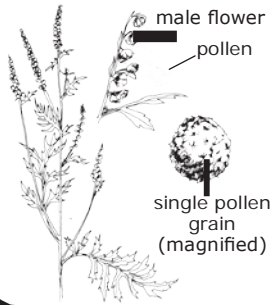


COMMON RAGWEED Science Page

DID YOU KNOW?



Pollen from common ragweed and giant ragweed is the main cause of hay fever in North America. Each ragweed plant can produce up to a billion pollen grains. Wind can carry the light pollen up to 640 km (400 miles). It is easy for people to inhale the tiny pollen grains.

ORIGINS

Most of the 30 or so ragweed species are native to North and South America. Common ragweed is the most widespread of all the ragweeds. It was accidentally imported to Europe in the 1940s, and has spread widely throughout many parts of Europe since then.



Common ragweed often grows on abandoned farms in Eastern Europe.

THE COMMON RAGWEED PLANT

Common ragweed is an annual, meaning it lives only one season. It is one of the first plants that grows where the soil has been disturbed -- in fields, gardens, roadsides, and waste places.

The plant grows up to 150 cm (5 feet) tall.

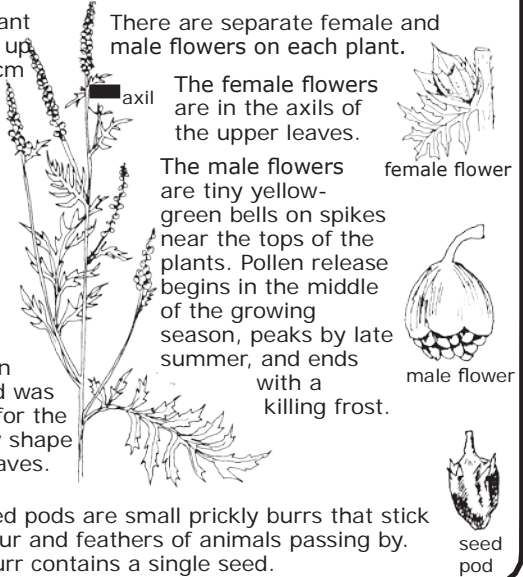
There are separate female and male flowers on each plant.

The female flowers are in the axils of the upper leaves.

The male flowers are tiny yellow-green bells on spikes near the tops of the plants. Pollen release begins in the middle of the growing season, peaks by late summer, and ends with a killing frost.

Common ragweed was named for the raggedy shape of its leaves.

The seed pods are small prickly burrs that stick to the fur and feathers of animals passing by. Each burr contains a single seed.



CLASSIFYING COMMON RAGWEED



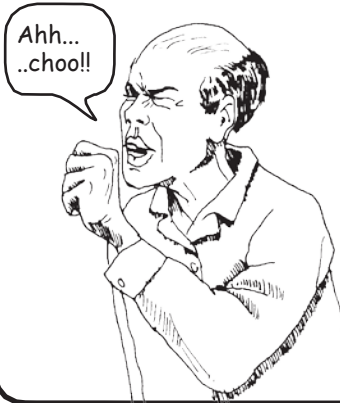
FRIEND...



Common ragweed provides food and shelter for animals. Rabbits and grasshoppers eat the leaves. Voles and many different species of birds eat the seeds.



...OR FOE?



Many people suffer from hay fever and asthma caused by ragweed pollen. Common ragweed and giant ragweed cause more hay fever than all other plants put together.



PUZZLE

Word Scramble

Pollen from Common and Giant (1) AWREGED causes more hay fever than all other plants put together. Ragweed belongs to the (2) SACERAETEA family, and the genus (3) SOMARAIB. (4) MOCOMN ragweed is the most widespread of all the ragweeds. The scientific name of common ragweed is *Ambrosia* (5) MEISFIAROTAILI. It is an (6) LUNANA, meaning it lives only one season. (7) LEAM ragweed flowers are on spikes near the tops of plants.



TRY THIS

Find a plant more salt-tolerant than common ragweed

What you need

- * salt solution: 15 ml (1 tablespoon) of salt in 1 liter (a quart) of water
- * water * paper towels * waterproof
- * seeds to test * clear plastic cups marker

What to do

1. Go to a roadside that is heavily salted in winter. Collect some ragweed seeds from plants that have over-wintered. CAUTION: DO THIS ONLY UNDER ADULT SUPERVISION, AND WATCH FOR TRAFFIC! You will also need to get seeds of salt-tolerant cover crops, such as trefoil or alfalfa, from a gardening supply store.
2. You will need six cups for each kind of seed you test—three will be moistened with salt water and three with fresh water (the control). For the ragweed seeds, write “ragweed” on the sides of six cups. Write “salt water” on the sides of three of the cups and “fresh water” on the other three. For each of the other kinds of seeds you test, label six cups in a similar way. Line the inside of all the cups with a paper towel and stuff paper towels into the center of the cups.
3. Place seeds between the towels inside of the cups. Put 10 seeds evenly spaced in each cup, about 2-3 cm (1 in) from the bottom of the cup. Label what kind of seeds are in each cup.
4. Moisten the towels in each cup with either salt water or fresh water. The seeds should be moist, but not under water.
5. Keep the cups in a warm place, not in direct sunlight. Add either fresh or salt water as needed.
6. Count the number of seeds that germinate in each cup over a couple of weeks. Make a graph to record your results.



SPOTLIGHT ON RESEARCH

Roadside Ragweed

Dr. DiTommaso, a weed scientist at Cornell University, noticed that common ragweed forms dense stands along roadsides where large amounts of salt are applied to help remove snow and ice in winter. Dr. DiTommaso hypothesized that this is because ragweed can easily adapt to salty soils. That is, ragweed can develop the ability to sprout and grow in salty soils. Other plants cannot adapt to salty soils as well.

To test his hypothesis, Dr. DiTommaso designed and carried out an experiment to see how well ragweed seeds can germinate in salt water. He compared seeds taken from salty roadsides with seeds taken from fields. According to his hypothesis, the ragweed seeds taken from roadsides should germinate better in salty water than the seeds taken from fields.

He collected ragweed seeds from along roadsides and from different fields. He placed seeds from each location on filter paper in sealed dishes, and moistened the filter paper in each dish with distilled water (the control) or with one of four different salt solutions, from slightly salty to very salty. All the dishes were kept in controlled temperature and light conditions (similar to spring time conditions). Then he counted the number of seeds that germinated in each dish for 21 days.

In the saltiest water, 31% of the ragweed seeds from roadsides germinated, and only 3% of the seeds from fields germinated. These results very strongly support the hypothesis: ragweed can easily adapt to salty soils. This study may explain why attempts to grow groundcovers along salty roadsides have failed -- ragweed quickly crowds them out. Plant scientists now need to test different groundcovers to find out which ones can compete with ragweed in salty soils.

Source: DiTommaso, A. (2004). Germination behavior of common ragweed (*Ambrosia artemisiifolia*) populations across a range of salinities. *WeedScience* 52:1002-1009.



QUOTE

“A square-mile field of ragweed plants can yield sixteen tons of pollen in a year, yet only a millionth of a gram can start an allergic response of the kind that can send many of us into fits of sneezing, scratching, coughing and wheezing.”

Source: Nesse, R.M. and Williams, G. (1994, Nov/Dec) Nothing to Sneeze At. *TheSciences*, pgs. 34-38.

Answers to puzzle: (1) ragweed; (2) Asteraceae; (3) male
Ambrosia; (4) common; (5) *artemisiifolia*; (6) annual; (7)