

## ***Acer negundo***

## **Aceraceae family**

Box elder, ashleaf maple, box elder maple, California box elder, Western box elder, Manitoba maple, inland box elder

[Description](#)

[Distribution in US](#)

[Images](#)

[Timing of growth](#)

[Phenophases to be monitored for NPN](#)

[Did you know](#)

[Bibliography](#)

[Notes](#)

**Description:** *Acer negundo* is a small to medium-sized, often multi-stemmed, deciduous, dioecious tree; short-lived. Flowers generally emerge before leaves, occasionally with leaf emergence. Wind pollinated. Flowering occurs on mature plants, beginning at 8-11 years old. Root sprouting occurs when the top is damaged.

Variation: *Acer negundo* has many recognized varieties and forms, having very confined to very wide continental distributions. Varieties are distinguished by their morphological characteristics of glaucousness, pubescence, or color of the branches and/or samaras. There are also several cultivars in the horticultural trade.

Size: Very variable; 20-75 ft. (6-23 m) tall; 24-48 in (60-120 cm) in diameter; typically in the small to medium range.

Leaves: Leaf opposite. Once pinnately compound; having 3-5 leaflets, occasionally 7; central leaflet the largest; upper surface bright green, lower surface lighter green; usually without hairs; leaflets 6-15 in. (15-38 cm) long. Leaflet margins coarsely serrate, sometimes somewhat lobed. Petiole 0.8-3.2 in. (2-8 cm) long.

Inflorescence: Dioecious. Female flowers occur in racemes, pendulous/drooping; 6 in. (15 cm) long. Male flowers occur in fascicled; loose clusters.

Flowers: Dioecious. Flowers having no petals; green to yellow. Male and female flowers occur on different trees (i.e. dioecious).

Fruit: Double samara; wings spreading at an angle of less than 60 degrees. Body red, finely hairy; straw-colored in fall; 1-1.5 in. (2.5-4 cm) long. Fruits persist on tree throughout winter.

Bark: Young bark is generally warty. Trees have thin bark, gray to light brown; with fine, shallow interlacing fissures/ridges; becoming deeply furrowed on older trunks and branches. Twigs green to purplish-green, usually glabrous, but often covered with a glaucous bloom; buds white, hairy.

Roots: Generally a shallow, fibrous root system. When on deep soils, it may form a short taproot, having strong lateral roots.

Habitat: Widespread in riparian and palustrine communities throughout most of the contiguous United States. It is found most commonly on deep alluvial, well-drained soils near streams, yet is found on virtually all soil types. Native to steamsbanks, lakes, swamps. Intermediate shade tolerance.

**Species distribution in US states:** AL, AR, AZ, CA, CO, CT, DC, DE, FL, GA, IA, ID, IL, IN, KS, KY, LA, MA, ME, MI, MN, MO, MS, MT, NC, ND, NE, NH, NJ, NM, NV, NY, OH, OK, OR, PA, RI, SC, SD, TN, TX, UT, VA, VT, WA, WI, WV, WY

### Species images:

Whole plant:

<http://oregonstate.edu/dept/ldplants/acne7.htm>

<http://www.cas.vanderbilt.edu/bioimages/species/acne2.htm>

Bark:

<http://oregonstate.edu/dept/ldplants/acne8.htm>

<http://www.cnr.vt.edu/dendro/dendrology/syllabus/factsheet.cfm?ID=3>

Leaf:

<http://www.cas.vanderbilt.edu/bioimages/species/acne2.htm>

[http://www.sbs.utexas.edu/bio406d/images/pics/ace/acer\\_negundo.htm](http://www.sbs.utexas.edu/bio406d/images/pics/ace/acer_negundo.htm)

Colored leaves:

<http://oregonstate.edu/dept/ldplants/acne12.htm>

<http://oregonstate.edu/dept/ldplants/acne10.htm>

Buds:

<http://oregonstate.edu/dept/ldplants/acne11.htm>

<http://www.cnr.vt.edu/dendro/dendrology/syllabus/factsheet.cfm?ID=3>

Staminate (male) flowers:

[http://plants.usda.gov/java/largeImage?imageID=acne2\\_010\\_ahp.jpg](http://plants.usda.gov/java/largeImage?imageID=acne2_010_ahp.jpg)

[http://plants.usda.gov/java/largeImage?imageID=acne2\\_011\\_ahp.jpg](http://plants.usda.gov/java/largeImage?imageID=acne2_011_ahp.jpg)

Pistillate (female) flowers:

<http://oregonstate.edu/dept/ldplants/acne1.htm>

Fruit:

[http://plants.usda.gov/java/largeImage?imageID=acne2\\_008\\_avp.tif](http://plants.usda.gov/java/largeImage?imageID=acne2_008_avp.tif)

<http://oregonstate.edu/dept/ldplants/acne5.htm>

**Expected timing of growth stages:**

Flowering: March-May, dependent on location.

Bud break/Leaf out: \*Need info

Leaf/canopy development: \*Need info

Fruit ripening: August-October

Seed dispersion: September-March

Leaf coloration: \*Need info

Leaf fall: \*Need info

**Phenophases to be monitored for NPN:**

**Flowering**

- *First flower*  
In at least 3 locations on the plant, a flower has opened completely. Flowers are considered 'opened' when the reproductive parts are visible between unfolded or opened flower parts. For *Acer negundo*, if you know whether the flowers you are observing are male or female, please report this information as well.
- *Full flower [Intensive only]*  
The plant has reached its peak floral display. This occurs when half (50%) of the flowers on the whole plant have opened completely.
- *Last flower*  
The last visible flower has opened completely and is still fresh.

**Leaf out**

- *First leaf*  
In at least 3 locations on the plant, the very first green tip of a young leaf has visibly moved out of the leaf bud.

**Leaf elongation**

*Note: These measures can be difficult to estimate without a few seasons of practice.*

- *25% leaf elongation [Intensive only]*  
The majority of young leaves have unfolded completely and have expanded to one-quarter (25%) of their mature size. Leaf elongation may also be estimated by viewing the canopy as a whole. At 25% leaf elongation, the canopy appears to be approximately one-quarter (25%) full.
- *50% leaf elongation [Intensive only]*  
The majority of young leaves have unfolded completely and have expanded to half (50%) of their mature size. Leaf elongation may also be estimated by viewing the canopy as a whole. At 50% leaf elongation, the canopy appears to be approximately half (50%) full.
- *75% leaf elongation*  
The majority of young leaves have unfolded completely and have expanded to three-quarters (75%) of their mature size. Leaf elongation may also be estimated by viewing the canopy as a whole. At 75% leaf elongation, the canopy appears to be approximately three-quarters (75%) full.
- *Full leaf elongation [Intensive only]*  
The majority of young leaves have unfolded completely and have expanded to 95-100% of their mature size. At full leaf elongation, the canopy appears to have reached its full density.

### **Fruit ripening**

- *First fruit ripe*  
In at least 3 locations on the plant, a fruit has become ripe. In *Acer negundo*, a good test for ripeness is fruit drop; ripe samaras will easily fall into your hand when touched or gently handled. Ripeness may also be indicated by the presence of at least 3 samaras on the ground below the plant (that are not apparently from a nearby tree). (Note that *Acer negundo* individuals with only male flowers will not produce fruit.)
- *50% of fruit ripe [Intensive only]*  
For the whole plant, half (50%) of the fruits are ripe. In *Acer negundo*, this occurs when half (50%) of the samaras have dropped.
- *All fruit ripe [Intensive only]*  
For the whole plant, virtually all (95-100%) of the fruits are ripe. In *Acer negundo*, this occurs when all (95-100%) of the samaras have dropped.

## Leaf color change

*Note: If drought seems to be the cause of leaf color change for a plant, please make a comment about it for that plant.*

- *First leaf colored [Intensive only]*  
In at least 3 locations on the plant, the green leaves have begun to change to their late season colors.
- *25% of leaves colored [Intensive only]*  
For the whole plant, one-quarter (25%) of the leaves (including any that have fallen to the ground) have changed to their late season colors.
- *50% of leaves colored*  
For the whole plant, half (50%) of the leaves (including any that have fallen to the ground) have changed to their late season colors.
- *75% of leaves colored [Intensive only]*  
For the whole plant, three-quarters (75%) of the leaves (including any that have fallen to the ground) have changed to their late season colors.
- *All leaves colored*  
For the whole plant, virtually all (95-100%) of the leaves (including any that have fallen to the ground) have changed to their late season colors and there is virtually no green left in the leaves.

## Leaf fall

*Note: If drought seems to be the cause of leaf fall for a plant, please make a comment about it for that plant.*

- *First leaf fallen [Intensive only]*  
In at least 3 locations on the plant, a leaf easily falls off into your hand when touched or gently handled. First leaf fallen may also be indicated by the presence of at least 3 leaves on the ground below the plant (that are not apparently from another individual nearby).
- *25% of leaves fallen [Intensive only]*  
For the whole plant, one-quarter (25%) of the leaves have fallen.
- *50% of leaves fallen*  
For the whole plant, half (50%) of the leaves have fallen.
- *75% of leaves fallen [Intensive only]*

For the whole plant, three-quarters (75%) of the leaves have fallen.

- *All leaves fallen*  
For the whole plant, virtually all (95-100%) of the leaves have fallen.

### **Did you know?**

*Acer negundo*'s wood is generally not suitable for furniture, firewood, nor is it a good erosion control or ornamental tree. Still, Native Americans used the trees as a source of syrup; it also has been made into a beverage.

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## Notes

The USDA PLANTS symbol for this plant is ACNE2.

The ITIS Taxonomic Serial No. for this species is 28749.

BBCH codes for phenophases used for this plant are available from the USA-NPN office upon request.

Proposed modifications, updates or corrections to this protocol are welcome; please direct correspondence to the USA-NPN National Coordinating Office.

Prior versions of this species protocol will be made available in a documents library on USA-NPN webpage.

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