

**Natural Resources Management  
And Income Opportunity Series**



**Wild Plants  
For Income**

**Northeast Regional Center for Rural Development  
The Pennsylvania State University  
University Park, PA 16802**

**West Virginia University  
Extension Service  
Morgantown, WV 26506**

**R.D. No. 771**

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# Wild Plants for Income

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## Authors

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Anthony "Tony" Ferrise was a former professor and state extension rural development specialist at West Virginia University. His untimely death in November 1990 left many goals and this publication incomplete. We dedicate this "wild plant" information to Tony who stood in awe before white oak trees and greatly admired the dandelion.

Michael A. Breiding is an amateur botanist and owner of Outback Nursery located near Morgantown, W.Va. He has acquired considerable specialized knowledge on rhododendron culture and marketing and is regionally recognized in the mid-Atlantic and Lake States for his contacts with other nurserymen and professional plant growers. His primary responsibility for this publication was production and marketing information on wild plants used for ornamentals and landscaping.

Danita Sue Alt was a law intern at West Virginia University during 1990 and shared responsibility with Tony Ferrise for the legal aspects of this publication. She earned a juris doctorate degree at West Virginia University in 1991 and is presently an associate in a general law practice in Harrisonburg, Va.

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## Abstract

Wild plants were critically important to the survival of hunter-gatherer societies and to early European settlers in North America. Several native wild plants have been cultivated for food, fiber, medicine, landscape and ornamental uses. Income opportunities also exist for managing and harvesting wild plants in natural settings. This paper reviews income opportunities, legal and marketing issues related to the culture, management and harvesting of wild plants.

## Introduction

Most landowners want to be good stewards of their properties. Managing the plant resources can offer a feeling of pride, the ability to pass property on to heirs in better condition than received and monetary income.

Some landowners are motivated by pride while others are motivated by the need to pay taxes and bills. Trees, shrubs, vines and other plants on a piece of land are often an overlooked and unmanaged resource. The questions and answers in this publication deal with some of the more common legal, cultural and marketing aspects of wild plants typically found in the eastern United States.

Available resources for this study have prohibited the collection of specific information from all states. Therefore, specific statewide questions are limited to West Virginia. People contemplating the culture and marketing of plant materials in other states will need to check with corresponding agencies in that state.

Long-term protection and sustainability as well as acceptable environmental practices are necessary concerns when harvesting wild plants. Wild plants should not be viewed as a serendipitous gift from heaven. Wild plants are a resource. Management and concern for the future should be critical factors in deriving income from wild plants.

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Cooperative Extension Work in Agriculture and Home Economics, West Virginia University and the United States Department of Agriculture, Cooperating. Rachel B. Tompkins, Director, Morgantown, West Virginia. Published in Furtherance of Acts of Congress of May 8 and June 30, 1914.

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United States plant hardiness zone map.

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# Harvesting and Marketing Wild Plant Resources

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## Ownership

**Q.** *Do I own the wild plant resources on my land in West Virginia?*

**A.** A landowner does own the wild plant resources growing on his/her land and, for the most part, may do with these resources as he/she wishes. However, there are laws regulating what can be done with species of plants that are considered endangered or threatened. A landowner will need to get permission from the U.S. Fish and Wildlife Service to harvest these plants, and this permission will probably only be granted in limited circumstances. A list of these endangered, sensitive or rare plants can be obtained from the U.S. Fish and Wildlife Service; state departments of fish and wildlife, natural heritage programs, the West Virginia University Extension Service or state field offices of The Nature Conservancy.

**Q.** *Who owns the wild plant resources on other lands such as state parks and forests, national parks and forests, and Army Corps of Engineers property?*

**A.** Government agencies that own land (whether federal, state or local) have the same ownership rights to live plants or plant materials that a private owner would have.

**Q.** *What about rented property?*

**A.** The rental agreement (whether oral or written) would control the ownership of wild plant materials. If the lease does not mention wild plant ownership then the annual crops (such as nuts and berries) would normally be the property of the one paying rent. Unless there is a lease covering more than one year, the owner normally would own crops that take several years to reach maturity.

## Harvesting

**Q.** *May I harvest wild plant materials from state parks and forests, federal parks and forests, or the Army Corps of Engineers property?*

### ***In state parks and forests?***

**A.** You must have written permission from the "owner" or be liable to the owner for three times the value of what was taken. Permission to take materials from state forests should be obtained from the W.Va. Division of Forestry. Land in the state parks is owned by the Division of Natural Resources but is managed by the Division of Tourism and Parks. Permission should be obtained from both agencies. Normally, no plant materials can be legally removed from state parks. Lands in the Public Hunting and Fishing Areas are controlled by the Division of Natural Resources/Wildlife Resources which requires written permission to remove any plant materials. The Department of Highways is in charge of all highways, roads and adjoining rights-of-ways and median strips.

### ***In national parks?***

**A.** The management policies of the National Park Service (NPS) indicate that a park superintendent can designate fruits, berries, nuts or unoccupied seashells that can be gathered for *personal* use or consumption (not for sale) as long as such gathering does not adversely affect the park wildlife, plants, or other resources.

### ***In national forests?***

**A.** Harvesting may be allowed depending on the location where harvesting would occur, number of plants to be harvested, the species of the plant, the reason for harvesting and if the entire plant will be harvested or parts such as seeds, twigs, etc., of the plant. This is to allow people maximum use of national forests without endangering the habitat. Generally, a forest service permit and fee is required to harvest entire plants or

large amounts of plant parts for commercial use or resale. These permits for harvesting on national forest lands can be obtained from the offices of the national forest supervisor. These addresses are listed on page 8 of this publication. If a plant in question is a sensitive plant, collectors must be able to identify the plant and must represent a college or university. If a plant is federally listed as an endangered species, the collector must have a permit from the U.S. Fish and Wildlife Service. Harvesting plants for landscape purposes is generally discouraged.

#### ***On Army Corps of Engineers property?***

**A.** By federal regulations, individuals are not permitted to harvest wild plant resources on any Army Corps of Engineers property except by permission of the district engineer. Such permission is rare and is granted only in cases of research, data collection or other unique situations. West Virginia is included in several Corps districts. In the Pittsburgh area the address is: District Engineer, Federal Building, 1000 Liberty Ave., Pittsburgh, Pa. 15222 and for Huntington the address is: Real Estate Division, Army Corps of Engineers, 502 Eighth St. (P.O. Box 2127), Huntington, W.Va. 25201, 304/529-5712.

#### ***Q. May I harvest plants on other public lands?***

**A.** Harvesting plants on public lands may or may not be allowed depending on who owns the land, e.g., local government, state government, national government, etc. In order to harvest plants on public land, permission is required and whether permission will be granted depends on the type of plant, the type of harvesting, and the effect it will have on the environment. In West Virginia check with the relevant state agencies listed on page 8 of this publication to learn what rules apply. In other states one must first determine whether the land is state owned or federally owned. If it is state owned, check with that state's Department of Agriculture. If the lands are federally owned, check with the appropriate supervisors.

#### ***Q. May I harvest plants on private lands that I don't own?***

**A.** In West Virginia, to harvest plants on private lands, you must have permission of the landowner or you will be violating trespass laws and could be subject to criminal and civil penalties. Written permission from the landowner is recommended.

## Legal Regulations

#### ***Q. What are the state laws dealing with harvesting?***

**A.** West Virginia has a law which says you may not pick or remove plant materials under the title of flora within 100 yards of a public road or you may be fined up to \$50 and face up to 3 months in jail for this offense.

#### ***Q. What penalties may I face if I am caught harvesting plants on private lands without permission?***

**A.** You can be in violation of civil or criminal laws or both. There are very few laws limiting the harvest of wild plants or plant materials from private land. There are a few that should be kept in mind.

1. Endangered species cannot be harvested without permission from federal and state authorities.
2. One must always have consent of the landowner or tenant. People who violate this law could face double or triple damages to the owner in addition to a fine and jail sentence.
3. Ginseng can only be harvested during a season which permits the berries to mature. The seasonal dates are typically set by a state agency dealing with natural resources, forestry, agriculture or environment.
4. Plants or parts of plants defined by the state law as noxious weeds cannot be harvested for sale, use or transplant. Currently these consist of marijuana or cannabis plants, poppy or opium and multiflora rose.

#### ***Q. If I harvest plants on my own land, must I have a permit?***

**A.** No permit is needed to harvest plants on your own property except for ginseng. This can be obtained from the W.Va. Division of Forestry.

#### ***Q. If I harvest plants on my own lands, must these plants be inspected?***

**A.** In West Virginia, plants must only be inspected if they are woody stemmed plants, however, this will vary as it is subject to any quarantines that may be imposed on certain plant resources. Any plant under quarantine must be inspected before it can be shipped anywhere within or outside the state of West Virginia. The West Virginia Department of Agriculture has inspectors who work in different

areas of the state and will identify and inspect these plants for you. To find out information in another state, contact that state's Department of Agriculture or other relevant state agencies.

**Q.** *If I harvest plants on my own lands, are there limits to the quantities I may harvest?*

**A.** Except for ginseng, there are no limits to the quantities that may be harvested, however, you should be careful of the damage you may be doing to the quantity and quality of the plant resources growing on your land. Certainly one should not destroy the long-term sustainability of plant resources.

**Q.** *If I want to harvest edible foods on my property, may I?*

**A.** You may harvest and offer for sale edible food products found growing on your property.

**Q.** *Can I be subject to liability if someone gets sick from eating any of these edible plant resources?*

**A.** Yes. When food or food products are marketed, there is an implied warranty of fitness that you are offering for sale a product that is fit for human consumption. This could result in a civil action brought by a person claiming injury. This person can sue the restaurant, etc., where he/she purchased the food and also the producer of such food. Depending on the seriousness of the injury, this type of damage could be extraordinary. When marketing food products, liability insurance is recommended.

Legally, you are responsible when selling food for human consumption. Attempting to carefully select the plant is not a defense to a lawsuit because by selling it you are presumed to be guaranteeing it is fit for consumption. A written statement that you make no guarantee of fitness (called a disclaimer) is recommended but courts frequently ignore such statements.

**Q.** *If I am going to market plants, herbs, etc., for medicinal purposes, must I be certain the product does what I say it will do?*

**A.** Yes. One has to be extremely careful when marketing for medicinal purposes. The Food and Drug Administration has stringent regulations on what drugs they will allow to be marketed. There is also the Magnuson-Moss Warranty Act which requires a warranty be set forth on consumer products. Ginseng is used by some for medicinal purposes and may be harvested, but the harvester usually does not process ginseng into a drug himself/herself. Harvesting of raw plant materials to be sold to drug manufacturers is allowed, but to make a drug yourself or say a certain plant will have certain effects may bring you under sanctions from FDA.

**Q.** *Do I, as a harvester, owe any legal duty to the landowner, such as not damaging property, leaving gates open, or leaving property in a safe condition without unforeseen damages such as large holes, etc.?*

**A.** Yes. You have a duty to leave premises in similar shape as you found them. Treat the property with the best of care so that you and others may be permitted to harvest on that land in the future. In addition, you may be liable if you do not leave the land in as good a condition as you found it.

**Q.** *As a landowner, do I have a legal duty to people who may come onto my property to harvest plants?*

**A.** Yes. Whether or not you charge people for coming on your property you should warn them of any hazards. If you are charging people you are also obligated to take all reasonable steps to eliminate the danger/hazards. This could include such steps as confining dangerous animals or fencing dangerous cliffs, holes or ponds. You are not normally required to take these stringent steps to protect trespassers but laws are changing. One exception to the trespasser rule involves young children. You are always responsible to eliminate dangers to young children who might be attracted to your property. This could include ponds, farm animals, machinery or even a family dog. If there is any chance young children might be attracted to your property, you should take steps to make your property as safe as possible.



# Business Organization And Issues

**Q.** *What do I need to consider in structuring a business?*

**A.** Generally businesses are organized as a sole *proprietorship*, *partnership* or as a *corporation*.

**A sole proprietorship** is a business owned and usually managed by one person.

*Some advantages are:*

- (1) being your own boss
- (2) ease of starting and ending the business
- (3) retaining entire profit
- (4) payment of no special taxes
- (5) pride of ownership

*Disadvantages include:*

- (1) risk of loss
- (2) unlimited liability
- (3) difficulty in management
- (4) large time commitment
- (5) few fringe benefits
- (6) limited growth
- (7) the fact that you are on your own
- (8) the business ends when the sole proprietor decides

**A partnership** is a business co-owned and managed by two or more people. In a general partnership, co-owners share in the business and business losses are considered personal losses. A limited partnership is composed of one or more limited partners as well as general partners. Limited partners invest money in business but do not necessarily manage the business and have limited liability for business losses.

*Advantages of partnerships are:* (1) greater pool of resources, and (2) management is shared.

*Disadvantages include:* (1) unlimited liability for general partners, (2) sharing of profits with others, (3) potential disagreements, and (4) the difficulty of ending the partnership.

**A corporation** is a business owned by one or more people (stockholders) which is operated under written permission from the state with the authority to act as a single individual in behalf of its owners. A prospective corporation applies to the secretary of state to be chartered and to get a license to practice in West Virginia.

*Advantages are:*

- (1) access to large amounts of money
- (2) limited liability
- (3) size
- (4) tax advantages
- (5) perpetual life, in that people come and go but the corporation still continues to exist
- (6) ease of changing owners
- (7) the separate ownership and management of the business

*The disadvantages include:*

- (1) cost of incorporation
- (2) increased paper work
- (3) filing of separate tax returns
- (4) becoming too big to function efficiently
- (5) high cost of compensation
- (6) more people are involved and more complicated procedures set forth to dissolve a corporation
- (7) income may be taxed twice—once as a corporate profit and again when paid as a dividend to the owners

**Q.** *What are the tax consequences of selling wild plant resources?*

**A.** Any income you receive as a result of your incorporated business will be considered income to you. Any profit made from the sale of plant materials must be recorded as income on your income taxes. To limit yearly taxes, one may want to incorporate or form a partnership in which the money flows into a business and not directly into your pocket. Several other taxes are of concern to employers. These include social security, state and federal withholding, unemployment compensation, and workers' compensation. In addition, employers must apply for a federal and a state tax identification number and a sales tax must be collected on some sales. Consult an attorney or accountant regarding most of these matters.

In West Virginia, the Department of Tax and Revenue can advise whether the product you are selling is subject to the West Virginia sales tax.

**Q.** *Do I need a business license to sell plant materials? If so, obtained from where?*

**A.** If you are operating as a business, a business license is required. This license may be obtained from the state tax department.

**Q.** *What kind of insurance do I need for my business and what must I consider?*

**A.** In assessing your insurance needs, you want to consider:

- (1) insuring your place of business against theft, fire, flood and other types of damage
- (2) insuring plants or plant materials that are going to be shipped against theft, loss, fire, damage. (In considering insurance needs on plant products that are to be shipped, remember that the terminology and agreement on how you ship plant materials will reduce your liability and costs in shipping. If shipping to an individual or dealer via a shipping company, a seller wants to be very careful what he/she guarantees and how he/she words the agreement.)
- (3) acquiring liability insurance

**Q.** *Are there specific labor laws I must follow?*

**A.** Yes. Child labor laws must be followed. There is a general age requirement of 16. However, this varies in certain occupations and circumstances. Strict restrictions are placed on employers in manufacturing and mining. Employers in other occupations may employ children between ages of 14 and 16. Parents who employ their own children are exempt from minimum age requirements.

In agriculture the minimum age is 16. However, a minor 12 to 15 years old may be employed with the written consent of his/her parents.

Minimum wage requirements must be followed. The federal minimum wage is \$4.25 per hour.

Migrant workers are frequently employed in agricultural production. A migrant worker is a person whose primary employment is in agriculture on a seasonal or temporary basis. There are also United States citizens who are migrant workers. The federal government formulated rules to protect these workers from abuses by employers and to try to check the flow of illegal aliens coming into this country.

**Q.** *Are there social security requirements that any business must follow?*

**A.** Yes. Every employer is required to withhold FICA Social Security payments from most employees. This tax attaches at the time wages are paid. Both the employer and employee pay taxes to FICA. If you have further questions, consult an accountant.

## Laws Relating to Ginseng

If ginseng is harvested for commercial use, a moderate fee and a "Forest Product Removal Permit" are necessary. This permit for harvesting on state lands may be obtained by all dealers from the West Virginia Division of Forestry in Charleston, W.Va.

Ginseng may be harvested for personal use with a "Free Use Permit" from the West Virginia Division of Forestry.

In West Virginia the annual season for collecting ginseng begins August 15 and ends November 30. It is illegal to possess uncertified ginseng between April 1 and August 14.

Ginseng dealers must (1) obtain a ginseng dealer's permit from the director of the Fish and Wildlife Service or a Division of Forestry person in your area, (2) keep on forms provided by director of the Fish and Wildlife Service, an accurate record for all ginseng acquired showing year harvested, date acquired by dealer, county of origin, weight and whether wild or cultivated, (3) have all records and all acquired ginseng inspected by the director at an official ginseng inspection station.

### ***Penalty if convicted of illegal possession of ginseng:***

#### *First Offense:*

- (1) If value of ginseng is less than \$200, the defendant is guilty of a misdemeanor and shall not be fined more than \$400.
- (2) When the value of ginseng exceeds \$200, the defendant is guilty of a misdemeanor and fined not less than \$400 or more than \$600—fine cannot be suspended. Defendant may not be imprisoned for more than 30 days.

#### *Second Offense:*

- (1) When the value of ginseng is \$200 or less the defendant is guilty of a misdemeanor and fined not less than \$200 nor more than \$600—fine cannot be suspended. Defendant cannot be imprisoned for more than 60 days.
- (2) When the value of ginseng is more than \$200, the defendant shall be guilty of a misdemeanor and fined not less than \$600 nor more than \$1,000 and imprisoned for not less than 60 days nor more than 6 months.

#### *Third Offense:*

The defendant shall be guilty of a felony and shall be fined not less than \$600 nor more than \$6,000 and shall be imprisoned in the penitentiary not less than 1 nor more than 2 years.

## Laws Relating to Noxious Weeds

It is illegal to harvest and transport multiflora rose at any time in West Virginia because this plant is considered a noxious weed.

**Q.** *What are the federal laws dealing with harvesting?*

**A.** There are no general laws against harvesting wild plant resources unless they are endangered, threatened or illegal. There are laws that apply to certain plant species that may come under quarantines for certain diseases or insects. These plants will be listed in the Code of Federal Regulations and will change. One must follow any regulations set forth by APHIS (Animal and Plant Health Inspection Service).

## Laws Relating to Endangered Species And Unique Areas

**Q.** *How do I deal with endangered species?*

**A.** Federally endangered plants that are illegal to harvest include: Running Buffalo Clover (*Trifolium stoloniferum*), Harperella (*Ptilimnium nodosum* or *P. fluviatile*), Shale Barren Rockcress (*Arabis serotina*), Northeastern Bulrush (*Scirpus ancistrochaetus*), and Virginia Spiraea (*Spiraea virginiana*).

However, this list is constantly changing and an update of endangered species may be obtained from state offices of the natural heritage programs or The Nature Conservancy Field Office.

In limited situations, endangered plants may be harvested.

These plants may be harvested with permission of the U.S. Fish and Wildlife Service. This per-

mission will be granted only in limited circumstances usually to research facilities or colleges and universities for research purposes only.

**Q.** *What are the penalties for harvesting an endangered species?*

**A.** Any person who knowingly violates any provision of this law may be assessed a civil penalty by the secretary of the interior of not more than \$10,000 per violation and fined up to \$20,000 and imprisoned for not more than one year.

**Q.** *May I pick plants on areas designated as wetland areas with or without permission?*

**A.** Harvesting of plants is not allowed in these areas because the whole purpose of designating these areas is to preserve the natural habitat for wildlife and the natural beauty for the public. These areas also help fulfill international obligations contained in several migratory bird treaties and conventions with other countries.

**Q.** *May I harvest plants that fall under the Wild and Scenic Rivers Act with or without permission?*

**A.** Wild plant resources cannot be taken from these areas. Currently, West Virginia has one area under this designation. It is the Bluestone Dam area, from 2 miles upstream from the Mercer County/Summers County line to the Bluestone Dam. Several other areas are being considered and could be added.

**Q.** *May I harvest plants from areas that are designated as federal wilderness areas?*

**A.** No. Wild plant resources cannot be taken from these areas. The wilderness areas in West Virginia and Virginia are: Cranberry, Dolly Sods, Laurel Fork South, Laurel Fork North, Otter Creek, Barbours Creek, Lewis Fork, Mountain Lake, Rich Hole, Rough Mountain and Shavers Run.

# Marketing Laws, Regulations and Quarantines

**Q.** *What are the state laws dealing with marketing?*

**A.** When marketing plants in West Virginia, the state Department of Agriculture guidelines and regulations must be followed. Penalties for non-compliance are: \$500 fine for a first offense; and, for a second offense, fined not less than \$500 nor more than \$1,000 or imprisonment in the county jail for not more than six months.

**Q.** *What are the federal laws dealing with marketing?*

**A.** The U.S. Department of Agriculture can determine how plant materials must be processed and packaged in order to be marketed. This agency also has the power to inspect and certify products moving in interstate commerce. States may designate to the secretary of agriculture lists of plants, plant products and plant pests that should be subject to terminal inspection. Terminal inspection means these plants should be inspected at certain locations along state lines. A list of plants that are not marketable can be obtained by calling or writing either the W.Va. Department of Agriculture, State Capitol, Room 28, Charleston, WV 25305 or the U.S. Secretary of Agriculture at (202) 447-2791, Department of Agriculture, 14th St. and Independence Ave. SW, Washington, DC 20250.

**Q.** *Does one need proof-of-ownership before selling wild plant resources?*

**A.** West Virginia has no laws to regulate ownership. However, if you are gathering plant materials from different places, it would be wise to obtain written proof-of-ownership. If you are going to harvest plants from legally allowed state and federal lands, ask for a permit or a written statement. If taking plants from private lands, written permission should be obtained.

**Q.** *If I grow plants to sell, are there certain pesticide regulations I must follow?*

**A.** Yes. A pesticide is any substance or mixture of substances intended for preventing, destroying, repelling or mitigating any pest, any sub-

stance or mixture of substances intended for use as a plant regulator, defoliant or desiccant. All pesticides for use or sale must be registered with the EPA. If there is no label on the container, it cannot be used legally. The federal law gives states the power to regulate pesticide use. In West Virginia you must be licensed to use registered pesticides. Apply to the state Department of Agriculture in Charleston to obtain a license.

A person violating any provision of this law is guilty of a misdemeanor and upon conviction thereof, shall be fined not less than \$100 nor more than \$500 for a first offense, and for a second offense shall be fined not less than \$500 nor more than \$1,000 or imprisoned in county jail not more than six months.

**Q.** *Are there certain interstate shipping regulations I must follow?*

**A.** Federal regulations must be followed in a quarantine. Plants under any quarantine will be strictly regulated. Each state also has shipping regulations. In West Virginia, woody stemmed plants must be inspected by a state Department of Agriculture inspector before they are shipped. This inspector will then give a certificate of health of the plant. This certifies that the plants are disease and insect free. Certificates of health are also given in a quarantine before any plant under quarantine can be shipped. The state Department of Agriculture has inspectors who travel throughout the state. In moving plant materials in or out of state, follow guidelines such as the Animal and Plant Health Inspection Service (APHIS), Plant Pest Act, Noxious Weed Act, Code of Federal Regulations and state laws dealing with shipping of plant materials. These regulations can be found in law libraries or obtained from the state Department of Agriculture or a local extension agent.

**Q.** *Are there quarantines on certain plants or what must I do in a quarantine?*

**A.** At certain times, the government may quarantine a product which is suspected of carrying a disease or infectious pest that may spread. For establishing a quarantine or inspection area, the state commissioner of agriculture shall give notice in writing of such quarantine or inspection area, specify its boundaries, the duration of the inspection, and the purpose thereof, and provide for notification of the proper authorities.

## Governmental Contacts

**Q.** *If I have questions, who should I contact for answers in West Virginia?*

**A.** The following places may be contacted for information on procedures and practices in the state:

*Harvest and sale of ginseng in state forests contact:*

Administrative Forester  
West Virginia Division of Forestry  
State Capitol  
Charleston, WV 25305  
(304) 348-3446

*Where Army Corps of Engineers land is involved contact:*

Chief  
Management and Disposal Branch  
Real Estate Division  
Army Corps of Engineers-Huntington District  
502 Eighth Street  
Huntington, WV 25721  
Phone (304) 529-5712

District Engineer  
Pittsburgh District  
Federal Building  
1000 Liberty Avenue  
Pittsburgh, PA 15222

*In the National Forests contact:*

Director  
Public Affairs Office  
Forest Service  
Dept. of Agriculture  
P.O. Box 96090  
Washington, DC 20090-6090  
Phone (202) 447-3957

*In the George Washington National Forest contact:*

Supervisor  
George Washington National Forest  
U.S. Forest Service  
P.O. Box 233  
Harrisonburg, VA 22801  
Phone (703) 433-2491

*In the Monongahela National Forest contact:*

Supervisor  
Monongahela National Forest  
200 Sycamore Street  
Elkins, WV 26241-3972  
Phone (304) 636-1800

*In the Jefferson National Forest contact:*

Supervisor  
Jefferson National Forest  
210 Franklin Road, SW  
Roanoke, VA 24001  
Phone (703) 982-6270

*The inspection, harvesting, etc., of wild plants and resources contact:*

West Virginia Department of Agriculture  
Plant Industries Division  
State Capitol  
Charleston, WV 25305  
Phone (304) 348-2212

*On incorporating a business in W.Va. contact:*

Secretary of State  
State Capitol  
Charleston, WV 25305  
Phone (304) 345-4000

*On hiring workers in production of wild plant resources contact:*

U.S. Department of Labor  
200 Constitution Avenue NW  
Washington, DC 20210  
Phone (202) 523-8165

*General information on legal problems in the state of West Virginia contact:*

Attorney General  
State Capitol, Room E-26  
Charleston, WV 25305  
Phone (304) 348-2021

*In state parks contact:*

West Virginia Division of Tourism & Parks  
State Capitol  
Charleston, WV 25305  
Phone (304) 348-2764

*On endangered species and rare plants contact:*

Natural Heritage Program  
Div. of Natural Resources/Wildlife Resources  
P.O. Box 67  
Elkins, WV 26241  
Phone (304) 637-0245

# Native Woody Plants Suitable for Nursery, Landscape and Wildlife Use

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**Q.** *Can I harvest native woody plants forever?*

**A.** When any natural resource, whether it be animal, mineral or plant is exploited, the greatest care must be taken to ensure that any negative impact on the environment is kept to a minimum and that the resource is managed for sustained yield.

When harvesting wild plants, whether by digging plants, collecting seed, or collecting material for cutting stock, always remember that all native plants are finite.

Good management will ensure the continued regeneration of the plants and therefore provide for a sustained yield. It will also help to protect and care for the land that provides the resource.

**Q.** *What rules should I follow when collecting wild plants?*

**A.** If plants or any parts of the plant are removed, always leave more than you take. If you do, you will be able to ensure a sustained yield of plants, seeds or cutting material.

When collecting, take care to prevent damage to other plants and to prevent any soil disturbance that might cause erosion, either from directly digging the plants or from the method of transportation used to reach the collection site. Remember—we all live downstream!

If collecting is done on private property, always get permission, preferably in writing.

Collecting plants within 100 yards of a public road or in state and national parks is prohibited. Some limited collecting may be permitted on certain state and federal lands. Refer to the “legal section” of this publication for more information on this subject.

Too much emphasis cannot be placed on protection of the environment and continuation of the species when collecting or growing native woody plants.

**Q.** *What is a native woody plant?*

**A.** Native woody plants are trees, shrubs and woody vines that grow naturally or have not been

introduced from elsewhere outside their growing area by artificial means, i.e., it is indigenous to the area.

**Q.** *Why use native woody plants for nursery or landscape use?*

**A.** The reason any woody plant is grown commercially is to fulfill a need by the consumer. Some native woody plants fulfill traditional requirements for use as nursery stock and landscaping plants, i.e., shade tree, tree or shrub with attractive flowers, fruit or bark. They may also provide the additional attributes of proven hardiness and adaptability within their natural growing area.

Another advantage to native species of woody plants is a current trend in popularity for backyard wildlife habitat plantings. If the correct species are chosen not only will it beautify an area, it will provide food and cover for wildlife, particularly native songbirds. Native plants are usually more in balance with the ecosystem and do not become noxious pests as has happened with introduced exotics such as multiflora rose, autumn olive and kudzu. Most nursery owners, landscapers and homeowners are already familiar with some of the more commonly used native plants such as white dogwood, mountain laurel, rhododendron, hemlock and red maple. However, many more species of native plants not only respond well to nursery cultivation but will also be welcome additions to residential, park and commercial landscaping.

More native plants are being used every year for highway beautification and habitat restoration of riparian and wetland areas and mining reclamation. All states now require some mitigation for wetland habitat loss where construction projects involve federal funds. Only native plant species can be used for these restoration projects. As more states adopt these policies, a growing number of plants will be needed to supply this market. These are some of the reasons to familiarize yourself with the native plants of your area and to start growing select species.

Once you become acquainted with some of the less common species you will see that there is

a huge pool of “new” and exciting plants from which to choose. In the section on common and potential use species, detailed information is given on the selection and propagation of these plants as well as landscape and wildlife values.

**Q. Where can I collect native woody plants?**

**A.** Collecting plants from the wild has been a common method of acquiring native species of plants for many years. It is still common in some areas, however, it has recently been on the decline. The main reasons for the decline are the likelihood of habitat destruction and the possibility of creating a deficit in the number of wild seedlings needed to maintain a stable reproductive population of the species.

Perhaps the best way to acquire plants from the wild is by “salvaging” them from areas slated for construction that would destroy them. Areas slated for road construction, shopping centers, mining, logging and housing sites may provide a useful number of native plants if permission can be obtained to collect them.

Although plants collected from the wild might seem a tempting source of plants at low cost, it is often difficult to find the quality of plants with the survivability needed to use them as a source of liners for nursery use. A liner is a small (12 to 18 inch tall) nursery plant with no particular form or shape that will be used to produce a commercially saleable plant. On rare occasions “finished” plants can be dug in the wild. However, it is difficult to dig plants with an adequate root system that will sustain the plant during the first critical year in its new environment.

**Q. If a collection site of wild plants is found, what procedure is recommended for pre- and post-harvest handling?**

**A.** All plants should be collected when completely dormant (October-March). Potential landscape plants should be tagged, branch thinned and root pruned the year prior to collecting. These procedures will increase the likelihood of survival when dug the following year. On most sites, it is easiest to bare root the plants rather than dig with a root ball. Bare rooting deciduous plant material of any size is best done when the weather is cloudy and cool and the humidity is high to prevent roots from drying out.

Every effort should be made to dig as much root mass as possible with the plant. A straight edge nursery spade can be used to cut the soil and roots past the line where they were previously

root pruned. The following guidelines provide root pruning diameters based on stem diameter and height.

Stem Diameter	Average Height Range	Minimum Root Spread
½ inch	5 to 6 ft.	12 inches
1 inch	8 to 10 ft.	18 inches
2 inch	12 to 14 ft.	28 inches
3 inch	14 to 16 ft.	38 inches

Plant branches should be tied to make them easier to handle and reduce the space needed for transport. If weather conditions threaten rapid drying of the roots, the plants should be heeled into a shallow trench and covered with soil or other material. If transport time is more than one hour, packing with hay and wetting down is recommended and any exposed branches should be wrapped to prevent mechanical damage and drying by the wind.

Small plants intended for use as liners should be handled in the same manner and root pruned to encourage a well developed root system. Plants under 18 inches tall can be placed directly into large plastic storage bags, sealed tightly, and placed in complete shade to prevent rapid heat build-up that can kill collected plants. Particular care must be taken with broad-leaved evergreens and conifers which will transpire even when dormant. Broad-leaved plants and some conifers have natural fibrous root systems and small hairlike roots that can dry rapidly. Some soil might be left on the roots to supply limited moisture to the plants and require less time in the field since complete bare rooting takes longer than with plants with a less dense, fibrous root system.

When plants reach their destination, they should either be planted immediately or unpacked, and heeled in to moist sawdust or other material such as rotted leaves or bark. Plants stored this way can be held safely for months when dormant.

It is highly recommended that all wild landscape size material be held two growing seasons in mineral soils mixed with decomposed organic materials. These soils, adequate water and fertilizer should produce healthy top and root growth as well as good flower bud set on plants. All collected plants can benefit from 50 to 60 percent shading the first year. Most broad-leaved evergreens require soils that are slightly

to moderately acid (5-6 pH), high in humus content, and consistently moist and cool. Deciduous azaleas, firs, and hemlock should be handled as broad-leaved evergreens. Pines are less demanding and can be handled as deciduous liners.

After two years in the ground, landscape-size material should be ready for landscaping or sale as balled and burlapped or potted plants which are preferred by most landscapers.

**Q.** *Can nursery stock be grown from seeds, cuttings and grafts?*

**A.** Native plants grown from seeds, cuttings and grafts are a convenient way to acquire large numbers of plants at a relatively low cost.

The method of growing woody plants from seed and from cuttings varies from species to species. Detailed information on “*Woody Plants of Potential Commercial Use*” begins on page 13.

When collecting seeds or cuttings always get the permission of the landowner or apply for the appropriate permits if they are on public or private lands. When collecting seeds and cuttings, always make a note of the specific location, the elevation, associated plants and permanently mark the individual plant you collect from. Some plants have particular value if the seedlings are from atypical plants which will sometimes provide additional tolerance to adverse climatic and growing conditions.

As you become more familiar with the typical appearance of the species you are growing, you might occasionally happen upon an unusual variation which may be of value and interest. Making note of “wild” locations and growing these varieties may provide plants that have superior characteristics to seedling grown plants. Propagation by asexual methods (cuttings, tissue culture) could be used to grow these plants in quantity if desired.

**Q.** *How can I grow and market native plants that are not in common use?*

**A.** If you find that a species you wish to grow is not available or you are unable to propagate the plant for whatever reason, many commercial propagators and nurseries will grow plants by contract. In many cases they can provide their own source of propagation material, or will rely on the customer to supply seed, cutting material or scion wood.

Also, many established nurseries always have some native plants as part of their “line.” These are sometimes available in larger quantities and at lower cost than a smaller or more specialized nursery may be able to produce. In many cases these plants are sold as bare root liners in sizes from under 12 inches to 10 feet tall and can be potted-up or field grown to the desired size. This is often a more reliable way to obtain native plants if you are not knowledgeable about or do not have the facilities to propagate plants.

If and when you establish a line of native plants, you may receive requests to contract grow plants for others. This will allow you to familiarize yourself with a plant you may not have grown previously. If you are successful in your attempt to propagate and grow these new species, you may have one more species to add to your line if you feel it will be marketable.

**Q.** *Are there native plants that have both ornamental and wildlife uses?*

**A.** In the past 10 years, there has been a tremendous increase in the number of people who have an interest and concern for the environment. More people than ever are involved in outdoor activities. Hiking, birdwatching, gardening and backpacking are just a few of the ways Americans are trying to “get back to the land.” Even in an urban environment, the use of city parks for birdwatching and nature study as well as the traditional uses of picnicking, strolling, and sports is on the increase.

This interest in the environment has been brought close to home by some who are trying to invite the plants and animals into their own backyards by creating micro-environments by using native species of plants that are attractive to birds and other creatures that provide many with enjoyment by their presence.

A few well chosen native plants can do much to attract a variety of wildlife and create an individually tailored and attractive landscape.

Many native trees and shrubs already established in the nursery trade also make excellent plants for attracting wildlife (see page 12).

Marketing native trees and shrubs by emphasizing their usefulness as both landscape and wildlife plants that encourage the visitation of birds, butterflies, squirrels and other wildlife greatly broadens their appeal to potential customers.



## Marketing Strategies And Methods

### Q. Should I market wholesale or retail?

A. Your marketing strategy will depend on the type of sales you develop, whether wholesale, retail or contract growing. Are your sales to be by mail order (retail), or will you sell in quantity (wholesale)? Will your sales be limited to a wholesale yard or a garden center or a combination of the two? Once you establish who your customers will be, the next step is to “get the word out” that you have what the customer wants.

### Q. Where are some potential wholesale outlets?

A. If you are a new business, perhaps the best way to present your product line is by advertising in a wide circulation trade journal. Several are printed throughout the country. The *American Nurseryman* is among the best known—reaching thousands of potential customers twice monthly.

Other journals and magazines dealing with wildlife, forestry and land restoration management would also be likely publications to place ads.

### Q. What are the advantages of printed advertising?

A. Printing an interesting, informative and attractive brochure to send customers will help promote your product.

A plain, typed species list with names (common and scientific), sizes, quantities available and prices is necessary as a minimum. However, a descriptive brochure explaining the various uses and attributes of native woody plants will be quite useful to potential customers and may help increase sales. Business cards and letterhead stationery also are important ways to communicate with customers.

A distinct and original company name and logo also will help. Consider consulting with a graphic artist.

### Q. Can trade shows be worthwhile?

A. Every area of the United States has nursery and landscape trade shows in major cities. A booth in one of these trade shows with some of your products attractively displayed and staffed by informed people with knowledge of the product as well as brochures will provide the needed face-to-face and hands-on experience that can turn a stranger into a customer. Nursery trade journals carry complete information on these regional shows.

### Q. How does word-of-mouth work in advertising?

A. This can be a surprisingly effective way to reach people, especially for a small nursery with limited production of a specialized “line.” Make an effort to contact people by phone or mail who may be in a position to purchase your product. Supplying information about your product to the landscape industry and people in agencies involved in soil conservation, land reclamation and restoration, wildlife management as well as other nursery owners involved with these people, can spread your name far and wide and generate new customers.

Anticipate that a customer will tell three other people about an outstanding experience but will tell 10 people about a very poor experience.

## Common Woody Plants

### Q. What native woody plants are already in common use for landscaping and wildlife use?

A. The following list of native species is not described in detail in this text because of existing widespread use in the nursery and landscape trades. Complete information on identification, culture, propagation, etc., of the listed species is available from one or more of the books contained in the bibliography.

Abies balsamea	Balsam Fir
Acer rubrum	Red Maple
Acer saccharum	Sugar Maple
Amelanchier arborea	Serviceberry
Carpinus caroliniana	American Hornbeam
Celtis occidentalis	Hackberry
Cercis canadensis	Redbud
Cornus florida	White Dogwood
Kalmia latifolia	Mountain Laurel
Liriodendron tulipifera	Tulip-tree or Yellow-poplar
Oxydendrum arboreum	Sourwood
Picea rubens	Red Spruce
Pinus strobus	White Pine
Quercus rubra	Red Oak
Quercus palustris	Pin Oak
Rhododendron catawbiense	Catawba or Purple Rhododendron
Rhododendron maximum	Great Laurel
Tsuga canadensis	Hemlock
Fraxinus pennsylvanica var. subintegerrima	Green Ash
Fraxinus americana	White Ash
Picea glauca	White Spruce

# Woody Plants of Potential Commercial Use

The following native woody plants are **not** in common use but have considerable potential.



*Acer pensylvanicum* – Striped Maple, Moosewood, Goosefoot Maple

**Leaves:** Opposite, simple, 5 to 7 inches long, fall color is bright yellow.

**Bark and Stems:** Young stems greenish brown or reddish. Young branches 1 inch or greater are green and conspicuously marked by long vertical white, sometimes pinkish stripes which prompted the common name. Older branches and trunks lose striping.

**Hardiness:** Zone 3 and South.

**Growth Rate and Mature Size:** Slow, medium to fast under cultivation, 15 to 20 feet in height.

**Flowers:** Yellow, produced in May on pendulous, slender 4 to 6 inch racemes, attractive and dainty.

**Propagation:** Seeds are stratified at 41° F for 90 to 120 days. Cuttings have not proven successful.

**Culture:** Prefers moist, rich soils, slightly acidic, in partial shade. Young plants respond well to irrigation and fertilization. Will grow in full sun to deep shade in right conditions. Easily moved.

**Landscape/Wildlife Use:** Although not the perfect specimen tree, would be well used as a small tree for naturalizing. Worthwhile as a “novelty” tree for its striped bark. The seeds are eaten extensively by squirrels and chipmunks while deer eat the buds and twigs.

**Diseases and Pests:** Anthracnose, leaf spot, powdery mildew, caterpillars, leafhoppers and borers.

**Natural Range:** Quebec to Manitoba and southward to Pennsylvania, high elevations of Appalachians to Georgia.



*Acer spicatum* – Mountain Maple

**Leaves:** Opposite, simple, 2 to 5 inches long, fall colors are combinations of yellow, orange and red.

**Bark and Stems:** Young stems grayish pubescent, developing purplish.

**Hardiness:** Zone 2-4.

**Growth Rate/Mature Size:** Slow to medium, from 10 to 30 feet tall.

**Propagation:** Seeds mature in late summer or early fall and requires stratification for 90 to 120 days at 41° F. Leafy cuttings may be rooted by using 8K to 20K ppm IBA talc or quick dip under mist with bottom heat. Cuttings are difficult to root.

**Culture:** When young, best grown in containers under 50 to 75 percent shade, then field planted when 2 to 3 inches tall. Can be moved bare root. Prefers moist, cool, shady conditions. Probably not heat tolerant.

**Landscape/Wildlife Value:** May be difficult to site, however, if cultural requirements can be met, it would be worth having for the unusual and showy mid-summer flowers and often beautiful fall foliage. Depending on conditions, will be a small tree or it can become shrubby and sucker from the base. Best used for a naturalized landscape although a well kept specimen would be of interest. Seeds, flowers and buds eaten by birds, squirrels, chipmunks. Stems browsed by deer. Older trees and thickets provide cover and nesting sites.

**Diseases and Pests:** None serious.

**Natural Range:** Quebec to upper peninsula of Michigan south to New Jersey, western New York and northern Ohio and southward along the Appalachians to North Carolina and Georgia at high altitudes.

## *Viburnum* – Viburnums

*Viburnum trilobum* –  
Highbush Cranberry, Cranberry Viburnum

*Viburnum acerifolium* –  
Maple-leaved Viburnum

*Viburnum recognitum* –  
Smooth Arrowwood, Northern Arrowwood

*Viburnum prunifolium* –  
Black Haw, Smooth Black Haw

Most viburnums are rugged, adaptable and attractive plants. If given half a chance to grow in a marginal habitat, they will generally survive and prosper. Viburnums have attractive white flowers, dark green leaves, attractive fruits and good fall coloration.

**Propagation:** Propagation by seed is most successful if seed is sown as soon as it is viable (generally late summer) and soil temperatures are still relatively high, then left in flats or beds over winter. This will then fulfill the warm-cold period required for germination. Softwood cuttings taken mid-summer and given 1,000-25,000 ppm IBA and put under mist will usually root easily.

**Culture:** Viburnums respond readily to container or field growing and are easily moved with bare roots when plants are 36 inches or less. Under field conditions, viburnums respond best to loam and silt soils that are evenly moist. In landscape situations they will eventually adapt to most soil conditions such as poorly drained or clay soils.

**Landscape/Wildlife Use:** One of the chief assets of viburnums is that they are virtually maintenance and pest free. Because of the adaptability and variety available with native species, they will fill just about any landscape niche. They are effective and economical to use as screens for buildings or perimeter hedges, fit easily into mixed border plantings and naturalize easily in most situations. If there is room in the landscape, viburnums can be used effectively as specimens and lone specimens that when in full flower or fruit can be a real showstopper. Viburnums supply food for both upland game and songbirds, as well as black bear, squirrel and chipmunks. Deer, beaver and rabbit will feed on the twigs and bark. In mass planting or in naturalized colonies, viburnums will give good cover year-round and provide nesting habitat during the spring and summer.



*Viburnum trilobum* – Highbush Cranberry, Cranberry Viburnum

**Leaves:** Opposite, simple, 2 to 5 inches long petiole with shallow groove and usually small dome shaped, stalked glands, fall color yellow to reddish purple.

**Stem:** Gray brown, glabrous with a waxy appearance.

**Growth Rate and Mature Size:** Medium, 8 to 12 feet high and 8 to 12 feet wide, multi-stemmed shrub, often with arching branches, creating a rounded habit.

**Hardiness:** Zones 2-7, not well adapted to heat.

**Flowers:** White blooms in May, combination of sterile and fertile flowers giving interesting and showy effect, borne in flat-topped cymes.

**Fruits:** Drupe, 1/3 inch long used for preserves and jellies. The bright red fruits adorn the plant from September to February or until eaten by wildlife.

**Diseases and Pests:** None serious.

**Natural Range:** Newfoundland to British Columbia, south to northern Indiana and Pennsylvania.



*Viburnum acerifolium* – Maple-leaved Viburnum

**Leaves:** Opposite, simple, dark green, in the fall colors in shades of pink, rose, red and purple are subtle, delicate and beautiful.

**Growth Rate and Mature Size:** Slow to medium, 6 feet or less.

**Hardiness:** Zone 3.

**Culture:** A straggling plant which suckers and may form large colonies, withstands heavy shade. Could probably be planted in yards or parks by giving more light and pruning, for use other than naturalizing.

**Flowers:** Blooms in early June with yellowish white flowers, borne in 1 to 3 inches diameter long stalked cymes.

**Fruits:** Drupe, black, up to 1/3 inch long, ripens in September.

**Diseases and Pests:** Occasional problems from aphids, scales, leaf spots and anthracnose.

**Natural Range:** Quebec to Minnesota, south to Tennessee and Georgia.



*Viburnum prunifolium* – Black Haw, Smooth Black Haw

**Leaves:** Opposite, simple, 1½ to 3½ inches long, 1 to 2 inches wide, lustrous dark green above, pale below, nearly glabrous; petiole 1/2 to 2/3 inch long, reddish.

**Bark and Stem:** Glabrous, usually short and stiff in nature, grayish brown.

**Growth Rate and Mature Size:** Slow-medium, 12 to 15 feet in height by 8 to 12 inches in width, can attain heights of 20 to 30 feet with rigid spreading branches.

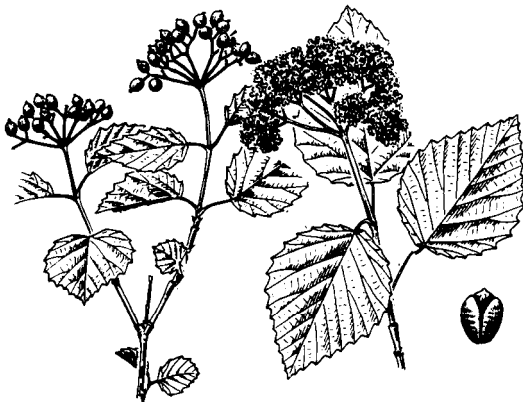
**Hardiness:** Zones 3-9.

**Flowers:** Creamy white on 2 to 4 inches diameter flat topped cymes.

**Fruit:** Drupe, up to ½ inch long, colors start pink, change to rose, then bluish black with white coating at maturity; ripening in September. Sweet, edible, usually abundant.

**Diseases and Pests:** None serious, occasional scale and borer insects.

**Natural Range:** Connecticut to Georgia, west to Michigan, Kansas and Texas.



*Viburnum recognitum* – Smooth Arrowwood, Northern Arrowwood

**Leaves:** Opposite, simple, 1½ to 3 inches, prominent pinnate veins.

**Stem:** Slender, glabrous, grayish.

**Growth Rate and Mature Size:** Medium, up to 14 feet in height. Tall, upright multi-stemmed. Suckers freely.

**Hardiness:** Zone 2-7.

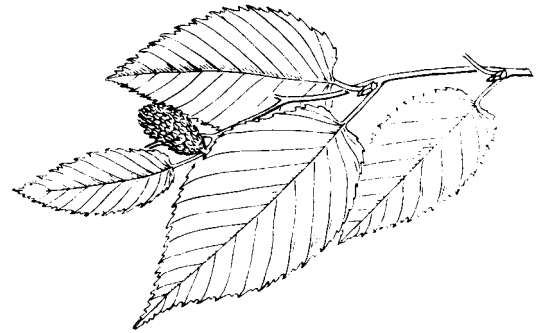
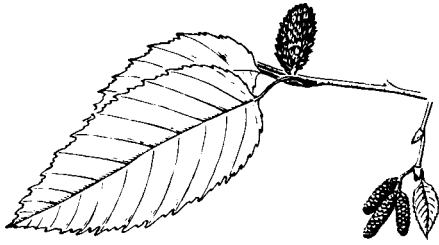
**Flowers:** Blooms May-June, white, 5-8 cm. broad in long stemmed cymes.

**Fruit:** Bluish black drupe in October.

**Diseases and Pests:** None serious.

**Natural Range:** Ontario south along the mountains to Georgia and to western New York, Michigan and Minnesota.

## *Betula* – Birches



### *Betula alleghaniensis* – Yellow Birch

**Leaves:** Alternate, simple, 3 to 5 inches long, yellow in fall.

**Bark and Stem:** Dull light yellowish brown, having the faint taste and odor of wintergreen, bark is bronze-yellowish in papery thin shreds, eventually changing to reddish brown with large ragged edge plates, twigs slender.

**Hardiness:** Zones 2-8.

**Growth Rate and Mature Size:** Fast when young then medium, 60 to 75 feet at maturity. Does not grow well in hot, dry climates.

**Propagation:** Birch seeds have low viability and are difficult to germinate. They should be stratified at 40° F for one to three months and then planted in fall or spring. Softwood cuttings can be rooted or treated with 8000 ppm IBA talc then put under mist.

**Culture:** Best growth attained in deep, rich, moist, slightly acid and well drained soils, but will adapt to both rocky, dry sites and moderately heavy soils. Grows readily under nursery conditions and is a good candidate for bare root harvesting.

**Landscape/Wildlife Use:** Would make an unusual specimen tree for the yard where the attractive peeling bark could be shown to good effect. Summer foliage is fresh looking and fall coloration is a pleasing yellow. Because of its large size, it should be sited carefully to avoid future problems that might lead to radical pruning or topping. Excellent for parks or naturalized areas. Ruffed grouse feed on catkins, buds and seed. Chickadees, pine siskins, tree sparrows and others feed on seed. Beaver, porcupine, rabbits and squirrels feed on bark, wood, twigs, buds and foliage. Deer, elk and moose will browse twigs and foliage.

**Diseases and Pests:** Can be seriously affected by canker, dieback, woody decay, aphids, leaf minor or bronze birch borer.

**Natural Range:** Massachusetts to Quebec west to Michigan and south to Georgia.

### *Betula lenta* – Sweet Birch, Black Birch

**Leaves:** Alternate, simple, 2½ to 6 inches long, glossy dark green and glabrous above, paler beneath and hairy on veins, golden-yellow in fall.

**Bark and Stem:** Bark is an attractive reddish brown, sometimes almost black on young trees and having prominent horizontal lenticels. Mature tree bark is brownish black and broken into thin irregular scaly plates. Twigs are glabrous, shiny, strong wintergreen flavor, short spurlike lateral shoots abundant and bearing two leaves each season.

**Growth Rate and Mature Size:** Fast when young then medium, 60 to 75 feet matured.

**Hardiness:** Zones 2-8.

**Propagation:** Seed, 40 to 70 days at 41° F, then germinate in moist sand at fluctuating temperatures of 90° F (day) and 59° F (night). Light also seems to help break dormancy.

**Culture:** Fairly easy to grow in nurseries and can be potted or sold as bare rooted trees.

**Landscape/Wildlife Use:** Excellent for shade trees in parks, yards or naturalized areas. Wild birds such as grouse and common redpoll readily eat the buds and seeds; beaver, rabbits and deer eat the twigs and leaves.

**Diseases and Pests:** Many problems from insects and diseases; canker and the bronze birch borer are probably the worst.

**Natural Range:** Quebec, Ontario, and New England south to West Virginia and uplands of Appalachians to Georgia.

### *Asimina triloba* – Pawpaw

**Leaves:** Alternate, simple, 6 to 12 inches long, medium green, usually glabrous at maturity, petiole ½ inch long, yellow or yellowish green fall color.



**Bark and Stem:** Bark is smooth, brownish-green, eventually rough and scaly at maturity. Twigs glabrous at maturity, brown, rank odor when broken.

**Growth Rate and Mature Size:** Medium, 15 to 20 feet high and wide. A small tree or shrub that sometimes forms extensive groves. Will sprout heavily from trunk and root if either is injured or cut.

**Flowers:** Purple, of heavy texture, 1 to 2 inches across in early to mid-May, borne singly, not particularly showy but interesting.

**Fruit:** Edible greenish yellow berry ripening to a blackish brown, 2 to 5 inches long, taste similar to banana, seed  $\frac{1}{2}$  to  $\frac{3}{4}$  inch, large flat brown, smooth, 2 to 3 per fruit. September-October maturity. A breeding program under way at the University of Maryland hopes to create a "super" pawpaw for commercial use.

**Hardiness:** Zones 5-9.

**Propagation:** Seeds should be stratified for 2 to 3 months at 40° F. Breeching seed coat may make germination less erratic. Successful propagation by cuttings not reported.

**Culture:** Considered difficult to transplant and best moved when a small tree, balled and burlapped or grown in containers. Prefers moist, deep soils of high fertility and slightly acid pH, grows best in full sun, but will survive as a somewhat straggly, sparse plant in the shade.

**Landscape/Wildlife Value:** A most interesting and distinctive tree, the dense, large foliage giving a tropical appearance. Might be considered as a specimen for its fruit alone, but best used in a naturalized situation where its requirements can be met. Fruits and seed eaten by a wide variety of mammals. Raccoon, opossum and gray squirrels are especially fond of the large, moist fleshy fruits.

**Diseases and Pests:** None serious.

**Natural Range:** New York to Florida west to Nebraska and Texas.



*Cephalantus occidentalis* – Buttonbush

**Leaves:** Opposite, or whorled, simple, 2 to 6 inches long, about half as wide, entire, lustrous bright green above.

**Bark and Stems:** Gray-brown to shining olive with prominent vertical lenticels, older stems become reddish brown and develop permanent fissures at the lenticels, four-sided twigs.

**Growth Rate and Mature Size:** Medium, a small tree or shrub 3 to 6 feet tall in the north, 10 to 15 feet tall in southern part of its range.

**Fruit:** Heads of fruit rounded, about 1 to 1½ inches across, containing a mass of dry nutlets, persisting over winter.

**Flowers:** Creamy-white in crowded globular heads. Flowering in August.

**Hardiness:** Zones 3-9.

**Propagation:** Seeds germinate promptly without pre-treatment and softwood cuttings taken in late July and early August root easily under mist in a sand/peat mix in about 30 days without hormone treatment.

**Culture:** Probably best grown as a container plant in a soil mix that holds water since it naturally grows in swampy, wet conditions.

**Landscape/Wildlife Value:** Excellent plant with glossy foliage and showy flowers. Best used in a naturalized situation where soil is wet or swampy. Will not thrive in areas subject to periodic drying, so it should be sited carefully. Seed used mainly as food by waterfowl—a reflection of its habitat. Beaver and deer browse wood, twigs and foliage.

**Diseases and Pests:** No serious diseases; San Jose scale can be a problem.

**Natural Range:** New Brunswick to west Ontario and Wisconsin. South to Florida, Texas, Arizona and California.



*Chionanthus virginicus* – Fringe-tree

**Leaves:** Opposite or sub-opposite, simple, 3 to 8 inches in length, entire, pubescent below, at least on veins. Fall color is generally not remarkable since leaf can change from yellow or green to brown.

**Bark and Stem:** Twig is orangish, somewhat four-sided, slightly peeling. Bark is thin with reddish brown scales.

**Hardiness:** Zone 4-8.

**Growth Rate and Mature Size:** Slow, may reach 25 to 30 feet, usually 12 to 20 feet wide with equal spread under landscape conditions, habit is open and often grows wider than high.

**Flowers:** May into early June, white and fragrant, borne in 6 to 8 inches long, fleecy delicate looking panicles. Flowers produced on previous year's wood.

**Fruit:** A fleshy drupe, dark blue with a bloom ripe in August and September, can be showy.

**Propagation:** Seeds are doubly dormant and require a warm period of 3 to 5 months, then cold temperature at 41° F for one or more months. Cuttings are considered nearly impossible to root but softwood cuttings from juvenile wood taken in late spring and treated with 8K to 20K ppm IBA talc then put under mist in a sand-vermiculite mix may prove successful.

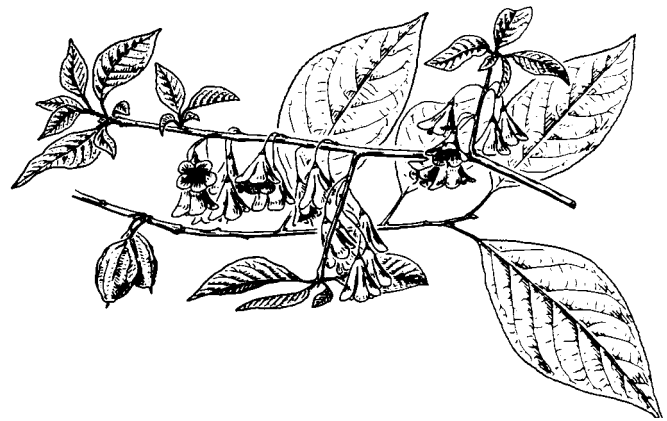
**Culture:** Can be grown either in container or balled and burlapped. Smaller plants can be harvested bare root. Prefers deep, moist soils with slightly acid to near neutral pH. Best grown in full sun to promote good flowering.

**Disease and Pests:** None considered serious.

**Landscape/Wildlife Use:** Certainly one of our most beautiful flowering native shrubs. Large specimens in full flower defy description and

must be seen to be appreciated. The delicate fragrance is an added bonus. Could be used equally well as a specimen, border or screen plant, however, open habit does allow it to be "seen through." Seldom needs more than routine maintenance. Its slow growth rate would make it a good candidate for a permanent planting. The fruits are taken by many bird species.

**Natural Range:** Central Pennsylvania south to Florida, west to Kentucky, Arkansas, southeast Oklahoma and eastern Texas.



*Halesia carolina* – Carolina Silverbell

**Leaves:** Alternative, simple, 2 to 5 inches long, stellate pubescence beneath; turning yellow in fall and dropping early.

**Bark and Stem:** Bark is green to brown to black combination, ridged and furrowed with flat sometimes lustrous ridges which develop into scaly plates, intermediate branches are gray and streaked with darker vertical fissures. Stems are slender, glabrous or densely pubescent then becoming slightly pubescent or glabrous, orange brown.

**Hardiness:** Zone 4-8.

**Growth Rate and Mature Size:** Medium, 30 to 40 feet high with a 20 to 35 foot spread.

**Propagation:** Moist stratification at 56-86° F for 60 to 120 days is required, followed by 60 to 90 days at 33-41° F. Considered difficult to germinate. Softwood cuttings can be rooted 80 to 90 percent by using 2500 to 10K ppm IBA.

**Culture:** Transplants readily balled and burlapped; prefers a rich, moist, well-drained soil high in organic material and slightly acid (pH 5-6).

**Landscape/Wildlife Use:** A lovely small tree for the yard or woody border. Easily worked into woodland gardens in combination with rhododendrons and azaleas. The attractive flowers, bark, and fruit, along with the small size make it a very desirable tree for even small suburban yards. Can be kept as a multi-stemmed shrub if cut back occasionally. Best used as a nesting and cover tree for wildlife.

**Diseases and Pests:** None serious.

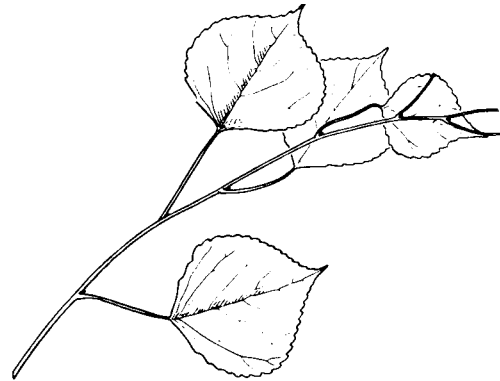
**Natural Range:** The Virginias, Carolinas, south to Georgia and Alabama and west to Tennessee and eastern Texas. Rare in Kentucky and southern Illinois.



**Landscape/Wildlife Use:** Not a particularly good plant but the late fragrant flowers and polished red stems make it desirable and interesting. Best kept cut back to a suckering shrub. Soils of average fertility and moisture would be adequate for this plant. Most effective when massed or used in borders. Seed may be taken by birds. Dense plants may provide good cover and nesting sites.

**Diseases and Pests:** Nearly troublefree.

**Natural Range:** The mountains of West Virginia, Virginia and Georgia.



*Clethra acuminata* – Sweet Pepperbush

**Leaves:** Alternate, simple, 2 to 4 inches long, pubescent beneath, dark green in summer, yellow to orange in fall.

**Bark and Stem:** Bark is shiny cinnamon brown, exfoliating on trunk.

**Hardiness:** Zones 4-6.

**Growth Rate and Mature Size:** Slow to medium, 8 to 12 feet tall in the wild, will sometimes reach 20 foot heights.

**Flowers:** Late July-August, white, fragrant, on 3 to 8 inches long solitary and cylindrical terminal racemes.

**Fruit:** Small capsule, usually persisting through winter.

**Propagation:** Seeds germinate without pre-treatment. Cuttings root easily in peat/sand mix without pre-treatment.

**Culture:** Move balled and burlapped or in container or bare root. Grows naturally in rocky woods or river banks. Container culture is preferred for nursery production.

*Populus tremuloides* – Trembling Aspen

**Leaves:** Alternate, simple, 1 to 3 inches long and wide, lustrous dark green above, glabrous and glaucous beneath, petiole flattened.

**Bark and Stem:** Bark is smooth, greenish white to cream color, eventually becoming furrowed, dark brown or gray and roughened by numerous wartlike bumps. Twig is slender, lustrous, reddish brown.

**Hardiness:** Zones 2-6.

**Growth Rate and Mature Size:** Fast, 40 to 50 feet high and 20 to 30 feet wide.

**Propagation:** Seeds should be collected as soon as the capsule begins to open and planted at once. Do not allow to dry out. If put in sealed containers after harvest and stored at 32° F, they will stay viable for years. There are no dormancy conditions and seed germinates within a few days of planting. Asexual propagation is best accomplished by removing root pieces, root suckers, and layering; inducing adventitious shoots to form from these propagules in vermiculite; then rooting shoots as stem cuttings with various IBA treatments.

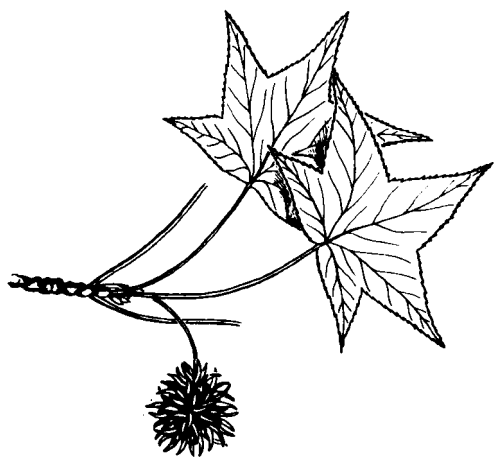


**Culture:** Will grow in virtually any type of soil. Since this plant will sucker and spread, it should be grown in a container. If field grown, seedlings, suckers and sprouts can be harvested bare root.

**Diseases and Pests:** Too numerous to mention, includes various cankers, leaf spots and rusts, aphids, borers, caterpillars and scale.

**Landscape/Wildlife Use:** In spite of its susceptibility to many pests and diseases, this can be an attractive tree in a naturalized planting. Its tendency to form groves over time might make it useful in areas that are in need of stabilization; or where the soil is too poor to support other tree species. When viewed from a distance, the trembling of the leaves caused by flattened petioles seems to hold one's gaze and encourages daydreams. The fall color is often a spectacular golden yellow. Upland game birds will take buds and catkins. Songbirds eat the buds. Rabbit, squirrel, beaver and muskrat will browse bark, foliage and buds. Deer will browse twigs and foliage. Groves and suckering thickets provide good cover and nesting habitat.

**Natural Range:** Newfoundland and Labrador to Alaska. South in the Rockies to northwest Mexico. Throughout the northeastern United States, the Great Lakes Basin and upper Mississippi Valley, south in the Appalachians to Kentucky. Absent from the Atlantic coast south of New Jersey, from most of the prairie provinces of Canada and the United States and most of the Ohio River Valley.



*Liquidambar styraciflua* – Sweetgum or Redgum

**Leaves:** Alternate, simple, 4 to 7 inches long 5-7 lobed star-shaped, dark green and lustrous above. Fall color yellow-purple and red, excellent on some, disappointing on others.

**Bark and Stem:** Bark is grayish-brown, deeply furrowed. Stem is light to dark reddish or yellowish brown, aromatic, rounded or somewhat angled, frequently developing corky wings during the second year.

**Growth Rate and Mature Size:** Medium to fast, 60 to 75 feet in height, up to 120 feet in the wild. In cultivation, width can be two-thirds of height.

**Hardiness:** Zones 5-9.

**Fruit:** Bristly, woody balls about 1 inch in diameter persisting into winter.

**Propagation:** Collect seed in fall not allowing to dry and stratify for 30-90 days at 40° F, then sow. Cuttings can be rooted by treating with 4000-8000 ppm IBA.

**Culture:** Balled and burlapped or container, small plants can be moved bare root. Large plants if root pruned. Will grow on a great variety of soils. Moist, rich soils are preferred to attain best growth.

**Landscape/Wildlife Use:** If room is provided for mature growth, will make an excellent lawn or park tree. Can be used as a street tree but the need for a large root area and the dropping "gum balls" could be a nuisance and eyesore. The corky stems, bright summer foliage, interesting fruit can combine with oftentimes excellent fall color to make this a tree of four season interest. Seeds eaten by mallards and some upland game birds. Songbirds such as chickadee, goldfinch, juncos, white-throated sparrow and towhee will also eat seed. Beaver, squirrel and chipmunk will eat seeds and wood.

**Diseases and Pests:** Bleeding necrosis, caterpillars, leaf spots, sweet gum web worm, and others.

**Natural Range:** Connecticut west to southern Illinois and Missouri then south to central Florida, eastern Texas. Occurs up to 4,000 foot elevation in the Appalachians.



*Sorbus americana* – Mountainash

**Leaves:** Alternate, pinnately compound, 13-17 leaflets 1 to 3 inches long, leaves 6 to 8 inches long. Dark yellow-green above with a whitish bloom beneath, yellow fall coloration.

**Bark and Stem:** Bark is thin, light gray, smooth or slightly scaly. Twig is rounded and stout, red brown, becoming dark brown and marked by large leaf scars and lenticels.

**Growth Rate and Mature Size:** Slow to medium, 10 to 30 feet tall, a small tree or shrub.

**Hardiness:** Zones 2-6.

**Flowers:** May/June, creamy white, very numerous in flat topped clusters, 3 to 4 inches across.

**Fruit:** Applelike ¼ inch in diameter, bright orange red with thin flesh and pale chestnut-colored seeds.

**Propagation:** Seeds require 90 days or more of stratification at 41° F or below in moist medium. Cuttings almost impossible to root and layering is difficult.

**Culture:** Moisture and pH adaptable, this tree will perform well in containers or under field grown conditions. Can be moved bare root if root pruned. Does best in cool, moist situations in full sun.

**Landscape/Wildlife Use:** This small, slow growing, short lived tree is a good candidate for border planting and naturalizing. Might make a good specimen tree for the small yard if kept healthy and vigorous so as to ward off the many diseases and pests that prey on weakened mountainash. The combination of fall foliage and brilliant colored fruits can make this tree a breathtaking sight on a clear autumn day. Fruits eaten by grouse, grosbeaks, waxwings and catbirds. Deer may browse foliage and twigs.

**Diseases and Pests:** As with any species of Sorbus, fire blight, borers and canker are the worst of many problems.

**Natural Range:** Newfoundland to Quebec south to Pennsylvania and Maryland, south along the mountains to North Carolina and Tennessee, westward to Minnesota.



*Pieris floribunda* – Mountain Fetterbush

**Leaves:** Alternate, simple, glandular-dotted beneath, 1 to 3 inches long, dark green.

**Flowers:** White fragrant nodding pyramidal clusters to 4 inches long, in April for 2-4 weeks, resemble flowers of blueberries or lily of the valley.

**Propagation:** Seed should be sown as soon as ripe, cuttings are difficult. However, rooting may be accomplished under mist with wounded cutting treated with 5K to 85K IBA liquid or talc and bottom heat. Rock wool propagating sheets are used to reduce transplant shock.

**Culture:** Move balled and burlapped or container, average soils with pH of 5 to 6 are best, no serious pests.

**Hardiness:** Zones 5-7.

**Growth Rate and Mature Size:** Slow, 2 to 6 feet tall with similar spread.

**Landscape/Wildlife Use:** A dense, attractive evergreen shrub best used for rock gardens, low borders or basal planting for taller trees and shrubs. A very serviceable and pest-free shrub deserving of widespread use. Dense shrubs are often used by birds for nest sites, as well as providing excellent cover for songbirds and small animals.

**Diseases and Pests:** None serious.

**Natural Range:** West Virginia, Virginia and south to Georgia.



*Cornus alternifolia* – Alternate-leaved Dogwood

**Leaves:** Alternate, appearing whorled, simple, slender stalked, medium to dark green, glaucous beneath, petiole 1 to 2 inches long.

**Bark and Stem:** Bark is thin, reddish-brown, smooth or fissured and cross-checked. Stems slender, usually greenish to reddish or purplish shiny light blooms, glabrous.

**Growth Rate and Mature Size:** Medium, 15 to 25 feet high with 1½ times that in spread.

Hardiness: Zone 3-7.

**Flowers:** May to early June. Yellowish white, fragrant, lasting 7 to 10 days, borne in 1 to 3 inch diameter flat topped cymes.

**Fruit:** Drupe, bluish black, matures July-August.

**Propagation:** Seed requires 2 to 5 months warm period followed by 2 to 3 months cold. Softwood cuttings may be rooted with 2500 to 8K ppm IBA.

**Culture:** Will respond well to standard nursery treatment, can be moved bare root when 3 to 5 feet. Prefers moist, cool soils, sun or shade.

**Landscape/Wildlife Use:** Strong horizontal branching along with the whorled appearance of the leaves make this dogwood interesting. Best suited for naturalizing or shrub borders—either a small tree or shrub. The flowers are showy enough to be effective and fall foliage is usually a reddish purple. Fruits held on bright stalks are attractive and change from green to red to bluish-black at maturity. Seeds eaten by songbirds and limbs provide cover and nesting habitat.

**Diseases and Pests:** Leaf spot, twig blight, canker borers, leaf miners and others.

**Natural Range:** Nova Scotia to Minnesota, south to Missouri, Alabama and Georgia.



*Cornus canadensis* – Bunchberry or Dwarf Cornel

**Leaves:** Whorled at top of stem, glabrous, glossy dark green changing to red in fall.

**Hardiness:** Zone 2.

**Growth Rate and Mature Size:** Slow, 3 to 9 inches high, spreading by stolons (rooted/layered stems).

**Flowers:** Fertile flowers not showy, bracts, borne in fours are white May through July.

**Fruit:** Scarlet, berrylike drupe ¼ inch diameter ripening in August.

**Propagation:** Seeds require warm plus cold stratification period. Cuttings might be rooted if various rates of IBA are tried. Propagation by dividing flattened or potted plants is probably the best method.

**Culture:** Best grown in containers under shade (50 to 75 percent), requires acid soil, evenly moist and high in organic material. Can be grown in flats and planted whole or sectioned and planted.

**Landscape/Wildlife Use:** Excellent ground cover if cultural requirements can be met. Will do well under pines and broad-leaved evergreens. Flowers and fruits are both charming and beautiful. Seeds eaten by birds.

**Diseases and Pests:** No serious pests.

**Natural Range:** Greenland to Alaska, south to West Virginia, west to South Dakota, New Mexico and California. Usually found at high altitudes in cool, moist woods.

## Quercus – Oaks

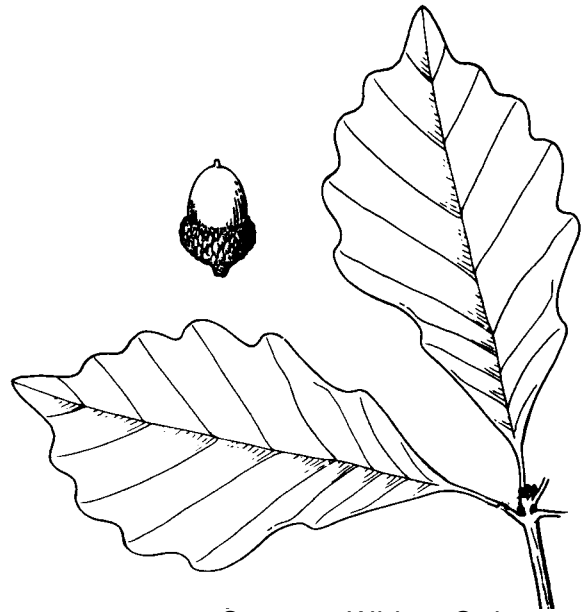
The native oaks have better representation in the nursery and landscape trade than any other genus of woody plants, and justifiably so. They are perhaps the most dependable of our ornamental trees. They have sturdy trunks and limbs and many species have brilliant fall color. They are mostly large trees and most attain heights of 75 feet or more. For this reason, they must be thought of as a tree for all ages—a tree to be planted that can be enjoyed by generations to come. All oaks bear mast that is used heavily by wildlife. Bird species that feed on acorns include mallard, clapper rail, ruffed grouse, bob white quail, wild turkey, yellow shafted flicker, rose-breasted grosbeak, blue jay, brown thrasher, red-headed and red-bellied woodpeckers and other species. Mammals include black bear, gray and red fox, muskrat, eastern cottontail, and various species of squirrels. White-tailed deer will feed on twigs and foliage in addition to acorns.

The following species were selected for their unique attributes and the fact that they are scarce in the nursery and landscape trade. All three species will grow in soils of average fertility and moisture with a pH of 5 to 6. Oaks should be moved balled and burlapped as small trees. Small seedlings can be moved bare root.

Most oaks are subject to a wide variety of pests. However, if well cared for and kept in vigorous, healthy condition, they will generally have few problems.

A few of the diseases and pests are: anthracnose, basal canker, rust, twig blight, various galls, oak sawfly, borers, leaf miners, saddle back caterpillars.

Oaks are generally propagated from their seed (acorns) by stratifying for 30-60 days in a moist medium at 41° F. Direct sowing outside is also usually successful.



*Quercus bicolor* – Swamp White Oak

**Leaves:** 5 to 6 inches long, alternate, coarsely sinuate-crenate or shallowly lobed, usually white pubescent beneath. Leaves are thick and firm with dark green shiny upper surface. Fall color is brown or dull orange.

**Hardiness:** Zone 3-6.

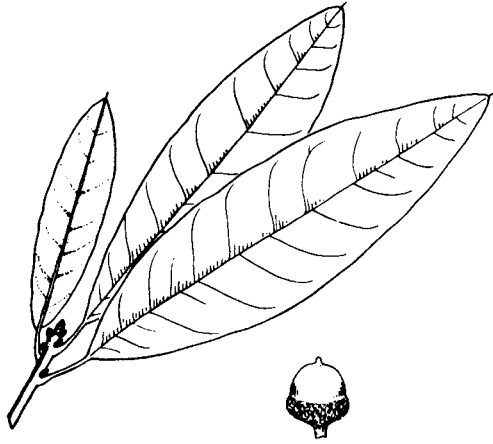
**Growth Rate and Mature Size:** Slow, usually 50 to 60 feet in height with equal or greater spread.

**Culture:** Transplant balled and burlapped as a small tree; requires acid soil and will grow in low lying wet areas.

**Landscape/Wildlife Use:** The chief appeal of this tree, other than those listed above, are the exfoliating bark on the branches and the edible (when boiled) acorns. It will also tolerate wet and swampy conditions and areas subject to flooding, so it would be useful in this type of area.

**Diseases and Pests:** Many insects and diseases, frequently affected by leaf chlorosis.

**Natural Range:** Maine to Florida west to Minnesota and Texas.



*Quercus imbricaria* – Shingle Oak

**Leaves:** Alternate, simple, dark green and very shiny above, pale or light brown or downy below, dead leaves often persist on trees through the winter from the mid-Atlantic states southward.

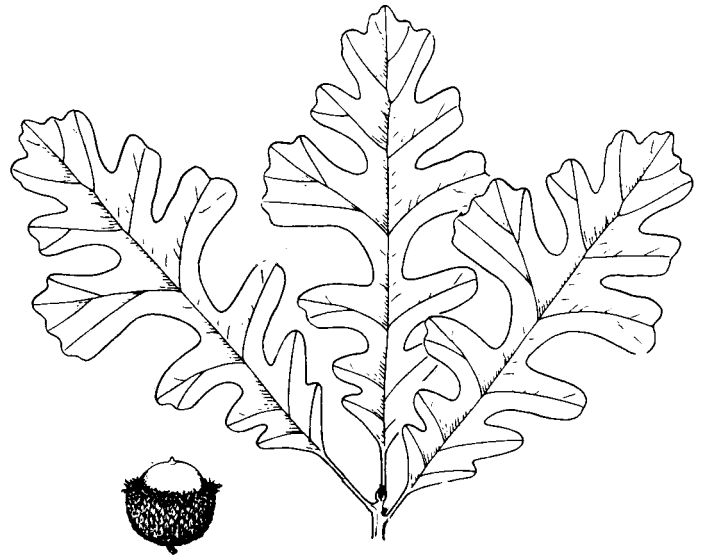
**Growth Rate and Mature Size:** Slow to medium, up to 80 to 100 feet but more commonly 50 to 60 feet in height with comparable spread.

**Hardiness:** Zones 4-8.

**Culture:** Transplants fairly well; prefers moist, rich, well-drained soil but will tolerate dry soils and city conditions; prefers full sun.

**Landscape/Wildlife Use:** Valuable as a street, golf course, park or lawn tree if area permits. Accepts pruning well and can be trimmed as a hedge. Leaves persist all winter, making an effective hedge or windbreak. The simple shape is not typical of what most think of as an “oaklike” leaf, so is somewhat of a novelty. The fall color is an unappealing brown to red-russet with many dead leaves hanging on the tree throughout the winter.

**Natural Range:** Pennsylvania south to Alabama, west to Iowa, and scattered in West Virginia, Maryland, Virginia and North Carolina.



*Quercus macrocarpa* – Bur Oak

**Leaves:** Alternate, simple, 4 to 10 inches long. Leaves are thick and firm with dark green and shiny above, silvery green and downy below.

**Bark and Stem:** Bark is rough, usually gray, and develops deep ridges and furrows. Stems are stout, yellowish brown and smooth or downy, usually developing corky ridges often the first year.

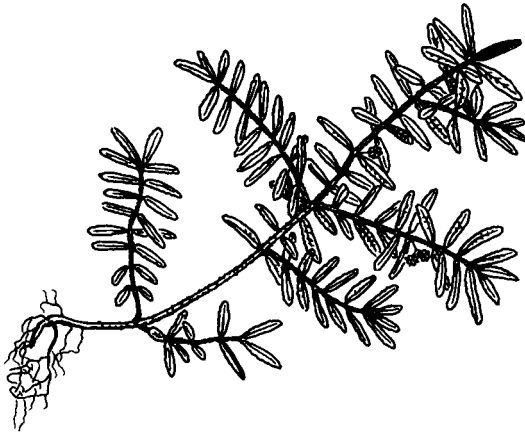
**Growth Rate and Mature Size:** Slow, 70 to 80 feet in height with an equal spread.

**Hardiness:** Zones 2-8.

**Culture:** Difficult to transplant, very adaptable to various soils, more tolerant to city conditions than most oaks; full sun.

**Landscape/Wildlife Use:** Best suited for parks or other areas where room will allow this beautiful oak to develop to its fullest. The interesting corky stems and beautiful ¾ to 1½ inch long acorns that are half covered by a deep fringed cup help to make this a tree of particular beauty.

**Natural Range:** Nova Scotia to Pennsylvania, west to Manitoba, south to Tennessee, east to the northern Chesapeake area of Maryland.



*Paxistima* or *Pachistima canbyi* – Canby's Mountain-lover

**Leaves:** Opposite, simple, evergreen, linear oblong or narrow oblong, ¼ to 1 inch long, 3/16 inch or less wide, lustrous dark green, turning bronze in fall.

**Growth Rate and Mature Size:** Slow, 1 foot high by 2 to 3 feet wide in 3 to 4 years.

**Hardiness:** Zones 3-8.

**Propagation:** Plants are easily divided and cuttings root readily when taken in July and treated with 1000 ppm IBA and placed under mist.

**Culture:** Best grown in moist well-drained soils, in sun or light shade. This plant will tolerate high soil pH and naturally occurs on calcareous soils. Best grown in containers or possibly deep flats.

**Landscape/Wildlife Use:** An excellent evergreen ground cover that requires little or no attention. Pests are few with leaf spot and scale being the most common. Would be ideal for a rock garden or low hedge along walks or paths since it is slow growing and stays low. No food value and very limited low cover value for wildlife.

**Diseases and Pests:** None serious.

**Natural Range:** This rare native plant occurs only sparsely in the mountains of West Virginia and Virginia and whole plants ***should never be collected or disturbed in any way.***

## Rhododendron – Azaleas

The five species listed compose those rhododendrons that are commonly known as deciduous azaleas in horticulture. They thrive in habitats that range from dry, open rocky woods to swamps and stream borders. All adapt easily to standard nursery practices for azaleas and are easily grown in containers or as balled and burlapped plants. Surprisingly enough, deciduous azaleas can be moved bare root. Even plants up to 24 inches and heavily branched will show no adverse effects if handled in the fall when dormant and replanted without delay.

**Diseases and Pests:** These plants have the typical pests and diseases of most rhododendrons. The worst are probably *Botryosphaeria*, *Phytophthora*, petal blight, powdery mildew and leaf spot.

**Propagation:** Although softwood cuttings can be rooted, propagation is best done by seed. Seed should be sown on damp peat moss in flats or covered plastic trays. Treatment with fungicides to prevent damping off will be helpful since the small seedling will need to be well watered. If seeds are sown in the fall and given bottom heat or greenhouse conditions, they will germinate and can be kept in active growth all winter by giving additional artificial light with fluorescent tubes. If kept “pushed” into spring and then throughout the summer, the seedlings are usually large enough to be moved out into protected beds or containers for the first winter. Superior plants will be produced if attention is given to thinning out the seedlings to prevent crowding and pruning back the larger stems to promote lateral and basal sprouts.

**Landscape/Wildlife Use:** Deciduous azaleas are perhaps the most rugged, durable and adaptable group of plants in the genus *Rhododendron*. Because of this they can be used in locations where the typical “big leaved” rhododendron would not thrive. Most azaleas are planted as a specimen, border, or for naturalizing. Sites that would be considered too hot, dry or exposed for most others of the genus would support most of the deciduous species that are native.

The azaleas have little wildlife value although dense stands will provide the always necessary cover and nesting sites for songbirds, and deer will browse foliage and stems.

**Culture:** Although they can be used just about anywhere to good effect, they are most effective and enjoyable when they can be planted individually as specimens so that their full beauty can be enjoyed. But they can be used to great effect as mass plantings on banks and slopes too steep to maintain by mowing. Although they will thrive in shady situations, they will develop into fuller, denser and much more floriferous plants in full sun.

Their ease of propagation by seed will make these plants economical to grow and seedling variation will add interest to mass planting.



*Rhododendron calendulaceum* – Flame Azalea

This is probably the best known and most widely grown of the native azaleas. Although often a bright orange, flower color is extremely variable and will range from the typical orange to dark yellow, apricot, salmon and scarlet. The flowers appearing in May to June are not fragrant, but this is seldom noticed because of their striking color. The foliage is a medium green in summer with shades of dull yellow to red in the fall. This loosely branched upright shrub grows to 6 feet tall, hardy to zone 5 and has a natural range from Pennsylvania mountains south to Georgia.



*Rhododendron arborescens* – Sweet Azalea, Smooth Azalea

The pink-tinged white flowers appearing in June or July are extremely fragrant and will fill the woods or garden with their scent. They will grow up to 20 feet tall, but like all deciduous azaleas are easily maintained at any height or width. This very hardy plant will bloom and survive in zones 4-9. This plant is not as tolerant to wet soils as Swamp Azalea. The natural range for sweet azalea is from southern Pennsylvania to Georgia. The summer leaves are a lustrous green and the fall foliage is yellowish.



*Rhododendron nudiflorum (periclymenoides)* –Pinksterbloom

The chief asset of this plant is that the flowers appear in late April or early May before the foliage. This gives a more refined and delicate look to the plant that is most beautiful. Although generally pink, the flowers may range from nearly white to a deep violet. The bright green foliage turns a dull yellow in the fall. This species is stoloniferous and will form dense multistemmed clumps that really give a splash of color when in bloom. Hardy in zones 3-8 and has a natural range from New York to Alabama and Mississippi.

# Medicinal Plants

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*Rhododendron prinophyllum (roseum)* – Rose Shell or Rose Azalea

The dark pink flowers exude a pungent clove scent that carries far and wide. This very hardy plant blooms in May and will take severe weather in even the most exposed situations and still bloom well. It is also known to be tolerant of a high pH, which makes it remarkable in a group of plants known for their requirement of acid soil conditions. The foliage is a bright green in summer changing to a reddish bronze in fall. Hardy in zones 3-8, natural range is from New Hampshire to Virginia and west to Missouri and Illinois.



*Rhododendron viscosum* – Swamp Azalea

The fact that this rhododendron will tolerate wet soil conditions makes it very useful. Many times planting sites that have poor drainage are left unplanted. However, the Swamp Azalea will fill the niche usually left to more common and less attractive plants.

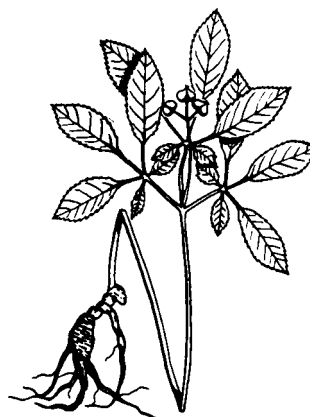
The white, sometimes pink flowers have a spicy clove scent and are present from mid-May to June. This plant will form large clumps—an indication of its stoloniferous habit.

Although usually found in low marsh areas, pond and stream banks from Maine to South Carolina it ascends up to the mountain tops of the North Carolina Blue Ridge. The fall coloration is usually an excellent red.

Swamp azalea differs from Smooth Azalea by having bristly hairs on the buds, twigs and leaf midrib as well as being obovate in shape.

**Q.** *What wild plants have income opportunities for medicinal uses?*

**A.** Many plants have been used for medicinal purposes over the decades. Most medicinal plants have eventually been found to contain chemicals useful to treat or cure ailments. However, the most valuable medicinal plant, American ginseng, defies science and relies on emotions, folklore and tradition to maintain its lofty stature as a “cure-all.” Only a few of the more valuable plants will be discussed in this section.



*Panax quinquefolium* or *P. quinquefolius* — American Ginseng

American ginseng has been the most valuable “medicinal” wild plant for the past 100 years. In 1991 the roots of wild ginseng were selling for \$200 to \$280 per pound of dried clean roots in various areas of the eastern United States. American ginseng, a native plant of hardwood forests, grows naturally in rich, moist woods from Quebec to northern Florida and west to Manitoba and Oklahoma. It grows best under the following conditions:

1. moist, well-drained loam soils that are high in organic material,
2. 75 to 85 percent shade,
3. north or east facing slopes.

Ginseng is often associated with mixed hardwoods, such as basswood, red oak, white ash, black walnut, yellow-poplar, shagbark hickory and bitternut hickory. Shallow rooted trees such as maples, birches, white pine, etc., seem to provide serious competition for water and nutrients. Associated herbs are Jack-in-the-pulpit, bloodroot, Solomon’s seal, plumelily, rattlesnake fern, blue cohosh, and Canada violet.



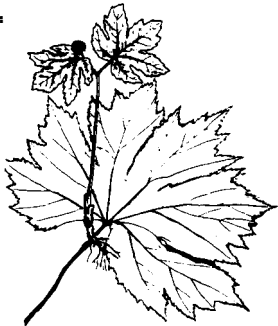
The high price of wild ginseng has caused many people to try to duplicate nature and grow ginseng in shaded beds or under simulated forest conditions. When grown in cultivated beds the roots are smooth, plump and cream-colored with few concentric rings versus the dark tan, gnarled wild roots that will contain numerous concentric rings.

The price paid for cultivated roots in 1990 ranged from \$30 to \$60 per pound.

Wild-simulated cultivation, where one tries to duplicate nature and grow American ginseng under forest canopies, is a potentially lucrative alternative. Roots will mature in 6 to 10 years and will have nearly the same value as wild ginseng roots. Wild-simulated cultivation provides the following advantages:

1. can obtain high plant population,
2. can partially control damage from deer (eat green plants) and rodents (eat roots),
3. can reduce competition in soil and bed preparation by removal of competing herbs,
4. can fertilize to increase growth,
5. can reduce vandalism by planting in an area where you control access.

It is neither reasonable to expect total control of rodents, deer and vandalism nor to hope ginseng will not be infected by *Alternaria* blight or *Phytophthora* root rot. Still, the smart entrepreneur can find growing American ginseng to be challenging and profitable.



*Hydrastis canadensis* – Goldenseal or yellow-root

Goldenseal or yellow-root is the second most valuable medicinal herb. The herb occurs naturally from Vermont to Georgia and west to Minnesota and Arkansas where it grows in similar habitats to American ginseng. In 1991 goldenseal prices ranged from \$8 to \$18 per pound of dried, clean roots. Some dealers will also purchase leaves and stems at lower prices.

In general, goldenseal is easier to cultivate, subject to fewer disease, insect and pest problems and is more tolerant to sunlight.

The bright yellow roots are used medicinally to treat mouth ulcers, as a hemostatic and as an astringent to treat certain eye conditions.

Goldenseal can be cultivated from seeds, rootlet cuttings and rhizome (root) divisions. It typically takes plants 3 to 5 years to reach maturity. As mentioned previously, goldenseal habitat requirements are very similar to American ginseng except it will tolerate more sunlight (65 to 75 percent shade).

Here are five additional wild plants that can be harvested and sold to herb dealers:

1. Black cohosh or rattletop (*Cimicifuga racemosa*)

Plant part: large, knotty creeping root  
1991 price: 55¢ per pound

Medicinal use: treatment of chronic rheumatism, expectorant and relaxant.

2. Witch-hazel (*Hamamelis virginiana*)

Plant part: leaves, twigs and bark  
1991 price: 70¢ per pound

Medicinal use: distilled oil used in ointments to treat sprains and bruises, hemorrhoid suppositories, and as an astringent to relieve itching and irritation.

3. Bloodroot (*Sanguinaria canadensis*)

Plant part: root  
1991 price: \$3.25 to \$3.50 per pound

Medicinal use: root is very poisonous but in correct dosage can be used to treat bronchitis, asthma, and croup. More recently it has been used as a toothpaste additive to reduce plaque.

4. Sassafras (*Sassafras albidum*)

Plant part: bark from trunk and roots  
1991 price: trunk bark 10¢ per pound, root bark \$1.00 to \$1.75 per pound

Medicinal use: Primarily used as a folklore spring tonic. Also used to treat skin eczema and psoriasis, head lice, gout and rheumatism.

5. Mayapple (*Podophyllum peltatum*)

Plant part: slender, knotty creeping rootstock  
1991 price: \$1.25 per pound

Medicinal use: treatment for cancer of testicles and lungs and to treat venereal warts.

# Edible Plants

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**Q.** Are there any potential income opportunities from wild plants being sold for food?

**A.** Yes. However the potential is limited. Literally hundreds of wild plants have excellent and unique edible qualities. Native American Indians and pioneers depended heavily on wild plants for food. Then, as today, collecting wild foods was time consuming and required lots of hand labor. Thus, only when nuts, fruits, berries, etc., were exceptionally concentrated and plentiful could anyone collect wild foods for sale.

The way to offset this was simply to take wild plants and cultivate them so you could assure quality, quantity and concentration. This was done in America with crops such as corn, cranberries, blueberries, chestnut, walnut, blackberries and other wild plants. Wild foods have not remained competitive in most instances because it was difficult to guarantee health and quality standards expected by the American consumer. These same difficulties caused researchers and farmers/foresters to **not** look for techniques to manage potential food plants in their natural setting. The trend to organic foods may slightly reverse this situation.

Wild foods in the eastern United States which seem to have the most potential are grouped as follows:

## 1. Table foods, jellies, jams, preserves

- |                 |                   |
|-----------------|-------------------|
| a. Blueberries  | g. Pawpaw         |
| b. Blackberries | h. Wild plums     |
| c. Cranberries  | i. Raspberries    |
| d. Wild grapes  | j. Serviceberries |
| e. Elderberries | (Juneberries)     |
| f. Persimmon    |                   |



*Rubus allegheniensis* – Allegheny blackberry

## 2. Nuts

- Walnuts
- Pecans (southern U. S.)
- Hazelnuts (Filberts)
- Hickories

## 3. Edible greens

- Ramps
- Watercress
- Fern fiddleheads (Ostrich & Bracken ferns)
- Cattails
- Wild leeks and garlic

## 4. Syrup

- Sugar maple

## 5. Exotic pest plants

- Autumn and Russian Olives (berries for jellies)
- Japanese Knotweed (early shoots for potherb)
- Tartarian and Morrow's Honeysuckle (berries for jellies)
- Kudzu (roots for flour)
- Pigweed (Amaranth) (seeds for flour)

## 6. Miscellaneous

- Mints (leaves for flavoring and teas)
- Roses (hips for vitamin C)



*Nasturtium officinale* – Watercress

# Wild Plants for Decorative and Craft Uses

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**Q.** *What is the history of wild plants being used for crafts and decorative uses?*

**A.** Wild plants have provided materials for crafts, furniture and decorations for centuries. American Indians depended totally on native wild plants, animals and rocks. Much of this information was passed on to European pioneers who found a wealth of many plants with practical and decorative uses. Fashions, designs and standards have changed over the years, but many people still prefer natural crafts, decorations, and rustic furniture. Some prefer the annual trek to bring home the Christmas tree from the forest along with ample holly/pine boughs and ground cedar for the proper Christmas atmosphere. Others take great delight in the challenge of using grapevines, pine cones and dried flower stalks to create an artistic masterpiece.

**Q.** *Are there wild plant materials that can be sold to decorate homes at Christmas?*

**A.** Yes. Conifers (pines, fir, spruce, cedar) that grow in the wild can be used as Christmas trees. To collect a Christmas tree today is not as easy as 50 years ago. Young trees are more valuable and landowners more reluctant to let people cut a wild Christmas tree. Also, trends favor cultivated and artificial trees. Other wild plant materials that could be harvested and sold might include American holly (especially with red berries), groundpines or running cedars, branches of evergreens, and pine cones.

**Q.** *What wild plant materials can be used for decorative wreaths?*

**A.** The first step in wreath making calls for wrapping vines in a circular pattern. Grapevines are most commonly used, even though several other vines have potential. Cones can be added as well as dried plant parts to provide balance, depth and an artistic touch.

Special Christmas wreaths are often made by attaching evergreen branches of fir or pine to a circular wire frame and then adding cones, holly, mistletoe, etc.

**Q.** *Can baskets be made from wild plants?*

**A.** Yes. Several types of baskets are made from wild plants. One of the most popular is

made from split pieces of white oak wood. In the southern United States longleaf pine needles and flexible grass stems are used to create beautiful and expensive baskets. Still others are made from vines such as Japanese honeysuckle or bark from trees such as hickory and basswood.

White oak and hickory are also still used to create the distinctive "split bottom" chairs.

**Q.** *Are there other specialty wood crafts with income potential?*

**A.** You are probably limited only by your own imagination and creativeness.

Wood carvers and "wood burners" are always searching for specialty woods such as basswood, white pine, paulownia, and American holly. They also look for trees with burls, cankers and knots which can provide unusual wood-grain characteristics. Other craftspersons are looking for driftwood, stumps, twisted limbs, gnarled roots, etc.

Try this for imagination and practicality.

A nursery owner near Baltimore bought a small sawmill to cut lowgrade lumber, plant stakes and slats for shading. A big problem was how to get rid of short, curved logs. For years they were left in the woods to rot or used for firewood.

Finally, a customer with imagination suggested sawing the log in half for a semicircular seat for his patio table. Semicircular log seats that are sanded and treated with polyurethane are now a best seller and profit maker.

**Q.** *What wild plant parts can be used for dried arrangements?*

**A.** Again, use your imagination. Below is a list of some popular dried plant parts in use:

- a. cattail seed heads
- b. common reed (*Phragmites*) seed heads
- c. sensitive fern spore stalks
- d. groundpine (*Lycopodium*) stems
- e. Redgum (sweetgum) fruits
- f. Cones (pine, spruce, hemlock)
- g. Showy fruits of bittersweet, strawberry-bush and wahoo.

Other craftspeople have been very successful in drying flowers, leaves, fruits, seeds, etc., to incorporate with notecards.

**Q.** *What are some wild plant materials that could be used in terrariums?*

**A.** Terrariums frequently use live plant materials such as mosses, lichens, reindeer moss, teaberry, pyrola, pipsissewa and small ferns. Groundpines, cranberries and similar plants typically look good for a week or so in terrariums but are unable to live and provide customer satisfaction.

**Q.** *What are the pitfalls of using wild plants?*

**A.** Wild plants are cheap and often plentiful. However, many American customers want assurance that products they purchase are not damaging the environment. Picking up halves of black walnut shells to create "owl paintings" is environmentally acceptable. Wholesale digging of teaberry plants or cutting vines will likely need to be explained. Explanations should provide proof that the environment is not being destroyed or exploited and that management plans are being implemented to ensure the long-term sustainability of the wild plant being harvested.

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