
Apios americana

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Apios americana is a climbing, perennial vine and a member of the legume (Fabaceae) family. Common names for this crop include apios, ground nut, wild bean, bog potato, wild potato, Virginia potato, Indian potato, and wild bean. The plant, native to eastern parts of North America, was widely cultivated by Native Americans for its edible tubers and beans. It has grown well in the subtropical climate of ECHO's Global Farm in southwest Florida (Sobetski, 2021). Its preference for trellis support makes it more difficult to grow on a field scale than a root crop like cassava (*Manihot esculenta*); however, *A. americana* is well-suited for small plantings around the home, producing protein-rich tubers that can be cooked in multiple ways.



Figure 8. *Apios americana* tubers. Source: Holly Sobetski

Uses

Many legumes are grown as green manure/cover crops, but *A. americana* is primarily cultivated for its starchy tubers that are an excellent source of carbohydrates and protein (Figure 8; Table 2). *A. americana* roots have more protein than other root crops shown in Table 2, and the protein in *A. americana* roots contains all the amino acids essential to human health (Neacsu *et al.*, 2021).

Table 2. Protein and carbohydrate content of *Apios americana* and three other major root crops. Units of measure are grams (g) per 100 g of dry matter.

Nutritional category	<i>Apios americana</i>^Z	Cassava (<i>Manihot esculenta</i>)^Y	Potato(<i>Solanum tuberosum</i>)^Y	Sweet Potato(<i>Ipomoea batatas</i>)^Y
Protein	13-17	3	9	5
Carbohydrate	47	87	67	78

^ZData from Kalberer *et al.* (2020) and Walter *et al.* (1986).

^YData from Chandrasekara and Kumar (2016).

²An antinutrient is a compound that interferes with the body's ability to absorb nutrients. *A. americana* has trypsin inhibitors, which keep the body from being able to digest protein.

A. americana tubers contain antinutritional factors ² and should be cooked before eating. You can boil, fry, or steam the tubers, or cook them other ways that potatoes are typically prepared. The mature beans are also edible; these can be cooked like split peas. Note that some people have reported allergic reactions to consuming *A. americana* tubers and beans (Ecocrop, 2020).

The *A. americana* flowers attract butterflies and other pollinators (Figure 9). Additionally, the vines may be used for forage by grazing animals, although hairs on the vines limit their palatability (USDA, n.d.).



Figure 9. Flowers and foliage of *A. americana*. *Source:* Holly Sobetski

Growing conditions

A. americana thrives in well-drained soils that receive at least 700 mm rainfall annually (Ecocrop, 2020). It has a high tolerance for flooding and a moderate tolerance for shade (Stevens, 2006). Freezing temperatures will kill young plants, so in temperate areas tubers are typically planted after the last frost. *A. americana* can grow between sea level and 1000 m in altitude (Ecocrop, 2020). The plant is not salt tolerant and is most productive in moderate to very fertile soils.

Cultivation

Once the danger of frost has passed, or at the beginning of the rainy season, plant tubers 5 to 7.5 cm deep. If planting from seed, space seeds 30 cm apart and 2 cm deep in a single row with access to a trellis (Figure 10; Sobetski, 2021). For tuber production, vines can be cultivated with or without trellises. As plants grow, mulch the bases of the plants to retain soil moisture and reduce weed competition.

With tubers planted in April/May, our plants at ECHO's Global Farm in Florida flower in September/October and have full green pods by mid November (Sobetski, 2021). We harvest the roots when the plants die back in late December or early January. Tubers will be sweeter with cold weather. Tuber production has been shown to respond well to added fertility (Putnam *et al.*, 1991). Harvest the tubers when the plants' leaves begin to turn yellow and die back. Propagating plants from

tubers will result in plants with traits identical to the parent plants. Plants grown from seed, on the other hand, will not have the exact same characteristics as the parent plants, due to the mixing of pollen--and, thus, genetic information--between plants. Planting *A. americana* from seed presents an opportunity to select for plants that grow and produce well under local conditions.



Figure 10. *A. americana* plants grown on a wire trellis. *Source:* Holly Sobetski

Seeds from ECHO

Active development workers who are members on ECHOcommunity.org (<https://www.echocommunity.org/>) may request a trial packet of seed. (See the website (https://www.echocommunity.org/pages/echo_global_seedbank_info) for how to register as a member and how to order seeds.)

References

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Cite this article as:

Boutell, M. 2021. *Apios Americana*. *ECHO Development Notes* no. 151.

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