Elderberry, Herb of the Year 2013

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Introduction

Since Elderberry (Sambucus) is the herb of the year for 2013, it is time to learn about the botany, lore, culture, and uses of this historically useful plant. Commercial culture is being investigated on an increasing scale in some parts of the country. This plant, which is sometimes dismissed because of its weedy tendencies around cultivated fields, should now come into its own. Both the flowers and berries have many culinary uses. All plant parts have historical uses as plant medicines.

It is important to remember that medicinal uses discussed in this paper are not designed as a prescription for self-medication, but as a thought-provoking look at historical herbal practice, as gleaned from the literature. Ideally, an open-minded physician and an experienced and well-trained herbalist could coordinate a safe and effective health program.

While there are a number of Elderberry species native to the US and Canada, it is *Sambucus canadensis* that is most common in the central and eastern parts. In fact, this one is often considered a woody weed in fencerows, along ditches, and around farmsteads. In many instances, only the local birds take much notice of this medium to large shrub.

Botany

The genus Sambucus was formerly classed in the honeysuckle family, Caprifoliaceae, but due to new genetic evidence, it has now been reclassified to the Moschatel family, Adoxaceae. There are several native species of the genus Sambucus in North America. From the Great Plains eastward to the Atlantic coast, the most familiar is American Elder or Elderberry, *Sambucus canadensis* (syn. *S. nigra canadensis*), a shrubby, multi-stemmed plant with outwardly arching habit, 3 to 15 feet high, spreading a similar width, with pithy brittle twigs, silvery to yellow-gray smooth bark, with prominent raised corky lenticels. Stems are white inside with thick pith in the center. Bark on older stems becomes shallowly furrowed and rough with age. Older plants tend to send out rhizomes, which spread and form clonal clumps. Individual stems may not be long-lived, but are readily replaced with others arising from the base of the plant. *S. canadensis* is hardy in USDA zones 4 to 10 (possibly 3).

Leaves are opposite, odd-pinnately compound, with 5-11 (usually 7) elliptical to lance-shaped, sharply-toothed, serrate leaflets, 2 to 6 inches long, dark green above and much paler below, with acuminate tips. The terminal leaflet is often larger than the others, and the bottom pair of leaflets are often 3-lobed, as well. It is normally deciduous, but in central and southern Florida, the plants may retain leaves all year. Leaves and wood have a musky, slightly acrid scent.

Perfect flowers appear in June-July, although in southern locations, such as Florida, bloom may recur sporadically through most of the year. Individual flowers are tiny, less than 1/8 inch across, with 5-lobed corolla and 5 stamens. Flowers are borne in large numbers in umbrella-shaped corymbs at the tips of new growth. On healthy specimens, the flowers can be very abundant, covering the whole plant. Fragrance is pleasant to slightly musky or rancid.

Fruits are small drupe-like berries, up to ¼ inch in diameter, purplish-black in color, juicy, and contain 3-5 nutlets. Ripe fruits are attractive to birds and other animals. They usually ripen August to September over much of their range.

Other black or blue-fruited North American species include *S. mexicana*, Mexican Elder, from the Sonoran desert, with black berries; *S. simpsonii*, Florida Elder, from the southeastern US, with blue-black berries; and *S. velutina*, the Velvet Elder of southwestern North America, with blue-black berries. *S. cerulean*, the Blue Elderberry, is native to western North America, and has dark blue-black berries with a thick glaucous bloom on the surface, giving them a sky-blue appearance.

Red-fruited elderberries include *S. callicarpa*, the Pacific Coast Elderberry, from the west coast of North America; *S microbotrys*, the Mountain Red Elder, from southwestern North American mountains; and *S. pubens*, the American Red Elder, found in northern North America. Native Americans were careful to remove the seeds from the fruit of red-fruited elderberries before consuming, to avoid a fairly high concentration of cyanide-producing glycosides in the seeds.

Distribution

Plants are most numerous in moist, rich soils, in deciduous forests, swamp edges, and along fences and roads, although they are adaptable to a variety of sites and conditions. Elderberry is a dominant understory species in riparian woodlands. Throughout most of the North American range, elderberry is common enough to be considered a woody shrub weed. *S. canadensis* ranges from Nova Scotia to Florida, and west to Minnesota and Texas. It occurs in a large area east of the Rocky Mountains in North America, and south through eastern Mexico and Central America to Panama.

History and Lore

Elderberry has been involved with human history for hundreds of years. Sambucus comes from the Greek word "sambuke," a musical instrument made of elder wood, whose music was believed to heal the spirit. (In Europe, Elderberry wood was used for making musical instruments.) The common name "elder" comes from the Anglo-Saxon "ellen", meaning fire-kindler, because of the dry, pithy stems.

Some species of elder is said to be the wood of Christ's cross, and was also celebrated as the home of the goddess Freya. If elder was seen in a dream, illness was on the way. It was such a healthful plant that John Evelyn called it a remedy "against all infirmities whatever." It would ward off witches if gathered on the last day of April and put up on the windows and doors of houses. The plant itself was very attractive to witches, and was avoided after dark. Conflicting folklore says that elder will ward off evil spirits, while it is also said that witches will often congregate under its branches.

Chopping down the plant presented serious dangers, according to folk tradition. In Denmark, the Hylde-mikoer (elder tree mother), a spirit, lived in elderberry plants and would haunt anybody who cut one down. The British found that the spirit was willing to bargain. "Take off your hat and kneel," one source advises, and try to sound respectful. Say, "Give me some of your wood and I will give thee some of mine when it grows in the forest." Silence meant consent.

Elderberries were an early black hair dye, and the berries ripened at just the right time to signal wheat planting season. Shakespeare called it "the stinking elder." The wood of old stems was prized for the making of mathematical and musical instruments. American Indians called the elder the "tree of music" and made flutes from branches cut in spring and dried with the leaves attached. Large, straight shoots were used as arrow shafts.

In popular culture, the most powerful wand in the Wizarding World of *Harry Potter* is a wand made of Sambucus known as the "Elder Wand". In *Monty Python and the Holy Grail*, the keeper of the French castle taunts King Arthur by telling him that his father "smelt of elderberries." Elton John released a song in 1973 called *Elderberry Wine*. The plot of the play *Arsenic and Old Lace* revolves around a pair of spinster aunts who murder men by serving them elderberry wine adulterated with cyanide, arsenic, and strychnine. *Elderberries* is a comic strip about a home for the elderly, drawn by Phil Frank.

Culinary Uses

Elderberries are easy to like. They're user-friendly. Jam, jelly, pies, syrup, schnapps, brandy, and wine can be made from them. pick and freeze clusters, to make removal from the stems easier and cleaner. The berries have more Vitamin C per unit weight than either oranges or tomatoes. They also contain more phosphorus and potassium than any other temperate fruit crop, and a good amount of Vitamin A.

The flowers are also edible and can be used in pancakes and muffins, or just dipped in batter and fried. They also make a nice tea or a frefreshing "Elder Blow Champagne," which is a pale wine resembling champagne. Elderflower water is also used in perfumes and sweets. Flowers are used to produce elderflower cordial. The French, Austrians, and Central Europeans produce elderflower syrup, commonly made from an extract of elderflower blossoms, which is added to pancake mixes instead of blueberries. People from Central, Eastern, and Southeasetern Europe us a similar method to make a syrup which is diluted with water and used as a drink. In the US, the French elderflower syrup is used to make elderflower marshmallows. St. Germaine, a French liqueur, is made from elderflowers; and Hallands Flader, a Swedish aquavit, is flavored with elderflowers.

Tart, deep purple berries are used in jams, jellies, chutneys, preserves, and wine. The dried blossoms are used in tea blends. There is one early recommendation that young elderberry shoots can be cooked like asparagus and eaten. No modern backup has been found for this one.

Medicinal Uses

Medicinally, elder has been used for hundreds of years. There may be a measurable effect in treating flu, alleviating allergies, and boosting the overall respiratory system. A 2010 study discovered that *S. nigra* juice prevented viruses from infecting mucous membranes. An elder flower tea has been used to break dry fevers and stimulate perspiration, aid headache, indigestion, twitching eyes, dropsy, rheumatism, appendix inflammation, bladder or kidney infections, colds, influenza, and consumption. Antiviral, antibacterial, and antitussive, elderberry juice was used to treat an epidemic of flu in Panama in 1995.

American Indians used the inner bark tea as a diuretic, strong laxative, emetic, poultice on cuts, sore or swollen limbs, newborn's navels, and boils, to relieve pain and swelling; also for headaches. Leaves were poulticed on bruises, and on cuts to stop bleeding. Bark tea was used as a wash for eczema, old skin ulcers, and skin eruptions. A tea made with elder and peppermint in water is a folk remedy for colds, induces sweating, and nausea. Beads made from the knots of the stem were made into a necklace for babies who were teething.

Native Americans applied the bark as an antidotal poultice to painful swellings and inflammations. There was some use of bark tea to ease parturition and the tea from the flowers as a febrifuge. Bruised leaves rubbed on the skin will keep flies away. An elder planted near the

orchard will help lure birds away from other fruits with its berries. A decoction of the leaves will keep caterpillars from eating plants on which it is sprayed. It may also prevent mildew.

Elder flowers were used in a strained, sterilized tea, which was used as a mild stimulant, carminative, and diaphoretic. The muscatel-scented flowers are made into an elderberry water for eye and skin lotions. The flowers treat colds, sore throats, hay fever, and arthritis, and act as a mild sedative. The inner bark has been given for epilepsy, and the roots to treat lymphatic and kidney ailments. A leaf brew is an insecticide. The root and bark are purgative, the flowers are diuretic and diaphoretic. The berries are healthily endowed with anti-viral procyandins and the leaves may be used to make a cooling salve. To make an ointment, take elder flower heads, without the leaves and push them into lard until no more can be pushed in. Place in a clear baking tin, and dry in a moderate oven until the flowers are brown. Strain through muslin and store in small jars. This ointment will beautify complexions, heal sores, and keep away flies.

Elderflowers contain flavonoids and rutin, which are known to improve immune function, particularly in combination with Vitamin C. The flowers also contain tannins, which account for their traditional use to reduce bleeding, diarrhea, and congestion. Flowers are the mildest part of the plant and prepared as a tea, are used to break dry fevers and stimulate perspiration, aid headache, indigestion, twitching eyes, dropsy, rheumatism, appendix inflammation, bladder or kidney infections, colds, influenza, consumption (bleeding in lungs) and are helpful to newborn babies. Used as a wash, the flowers or leaves are good for wounds, sprains, and bruises, as well as for sores on domestic animals.

Leaves, which are slightly stronger, medicinally, have a slightly laxative property. Applied externally, leaves, flowers, bark , and twigs are excellent as a poultice, mixed equally with chamomile, for soreness, inflammations, joint stiffness, and to reduce the swelling of bee stings. The flowers and berries are employed as a diuretic, and can also aid arthritis and rheumatism. Steeped in water, the flowers are used externally to aid in complexion beauty, to tone and soften the skin, and to lighten freckles or spots. The berry juice made into salve aids burns and scalds. The juice taken internally will act as a purgative.

Elderberry is **not** recommended for use in combination with the following pharmaceutical medications, without consulting your health care provider. Diuretics, diabetes medication, chemotherapy, laxatives, Theophylline, and drugs that suppress the immune system are on this list.

Remember that the leaves, twigs, branches, seeds, and roots contain a cyanide-producing glycoside, which gives rise to cyanide as it is metabolized in the body. Although elder stems have been used to make whistles and flutes, prolonged contact may be toxic. An "herbal tea" made from the leaves should be treated with extreme caution, and possibly avoided. There are reports of children getting sick from playing with elderberry whistles or blowguns. Ripe, cooked berries are harmless, as are the flowers. Consuming limited amounts of raw fruit may also show no adverse effect.

Other Uses

Elderberry has been used for dyes for basketry, arrow shafts, flutes, whistles, clapper sticks, and folk medicine. The wood is hard and has been used for combs, spindles, and pegs. The hollow stems have been used to fashion flutes, blowguns, and tree-tapping spiles.

Ornamental

Elderberry is best used in mass plantings in the garden, where its somewhat coarse appearance can blend into a naturalistic setting. Cultivars having cut leaves and purple or chartreuse foliage have been developed as specimen plants.

Culture

Elderberries grow readily from seeds, although, like many other fruit crops, quality and yield may vary significantly between seedlings, even from the same mother plant. Seeds may remain viable for 16 years or more. Since the plants sucker readily, these offshoots can be removed and used to propagate choice plants. If a large number of clonal plants are needed quickly, both dormant hardwood and softwood stem cuttings will root and reproduce the mother plant. Bottom heat will speed this process. Root cuttings will also produce plants this way. Newly established plants will flower after 2-3 years, and near full size after 4.

Plants are adaptable to a wide range of conditions. Both acid and slightly alkaline soils will work. Moist (but not wet) sites are preferred in nature, but the plants can perform well in fairly dry sites, too. If clonal material is planted, two or more clones will ensure better pollination. With wild collected or seedling plants, this will naturally occur if there are two or more. Full sun is best, but moderate shade can be tolerated. Plants are shallow-rooted, so they need to be well watered in the first season. A thick layer of organic mulch may help maintain soil moisture for mature plants. They respond well to fertilization, both with manure or compost or an annual application of commercial fertilizer in early spring. Use 1/2 lb of 10-10-10 per plant per year of age, up to 1 pound per plant for mature plants. No commercial fertilizer should be applied at planting becaiuse of the risk of burning the roots.

Space producing plants 6-10 feet apart in the elder orchard. Established plants will benefit from annual pruning to remove declining older stems, and to head back lush growth to increase vigor and make harvest easier. Second year canes with good lateral development are the most fruitful. By the third or fourth year, older wood tends to lose vigor and become weak. In late winter to early spring while the plants are dormant, remove all dead, broken, or weak canes, plus all canes older then 3 years. Ideally there should be an equal number of 1, 2, and 3 year old canes on the plant. Plants may be coppiced to form a low, bushy screen. Since flowers are borne on both old and new growth, this should not affect yield too much.

Weed control is the most difficult problem faced when establishing elderberries. Because of the shallow roots, cultivation should be no deeper than 2 inches, through the first year. After the first year, it is best to avoid disturbing the soil at all. Use a combination of pulling weeds by hand while they are still small, mowing, and mulching to control weeds without disturbing the roots. Once a thick hedgerow of plants is established, they compete well with most common weeds. Watch out for other bird-carried woody plants, such as mulberry and hackberry, which may invade from time to time.

Elderberry is relatively free of pests, other than ravenous birds, who will compete for the ripe berries. Powdery mildew can be a problem in some years, especially if it affects the fruit. Cane borers occasionally cause damage, but usually are not present in large numbers. Pruning and destroying affected canes can be a reasonably effective treatment.

Cultivars include ‘Aurea’, which has red berries and golden-yellow foliage, ‘Maxima’, which has flower clusters to 15 inches across; and ‘Laciniata’, which grows to only 8 feet, with attractive, deeply dissected leaflets. Selections for fruit production in include ‘Adams No. 1’,

'Adams No. 2', 'Johns', 'Scotia', 'Nova', and 'York', which has the largest berries of any cultivated elderberry.

Harvest/ Processing

Pick flowers when they are in full bloom. They can be used fresh, pickled by the addition of about 10% common salt, or dried. Drying can be accomplished by stirring in a heated copper pan or by placing in a warm, but not hot, oven with the door open.

Inner bark is harvested in early spring and fall; flowers, leaves, and fruit during the season. Strip bark from the plant and dry at moderate heat. It can also be cured in the sun, covering or taking it indoors at night.

Leaves can be harvested in early to mid-summer, on clear mornings after the dew has dried. They can be used fresh or dried.

Berries are harvested by cutting the whole cluster from the bush, once all the berries have fully ripened. Because fruit harvested from different aged canes will ripen at different times, fruit is generally harvested weekly over a period of approximately 3 weeks. Elderberries are separated from the corymb by freezing and then stripping or shaking off the fruit. The harvested fruit is either re-frozen for later processing or thawed for immediate processing. With good growing conditions, an average yield of 3-4 tons of fruit per acre can be expected.

Elderberry production is still labor-intensive at this time, since clusters must be hand-harvested, then removed from the corymb after harvest. Labor needs are approximately 100 hours per acre for production and 650 for hand harvest and freezing/processing. Mechanical harvesting is still in the investigation phase, but may be necessary for large-scale production to be cost effective.

Caution

Leaves, twigs (stems), roots, and unripe fruit are classed as "poisonous," due to the presence of cyanogenic glycoside and alkaloid, which can release toxic amounts of hydrogen cyanide in the digestive tract.

Resources

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