UNITED STATES BOTANIC GARDEN
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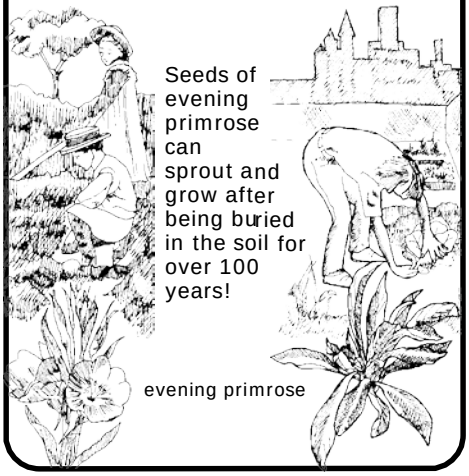
WEEDS Science Page

DID YOU KNOW?

Weeds are plants growing where they are not wanted. They can quickly grow and take over bare patches of soil. Weed seeds can be buried in the soil for many years. When they are uncovered, they can still sprout and grow.



Seeds of evening primrose can sprout and grow after being buried in the soil for over 100 years!

evening primrose

WEED LIFE CYCLES

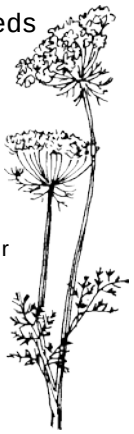
Annual weeds complete their life cycle in a single season.

Seeds of annuals sprout and grow into mature plants. After making seeds, the plants die.

lambsquarters

Biennial weeds live for two growing seasons.

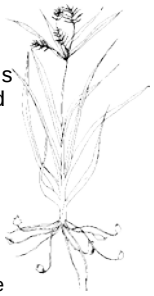
During the first growing season, they make food that is stored in their underground stems or roots. In the second season, they use the stored food to make flowers and seeds.



Queen Anne's lace

Perennial weeds live year to year.

Perennials die to the ground each growing season. But their underground roots or stems stay alive and send up new shoots at the start of the each growing season.



yellow nutsedge

WEED SEEDS

Most weeds make lots of seeds. Weeds also have unique ways to spread their seeds.

Dandelion seeds have parachutes that float in the wind.

Burdock seeds hitch a ride on fur and clothing.

WEEDS ARE HARDY

Most weeds can grow very rapidly, and they can grow in many different places.

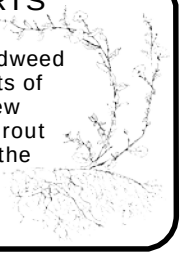
fireweed

WEEDS GROW FROM PLANT PARTS

Many weeds can also sprout from roots, stems, or leaves.

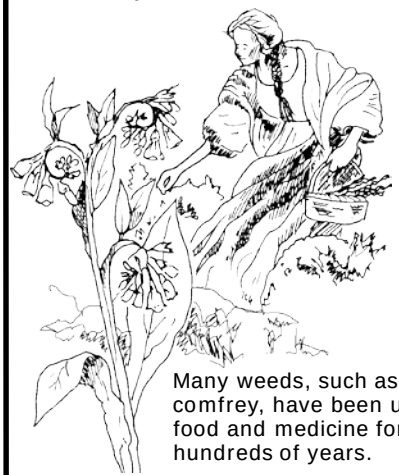
A small piece of stem or leaf of common purslane can grow into a new plant.

Field bindweed grows lots of roots. New plants sprout up from the roots.

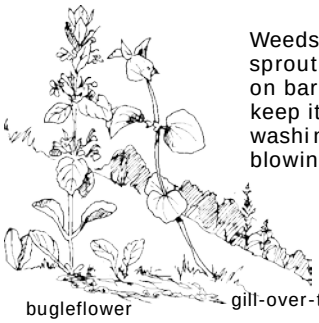


WEEDS CAN BE FRIENDS...

While weeds can become pests in fields, lawns, and gardens, they can also be useful. They can be used as food or medicine for humans and animals. They can protect and improve the soil. They can also be beautiful to look at!



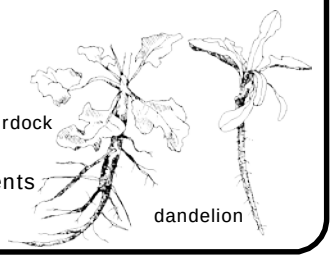
Many weeds, such as comfrey, have been used as food and medicine for hundreds of years.



bugleflower

gill-over-the-ground

Weeds quickly sprout and grow on bare soil, and keep it from washing or blowing away.



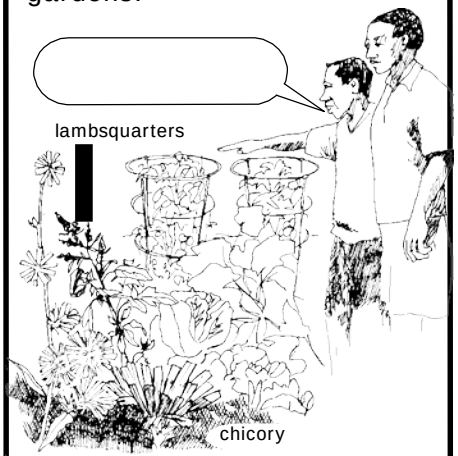
burdock

dandelion

Deep-rooted weeds can bring up nutrients from deep in the soil. When they die, weeds add organic matter to the soil.

...AND CAN BE FOES!

It can be difficult to get rid of weeds, especially in areas where humans have disturbed the soil. Weeds can reduce crop yield in fields and gardens.



lambsquarters

chicory

Weeds compete with crops for space, water, sunlight, and nutrients.

CIVI ECOLOGY LAB

Cornell University

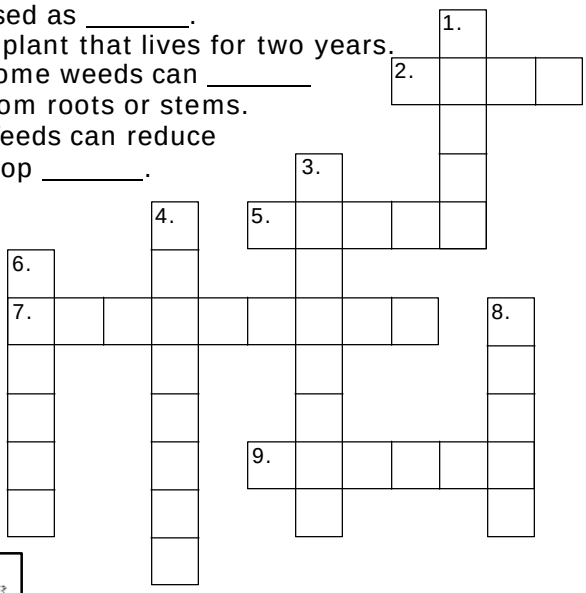
CROSSWORD PUZZLE

Across

2. Grows where it is not wanted.
5. Weeds can be _____ in gardens.
7. A plant that lives from year to year.
9. Completes its life cycle in one season.

Down

1. Weeds have many ways to spread _____.
3. Some weeds can be used as _____.
4. A plant that lives for two years.
6. Some weeds can _____ from roots or stems.
8. Weeds can reduce crop _____.



TRY THIS

WHERE DO WEEDS COME FROM?

What you need

* about 4 liters (1 gallon) of soil from three different places, such as a garden, an empty lot, a roadside, or a lawn
* 3 growing containers of the same size (about 30 cm [1 ft] in diameter)
* hand lens
* 3 popsicle sticks
* paper and pencil
* weed identification book

What to do

1. Use a hand lens to search each soil sample for weed seeds. Remove any large stones or debris from the samples.
2. Punch drainage holes in the bottom of the three containers, if needed.
3. Place each soil sample in a container. Use the popsicle sticks to label where they came from.
4. Place the containers outside or in a well-lit room. Water the soil in each container for a few days until some weed seeds sprout. Try to identify the weed seedlings.
5. Count the number of weeds over a 4-week period or longer, and measure the area of the soil surface in each container. Then calculate the number of weeds per square meter (or per sq yard) for each soil sample.
6. Summarize your results on a chart and/or a graph. For example, you can put soil type on the x-axis and weeds/m^2 on the y-axis.
7. Can you think of a hypothesis for why more weeds are growing per m^2 in one type of soil than in another? How might you test this hypothesis?

SPOTLIGHT ON RESEARCH

Velvetleaf Seeds Are Not All Alike

Velvetleaf is a large weed that produces thousands of seeds. It can cost farmers millions of dollars in lost crop yields. Scientists are studying velvetleaf seeds, so that they can find better ways to control it. In one study, scientists at McGill University in Canada tried to answer these questions: Do large velvetleaf seeds sprout (germinate) better than small ones? Do seeds from one plant sprout better than seeds from another?

They randomly picked 10 velvetleaf plants, and then collected up to 1000 seeds from each plant. They separated the seeds from each plant by weight—small, medium, and large. Then they put the seeds in growth chambers. Inside the chambers, the moisture, temperature, and daylight were similar to what one would find outside in the spring.

More medium-sized seeds sprouted than heavier seeds. Some of the heavier seeds became dormant, that is, they may sprout at some later time. The percentage sprouting also depended a lot on which plant the seeds were from.

The scientists believe that the differences between seeds may help velvetleaf plants survive. Different seeds may sprout and grow better under different conditions. The live but dormant seeds could be a kind of insurance for the velvetleaf plant. Even if all the velvetleaf plants in a field die off, the dormant seeds in the soil could sprout later and grow into new plants.

Source: Baloch, H.A., DiTommaso,A., and Watson, A. K.(2001). Intrapopulation variation in Abutilon theophrasti seed mass and its relationship to seed germinability. Seed Science Research. 11, 335-343.

JOKE

Knock! Knock! Who's there?
Weed. Weed who?
We'd know if you would answer the door!

Crossword puzzle answers
Across: 2. weed; 5. pests; 7. perennial; 9. annual.
Down: 1. seeds; 3. medicine; 4. biennial; 6. sprout; 8. yield.