

Pawpaws in the Garden

The PawPaw Foundation - 1990

CLIMATE. The pawpaw, *Asimina triloba*, is a tree of temperate humid zones, requiring warm to hot summers, mild to cold winters, and a minimum of 32 inches (80 cm) of rainfall spread rather evenly throughout the year, with the majority falling in spring and summer. It is hardy to zone 5 (-15F/-25C). Pawpaws are native over a wide range of latitude, from the Gulf Coastal plain to southern Michigan. Most named cultivars originated in the Midwest, which is the northern portion of the pawpaw's range.

SITE, SOILS, AND HABITAT. Although the pawpaw is capable of fruiting in the shade, optimum yields are obtained in open exposure, with some protection from wind (on account of the large leaves). Germinating seedlings, however, will not survive under those conditions because they are extremely sensitive to full sunlight, which can kill them. Shading for the first year, and sometimes the second, is normally required, and it is for this reason that pawpaws are almost always found in nature as an understory tree. The soil should be slightly acid (pH 5.5-7), deep, fertile, and well-drained. Good drainage is essential to success. Pawpaws will not thrive in heavy soil or water-logged soil. In habit it is a small tree, seldom taller than 25 feet. Grown in full sun, the pawpaw tree develops a narrowly pyramidal shape with dense, drooping foliage down to the ground level. In the shade it has a more open branching habit with few lower limbs and horizontally held leaves.

PROPAGATION BY GERMINATION. Pawpaw seed is slow to germinate but not difficult if certain procedures are followed. Do not allow the seed to dry for long periods (i.e., months) because this can destroy the immature, dormant embryo. To break dormancy, the seed must receive a period of stratification (exposure to cold temperatures) for 90-120 days. This may be accomplished by sowing the seed late in the fall and letting it overwinter; the seed will germinate the following year in late July to late August. Another way is to stratify the seed in the refrigerator (32-40F/~5C). In this case the seed should be stored in a plastic ziplock bag with a little moist sphagnum moss to keep the seed moist and suppress fungal/bacterial growth. After stratification the seed should be sown in a well-aerated soil mix, pH 5.5-7, with an optimum temperature of 75-85F (25-30C). The root will normally emerge from the seed coat on the 18th day, develop into a taproot about 10 inches deep, and then send up a shoot on day number 64. Germination is *hypogeal*: the shoot emerges without any cotyledons. For the first two years growth is slow as the root system establishes itself, but thereafter it accelerates. Fruit bearing normally begins when the sapling reaches 6 feet, which usually requires six to eight years.

PROPAGATION BY VEGETATIVE MEANS. Pawpaw clones are easily propagated by a number of grafting and budding techniques, such as whip-and-tongue, cleft, bark inlay, and chip budding. The only method that does not produce good results is T-budding. Shoot cuttings have proved virtually impossible to root, while root cuttings are usually successful. Although it is common for a pawpaw to sucker from the roots, and would therefore seem a natural way to propagate a clone through transplanting root suckers, in practice this is extremely difficult. Pawpaws are ordinarily quite difficult to transplant. They have fleshy, brittle roots with very few fine hairs. Experimentation has shown that, to be successful, transplantation should be done in the spring at the time that new growth commences, or soon after. (This is basically the same as for magnolia.) If many roots are lost, it may be desirable to prune the top to bring it into balance with the remaining roots.

POLLINATION, NATURAL AND ARTIFICIAL. Pollination is the major limitation to pawpaw fruit set. The flowers are *protogynous*, meaning that the stigma (the female receptive organ) ripens before the pollen, and is no longer receptive when the pollen is shed. Thus the flower is designed not to be self-pollinated. In addition, pawpaw trees are self-incompatible, requiring pollen from a genetically different tree in order to be fertilized. Finally, the natural pollinators of the pawpaw--various species of flies and beetles--are not efficient or dependable. Although it requires a little extra labor, hand pollination can be well worth the effort and can be done as follows: Using a small, flexible artist's brush, transfer a quantity of fresh pollen from the anthers of the flower of one clone to the ripe stigma of the flower of another clone. Pollen is ripe when the little ball of anthers is brown in color, loose and friable; pollen grains appear as yellow dust on the brush hairs. The stigma is ripe when the tips of the pistils are green and glossy, and the anther ball is still hard and green. Do not overburden the tree with fruit, as this will stress the tree, resulting in smaller than normal fruit, and may cause limbs to break under excessive weight.

PESTS. In its native habitat the pawpaw has few pests of any importance. The worst pest is *Talponia plummeriana*, the pawpaw peduncle borer, a small moth larva (about 5 mm long) that burrows in the fleshy tissues of the flower, causing the flower to wither and drop. In some years this borer is capable of destroying the majority of blossoms. Another pest is *Eurytides marcellus*, whose larvae feed exclusively on young pawpaw foliage, but never in great numbers. The adult butterfly is of such great beauty that this should be thought more a blessing than a curse. Sometimes the fruit surface may be covered with patches that are hard and black; this is a fungus infection, but it seldom has any effect on flavor or edibility. Deer will not eat the leaves, twigs, or fruit. Outside its native region, the pawpaw is sometimes reported to be plagued by pests, but this may be because of poor health resulting from improper soils and an unsuitable climate.