

PAPALO Teaching Tips



LEARNING OBJECTIVES

Youth will be able to:

- * Identify papalo.
- * Explain the meaning of the scientific name for papalo.
- * Explain how to grow and harvest papalo.
- * Prepare a recipe using papalo.



HOW TO USE THE PAPALO SCIENCE PAGE

Point out papalo growing in the garden or show some papalo that has been harvested. (Note that a subspecies of papalo has lance-shaped leaves, rather than egg-shaped leaves as shown in the drawing. The subspecies with egg-shaped leaves is more common, but it is possible that lance-shaped leaved papalo is growing in the community garden.) Give youth the opportunity to smell and taste it, and ask if anyone knows what the herb is called. Youth from Latin American countries may be familiar with *Porophyllum ruderale*, but they may know it by a different common name. In Mexico it is called papalo, or papaloquelite. Explain that "Papalo" is a Nahuatl word. Nahuatl is the name of a group of native Americans that inhabit Central America. "Quelite" is a Spanish term that refers to a wide variety of edible greens gathered by native peoples of Mexico. In Bolivia, where it grows to 1.8 meters high, *Porophyllum ruderale* goes by the common name "Quilquina" or "cravo de urubu" (black vulture's marigold).

After youth have read about how papalo is classified, point out that many common flowers belong to the Compositae family, including dandelions, daisies, chicory, marigolds, and sunflowers. The "flowers" of these plants are actually many small flowers packed together in a head. In sunflowers, chicory, and daisies, showy ray flowers grow at the edge, and smaller disk flowers

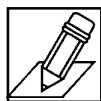


ray flower disk flower
grow in the center. Youth may dissect flowers, such as daisies or dandelions, and examine a single flower with a magnifying lens.

Have youth examine the pores on the leaves of papalo, and point out that "*poro*" means "pore" and "*phyllum*" means "leaf." Emphasize that the oil that gives papalo a strong scent and flavor is made in glands in the leaf, and the pores are the openings to these glands. After youth read "Spotlight on Research," explain that scientists think many chemicals produced by plants deter insects from feeding on the plants. Often these chemicals produce a strong odor.

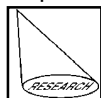
After youth read the Science Page, emphasize that in the northern parts of the U.S., papalo grows for only one season, and is usually killed by frost before it produces seeds. In southern parts of the U.S., where the growing season is longer, it will grow taller. In Central America, papalo can grow year-round and produce seeds, which are carried by the wind, so the plant is easily spread.

Explain that papalo has many uses in traditional medicine in Central America, but its effectiveness as a medicine has not been researched by scientists. *Tell youth that plants should not be used for medicinal purposes without the recommendation of a doctor.*



CROSSWORD

Answers: Across: 2. family; 3. rubble; 5. fresh; 6. young; 7. soups (or stews, salsa, or salad)
Down: 1. cilantro; 2. freezing; 4. pores



SPOTLIGHT ON RESEARCH

The source for this information is: Guillet, G., Bélanger, A. and

Arnason, J.T. 1998. "Volatile monoterpenes in *Porophyllum gracile* and *P. ruderale*: identification, localization and insecticidal synergism." *Phytochemistry* 49: 423-429.

Explain that this research is an example of chemical ecology, which is the study of the natural chemical mechanisms that organisms have evolved to help them survive. There are many examples of this in nature. For example, many flowers have strong scents that attract insect pollinators. Many insects secrete pheromones that attract mates. In the "Spotlight on Research" example, the chemicals in papalo have the ability to retard the growth rate of corn borers. Many other plants have evolved similar mechanisms to deter insect attack. You may be familiar with pyrethrum, which is a natural insecticide made from a plant that has chemicals that kill insect attackers. Besides working to understand how natural chemical mechanisms work, chemical ecologists also try to find ways to use these natural mechanisms for practical purposes, like reducing damage by insect pests.



RECIPES

Preparing these recipes requires no cooking, and should be a fun activity for youth. Point out that papalo can be substituted for cilantro in almost any recipe. In some parts of Mexico, cilantro is used in place of papalo, but papalo is much more authentic. In fact, one travel writer said that he can judge how authentic a local restaurant is by whether they use papalo or cilantro! Salsa and guacamole with tortilla chips and cut up raw vegetables make a delicious, nutritious snack. (If you purchase tortilla chips, check the nutrition facts for salt and fat content. For a more nutritious snack, try to choose a brand that is low in both these ingredients.)