plantago* spp.) grows in compacted, sour soil with low fertility and often indicates heavy clay.

Like prostrate knotweed, it has evolved to survive being trampled and can grow in heavily trafficked garden paths.

Red Root Pigweed (*Amaranthus* spp grows in rich soil with high levels of readily available nitrogen.

Purslane *(Portulaca oleracea)* pre fers rich soil and is an indicator of high phosphorus.
Like dandelions, purslane is edible and offers health benefits

Quackgrass *(Elymus repens)* will grow in heavy clay or compacted soil.

Queen Anne's lace *(Daucus carota)* grows where the soil is poor, but on the sweet side.

Ragweed (*Ambrosia* spp.) indicates low fertility.

Stinging nettle *(Urtica dioica)* grows in rich, acidic soil.

Sheep sorrel *(Rumex acetosella)* indicates dry, sandy, acidic soil depleted of nutrients and low in calcium. Low in nitrogen

- **Yarrow** *(Achillea millefolium)* grows where potassium and fertility are low and the soil is sandy and dry. *Yarrow is found on poor, dry, sandy soil where little else will g*

Opportunistic plant

Will usually grow in thin or bare areas of your lawn

Can crowd out good grasses that are weakened

Hard frost causes it to die, turn brown and look uglier

Crabgrass (*Digitaria* spp.) grows where the soil has been depleted of nutrients and is low in calcium.

Crabgrass spreads by seed and from the rootings of nodes on the soil .
The seeds remain viable for at least three years in the soil.
Mulch, hoe, and hand pull
To control it.
Solarization also works.

Soil solarization is a non-chemical method of using the sun’s energy to heat up soil and control pests.

The process involves covering moist soil with a clear plastic tarp during hot weather .

The heat can kill or weaken many soil-borne pathogens, nematodes, weed seeds, and seedlings, while also reducing the population of insect pests.

Solarization can be used on any soil type, including rock soils and can be done on a small or large scale.

WEEDS

THEY'RE NOT ALL BAD but do need to be controlled

#1 rule: NEVER LET THEM SEED
Weed early when weeds are young.
Pull them out or cut them off below the soil line.
Keep your digging shallow so new weed seeds aren’t brought to surface

Clean your gardening tools when you move from one area to another

Be careful when you buy materials from garden centers-weed free mulch, manure, compost and, soil.

If you have time before planting:
Cover weedy patch with landscape fabric, black plastic, an old carpet, etc.

Once you have seeded, do not till garden area if it is filled with perennial weeds.

This would break up the underground tubers and spread weeds around.

Apply layer of mulch

Weed seeds have a harder time pushing through mulch (which also blocks sunlight)

Water right around your plants. If you sprinkle entire garden, you will be watering weeds.

Establish a weed-free perimeter around garden. Mow or mulch the area or pull or dig up weeds as they emerge.
This will reduce the number of new weed seeds in the area you want to protect.

Perennial weeds come back year after year;
are more difficult to control.
You must dig up any roots, underground tubers, and rhizomes without leaving fragments behind. New weeds can grow from pieces that break off and remain in the soil.

Cut off the emerging green part of the weed with your hoe or mower. Repeat this process quickly each time it regrows. The underground plant parts will become weakened and may eventually die.

When digging out weeds, try to remove the taproot or as much as you can. May need to do this several times.

When pulling out weeds, wait until the soil is moist and grasp low on the stem to avoid it breaking root.

You will soon find that you won’t spend as much time weeding in following years.

Look at bare ground. It’s apt to be blown away by wind or washed away by water. Thankfully, ground is not bare for long before lambsquarters, pigweed, smartweed, and other plants we normally call weeds rush in to clothe the soil and protect it from the elements.

Not only do weeds protect bare soil; over time, they improve the soil several ways.

Their roots break up soil to improve aeration and extract nutrients. As weeds' roots die, they, along with weeds' dead leaves and stems, decompose to enrich the ground with humus.

Weeds probably correct mineral imbalances in the soil. Contrast the diversity of plants in an uncultivated field with the uniformity of plants in a weed-free cornfield.

In the uncultivated field, each plant draws a different balance of nutrients out of the soil; in the cultivated cornfield, corn plants are taking up only what they need. A few weeds there might take up the slack and balance out any proportional excesses of certain nutrients left in the soil after the corn.

A layer of any weed-free organic material enriches and improves the soil while it keeps weeds in check. Possibilities here include arborist wood chips, sawdust, grass clippings, straw and pine needles.

One of the best ways to maintain the upper hand with weeds is to avoid turning over the soil — ever — with a rototiller, plow, garden fork or shovel. Buried within every soil are myriad weed seeds, dormant. Turning over the ground exposes those seeds to light and air, awakening them.

Finally, many weeds make good eating.

Enjoy sweet revenge as you turn pigweed, lambsquarter, purslane and other edible weeds into part of your next meal.

Join us on August 13th Karen and Karla will be sharing “Plants as Medicine”