

Araliaceae—Ginseng family

***Kalopanax septemlobus* (Thunb. ex
A. Murr.) Koidz.**

castor-aralia

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Synonym. *K. pictus* (Nakai).

Growth habit, occurrence, and use. The genus *Kalopanax* comprises 1 species of deciduous, small to medium-sized tree that is native to China, Japan, eastern Russia, and Korea (LHBH 1976; Ohashi 1994). Castor-aralia—*K. septemlobus* (Thunb. ex A. Murr.) Koidz.—was introduced in 1865 and has been used primarily for ornamental purposes, as a shade tree yielding a tropical effect in USDA Hardiness Zones 4 to 7 (Dirr 1990; Hillier 1991; Krüssmann 1984; van Gelderen and others 1994; Wijnands 1990). It is a valuable tree in China (Zhao and others 1987) and the wood may be suitable for bentwood, carving, and some interior use (KRRRT 1987). The dried bark has been used as a medicine in China for various ailments (Sano and others 1991). Analysis of the nutrient content of leaves of castor-aralia showed plentiful levels of calcium, magnesium, zinc, iron, and beta-carotene, making it a potential food source of high nutritive value (Liu and others 1998). Phytochemical investigations have allowed the isolation and characterization of saponin and phenolic compounds (Porzel and others 1992; Sano and others 1991; Shao and others 1989, 1990; Sun and others 1990) that are reported to show preventive activity against stress-induced changes in mice.

Castor-aralia is an upright, oval-rounded tree that can obtain heights of 24.4 to 27.4 m in the wild, but under cultivation practices usually 12.2 to 18.3 m (Dirr 1990). The branches are coarse, stout, and bear numerous broad-based prickles (Dirr 1990; Hillier 1991). The leaves are quite variable—but somewhat similar in shape to sweetgum, *Liquidambar styraciflua* L.—changing to yellow or red in the fall (Dirr 1990). Another variety—*K. septemlobus* var. *maximowiczii* (Van Houtte) Hand.-Mazz.—has leaves that are deeply lobed (5–7) and incised to beneath the middle of the blade (Krüssmann 1984).

Flowering and fruiting. The perfect, white flowers, which bloom in July to early August (sometimes as early as May in parts of Japan), are produced in numerous umbels,

forming large terminal panicles that measure 30.5 to 61 cm across (Dirr 1990; Hillier 1991; Rudolf 1974). The fruits are globose drupes about 0.4 cm wide with a persistent style (bluish black in color) that contains 2 flat seeds (Dirr 1990; Krüssmann 1984). The fruits, which ripen in September–October, have a fleshy coat and are relished by birds (Dirr 1990; Dirr and Heuser 1987).

Collection of fruits; extraction, cleaning, and storage of seeds. The fruits are harvested by hand or shaken onto canvas as they ripen in September–October (Rudolf 1974). Fruits should be run through a macerator with water to extract the seeds (figure 1). Although more recent information was not attainable, Sins (1925, cited by Rudolf 1974) reported that about 3.6 to 4.5 kg (8 to 10 lb) of clean seeds can be obtained from 45.4 kg (100 lb) of fresh fruits. The number of cleaned seeds per weight was 220,000/kg (99,790/lb) (Satoo 1992). The seeds (figure 2) have small embryos and contain endosperm tissue (Rudolf 1974). Reports indicate that seeds can be kept satisfactorily for 1 year under ordinary storage conditions (Sins 1925, cited by Rudolf 1974). However, the use of sealed containers kept at 0 to 5 °C is suggested for longer storage periods.

Figure 1—*Kalopanax septemlobus*, castor-aralia: cleaned seed extracted from the fleshy fruit.



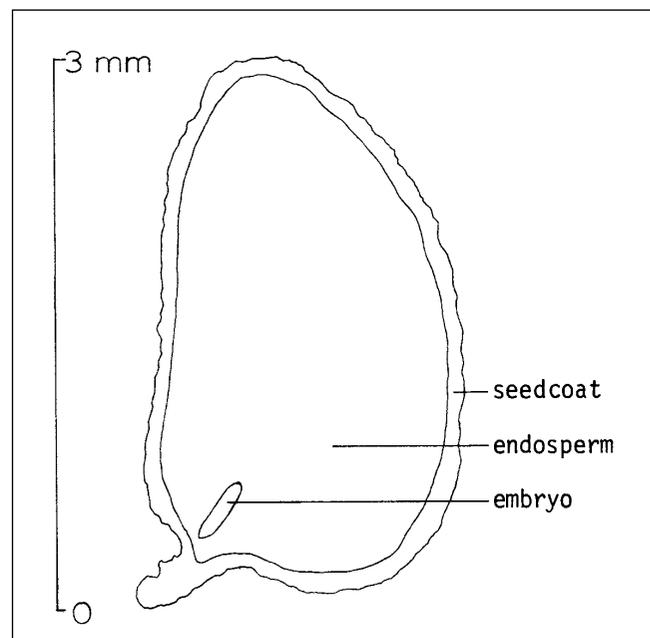
Pregermination treatments. Under natural conditions, castor-aralia seeds require a 2-year germination period (Sato 1998). Dormancy of the seed is caused by neutral (coumarin) and acid (abscisic) inhibitors present in the seed-coat and endosperm, and by an impermeable seedcoat (Dirr 1990; Huang 1987a&b). Warm temperatures of 15 to 25 °C for 3 to 5 months followed by cold stratification at 0 to 5 °C for 2 to 3 months will overcome seed dormancy and give reasonable germination (Dirr and Heuser 1987; Huang 1986, 1987b; Sato 1998; Xu and Han 1988). Soaking the seeds in sulfuric acid for 30 minutes will substitute for the warm stratification period (Dirr and Heuser 1987; Rudolf 1974).

Germination tests. Tests in germinators or sand flats for 60 days is suggested (Rudolf 1974).

Nursery practice and seedling care. Fresh seeds that have been cleaned and dried can be sown in the fall but will not germinate for 2 years (Dirr and Heuser 1987; Satoo 1992). Stratified seeds should be sown in the spring (Rudolf 1974). The seeds should be sown in well-prepared beds at a rate of 1,760 to 3,300/m² (164 to 307/ft²) to give 200 to 300 seedlings/m² (19 to 28/ft²) (Satoo 1992). Castor-aralia can be propagated by root cuttings (Dirr and Heuser 1987; Macdonald 1986). Root cuttings, 7.6 to 10.2 cm (3 to 4 inches) in length, should be dug soon after frost and then placed upright (proximal end) in a medium kept in a cool

greenhouse with bottom heat (Dirr and Heuser 1987). Stem cuttings are difficult, if not impossible, to root from mature trees (Dirr and Heuser 1987).

Figure 2—*Kalopanax septemlobus*, castor-aralia: longitudinal section through a seed.



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