



Flora of North America

## *Plants and People*

What do willow trees, ginseng, and American Yew have in common? What do cranberries, sunflowers, pecans, and wild rice have in common?

Plants are a primary source of medicines, fiber, food, fuel, shelter, and other items in everyday use by humans. Roots, stems, leaves, flowers, fruits, and seeds provide food for humans. Wood is a source for lumber, paper, and fuel. Fibers are a source of paper, cloth, and rope. Traditional medicine relies on many plants, and many current medicines have been developed from plants. Knowledge of wild plants was important to the development of more than half of the top 150 prescribed drugs in the United States. This lesson is designed to deepen students' knowledge of plants in their local environments.

The end product of this activity for middle school students is an illustrated journal about edible and medicinal plants that grow in your region. Students develop skills in researching a topic, observing plants, photographing (or drawing) plants, and writing. The additional enrichment activities introduce human modification of plants.

**Learning goals:** to understand the diverse roles of plants in the ecosystem; to understand human use of plants in their daily lives, and how humans modify plants in the past and present

**Key concepts and terms:** ethnobotany, economic botany, medicinal plants, agriculture, horticulture, plant domestication, cereal, genetically modified organisms (GMO)

### **Hands-on Activity: Illustrated Plant Journal**

#### **Time frame**

20 minutes to introduce the activity and allow students to brainstorm; out of class time for student research; 2 hours for field activity; out of class time for student preparation of journal

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#### *Materials for Creating an Illustrated Plant Journal*

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- unlined paper (bound or unbound journal)
  - pencil or pen
  - library or internet resources
  - camera and tape or glue to affix photographs to paper(optional)
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#### **Procedures**

1. **Classroom introduction** – Ask students in the class to list the plant foods that they have eaten in the last week. Ask students to consider what plant foods they might have eaten if they lived 200 years ago, 2000 years ago. As a class, brainstorm to develop a list of local native plants they think might be used as food, medicine, or building materials. Students should keep a record of this list of plants.

2. **Background research** – Have students use library or internet resources to research native wild edible and medicinal plants. Ask students prepare a list of at least 20 species that occur in your region and record what part of the plant is used (or was used traditionally), how it is prepared, when it is harvested, and additional notes of interest.
3. **The fieldwork** – Go for a walk in a local park, woodland area, or botanical garden. Ask students to photograph or draw plants they encounter that humans can use as food or medicine.
4. **Producing an illustrated journal** – Have students compile their photographs or drawings into a journal and provide captions to accompany each plant entry. Students may need to conduct more library research to prepare text for the plants they photographed or sketched.

**CAUTION!** *Some plants cause allergic reactions if touched. Some are poisonous if eaten. Don't risk it. Never eat any part of an unknown plant.*

### Enrichment Activities

- How do you create a new orchid hybrid? Design a new orchid for the horticultural trade by discovering how new hybrids are formed. Decide what features you would like to enhance and which parental orchids would be best to cross. Illustrate and name your new orchid, and prepare a promotional flyer for it.
- What's your favorite cereal grain? Research the history of its domestication. Find out what techniques biologists use to track down the story of domestication. Prepare a brief report on your favorite grain. Swap your report with another student and peer-review the report.
- Why does the Flavr-Savr tomato differ from a homegrown? Your teacher will separate the class into several groups. As a team, research a genetically modified plant or animal. Use this information to prepare two statements: for and against GMO technology. Your teacher will moderate a class debate on the issue.
- Can plants cure cancer and the common cold–Which plants have anti-bacterial properties, anti-viral, anti-fungal, anti-cancer? Discover the chemical properties that make some plants effective medicines.

### Explore more!

*Find out more about how people, past and present, use plants in their everyday lives.*

**Ethnobotanical Leaflets** – Articles on plant uses around the world, book reviews, and career information are available in this web Journal from the Southern Illinois University at Carbondale.

<http://www.siu.edu/~eb/>

**Herb Society of America** – Since 1933, this Society has promoted and shared the knowledge of herbs. As well as information on herbs and their cultivation, this site has a Just for Kids section.

<http://www.herbsociety.org/>

**The Garden Club of America** – Links to horticultural societies, botanical gardens, and related organizations are provided on the Club's website.

<http://www.gcamerica.org/>

**Dr. Duke's Phytochemical and Ethnobotanical Databases** – Search this site by plant use or chemistry. The databases has 80,000 records of medicinal plants, native food plants, and more.

<http://www.ars-grin.gov/duke/>

### **Suggested Readings and Resources**

- Avise, J. C. 2004. *The Hope, Hype, & Reality of Genetic Engineering: Remarkable Stories from Agriculture, Industry, Medicine, and the Environment*. Oxford University Press.
- Druse, K. 2000. *Making More Plants: The Science, Art, and Joy of Propagation*. Clarkson N. Potter Publishers.
- Facklam, H. and Facklam, M. 1990. *Plants: Extinction or Survival*. Enslow Publishers. [An overview of ethnobotany, agriculture, biotechnology, and related plant topics, geared at secondary school level]
- Heiser, C. B., Jr. 1993. Ethnobotany and economic botany. In: Flora of North America Editorial Committee, eds., 1993+. *Flora of North America North of Mexico*. 7+ vols. Volume 1, pp. 199–206.
- Minnis, P. E. and Elisens, W. J. 2000. *Biodiversity and Native America*. University of Oklahoma Press.
- Moerman, D. E. 1998. *Native American Ethnobotany*. Timber Press.
- Nabhan, G. 1989. *Enduring Seeds: Native American Agriculture and Wild Plant Conservation*. North Point Press.
- Plotkin, M. J. 2000. *Medicine Quest: In Search of Nature's Healing Secrets*. Viking.
- Sumner, J. 2004. *American Household Botany*. Timber Press.

**NRC Content Standards:** Diversity and adaptations of organisms, interdependence of organisms

**Grades and levels:** middle school, with modifications for high school

High school educators: follow the chemistry and health connections using a lesson such as <http://accessexcellence.org/AE/ATG/data/released/0179-JohnNorton/index.html> or <http://www.actionbioscience.org/biodiversity/plotkin.html>