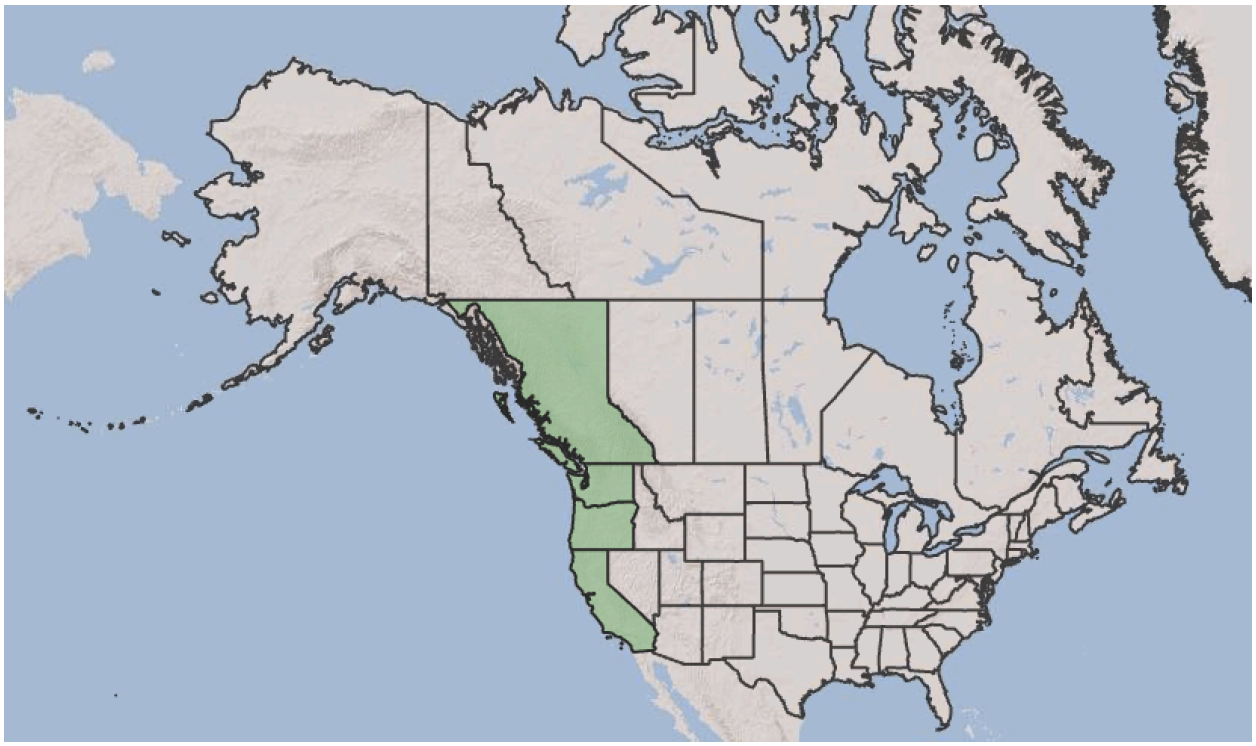
Plant Propagation Protocol for *Acer macrophyllum*
ESRM 412 – Native Plant Production



(3)

TAXONOMY	
Plant Family	
Scientific Name	*Aceraceae* Juss. (1)
Common Name	Maple family (1)
Species Scientific Name	
Scientific Name	*Acer macrophyllum* Pursh 9 (11)
Varieties	No information found.
Sub-species	No information found.
Cultivar	No information found.
Common Synonym(s)	*Acer macrophyllum* Pursh var. *kimballi* Harrar *Acer macrophyllum* Pursh var. *macrophyllum* *Acer macrophyllum* Pursh forma *rubrum* Murray (5).
Common Name(s)	Bigleaf maple, Big-leaf maple (2) Oregon maple (5)
Species Code (as per USDA Plants database)	ACMA3 (1)
GENERAL INFORMATION	

Geographical range	The range of bigleaf maple extends from 33° to 51° N, and always remains within 300 km of the Pacific Ocean. On the mainland, its range is a continuous belt from Sullivan Bay, BC to within 16 km of San Francisco Bay, CA. This belt includes the western slopes of the Coast Ranges of British Columbia, the Olympic Peninsula in Washington, the Coast Ranges of Oregon and California, and the western slopes of the Cascade Range in Oregon and Washington (4).
Ecological distribution	Streambanks, canyons, mountainous regions (6).
Climate and elevation range	Bigleaf maple grows in a variety of climates, ranging from the cool, moist, marine climate of coastal British Columbia to the warm, dry, growing seasons of southern California (4). Elevation: < 1500 m (6)
Local habitat and abundance	Moist woods, forests, and canyons are bigleaf maple's most common habitats. Its frequency increases with higher soil moisture. It is most common in upland riparian zones but can also grow in low riparian zones and in mesic upland forests of the Pacific Northwest (5).
Plant strategy type / successional stage	Occurs in all stages of succession, but is most common in seral forests (5).
Plant characteristics	*Acer macrophyllum* is one of the few commercial hardwood tree species on the Pacific Coast. Most mature trees are around 15 m tall and 50 cm in diameter. Large trees can reach a height of 30 m and a diameter of 90 - 120 cm (4). Leaves are typically 30.5 cm across and are dark green above and pale green below during the spring and summer, which turn dull yellow in autumn (10). Leaves are palmately shaped with 5 lobes oppositely arranged on the branch (10). The bark is initially green, which turns grayish-brown and narrowly furrows with age. Old bark is often covered by mosses, lichens, and ferns (7). Trees live about 50 - 100 years (4).
PROPAGATION DETAILS: FROM SEED	
Steinfeld, David. 2003. Propagation protocol for production of Container (plug) *Acer macrophyllum* plants 1,2,3,4 gallon containers; USDA FS - J Herbert Stone Nursery Central Point, Oregon.	
Ecotype	No information found.
Propagation Goal	Plants (3)
Propagation Method	Seed (3)
Product Type	Container (plug) (3)

Stock Type	1,2,3,4 gallon containers (3)
Time to Grow	1 year (3)
Target Specifications	Seedlings have reached target when roots have fully occupied the container but not to the amount where seedlings are root-bound (3).
Propagule Collection Instructions	Seedlings are started from fresh seed collected in the fall. The seed is brought to the nursery in plastic bags to avoid having the seed dry out. It is put in cold storage conditions until stratification (3).
Propagule Processing/Propagule Characteristics	No information found.
Pre-Planting Propagule Treatments	Seed is placed in open trays and stored in stratification rooms for 2 to 3 months prior to the anticipated sowing date. The rooms are set at 33oF and equipped with foggers to maintain a very high humidity (surface moisture can be seen on the seed coat). If the seed is dry it is placed into cold running water for 48 hours prior to stratification, otherwise seed is not soaked (3).
Growing Area Preparation / Annual Practices for Perennial Crops	Containers used are TreepotsTM distributed through Stuewe & Sons, Inc. Sizes used are 1, 2, 3, 4 gallon capacity. Media is Grower's Gold Mix #1 (from SunGro Horticulture), which is composed of 40% composted pine/fir bark (fine 3/8" minus), 35% Canadian sphagnum peat moss (growers grade) and 25% screened volcanic pumice (3/8"minus). The media is pre-moistened and contains a starter fertilizer (6-10-6 with fritted trace elements). Containers are filled with media prior to planting and lightly tamped to reduce large pores spaces, then filled to 1" below the top of the container. The containers are used more than once but pressure washed at 160 oF to remove media and clean containers between crops. Most seedlings are grown outside without shade on drivable-gravel surfaced pads. The surface is graded and sloped to allow rain or irrigation water to not puddle. Climate at the nursery is hot and dry in the summer with average maximum temperatures in July and August of 87.5oF. Spring temperatures are moderate with frost in the upper 20's uncommon. Fall temperatures are warm with average maximum highs in October of 67oF and maximum lows of 37.5oF. Frosts in the low 20's is uncommon in October (3).

Establishment Phase Details	Seed trays in the stratification rooms are regularly monitored for germination. When seeds begin to show a radical, they are removed from stratification and planted into large containers. One seed is planted in each container by placing the seed into the media and directing the wing vertical position. This operation occurs from late winter through mid spring. Containers are placed on transportable steel racks (6.5' by 3.5'). The racks include a hardware cloth for the bottom of the container to rest on and a wire mesh top with 4" by 4" openings to support the one-gallon containers. 8" by 8" openings are used for three and four-gallon containers. Eight-gallon containers are free standing and do not require support. Nearly all containers are placed so that there is a space or opening between every container. The lower density gives seedlings more light and space for growth. Several weeks after seedlings have been transplanted, a isobutylidene diurea top dressing is applied to each container. Wil-Gro (Wilbur-Ellis), a 18-6-12 with Mg, S and Fe elements, is applied as follows: 1/16 cup for 1-gallon containers, 1/8 cup for 2, 3 and 4-gallon containers. Seedlings are only fertilized one time per year. If a seedling is held over for a second year, controlled-release fertilizer is again applied as a topdress in the spring. During the establishment phase, seedlings are irrigated 1 to 2 times per week. Watering is accomplished through overhead fixed irrigation system. Sprinkler head nozzles are a Rainbird BR5 and are placed on 5 to 7 foot-high risers to accommodate tall seedlings. Risers are on a square grid pattern with a 20' by 30' spacing (3).
Length of Establishment Phase	One month (3)
Active Growth Phase	Seedlings are irrigated in the early morning when the wind is at a minimum. Irrigation scheduling is based on the moisture content of the plug. Generally, the plug is not allowed to dry down much below field capacity. With maximum summer temperatures in the high 80's, seedlings are irrigated every 2 to 3 days for up to 4.5 hours an irrigation. Seedlings are not cooled in the afternoon with overhead irrigation. Seedlings are monitored for pests but generally insects and diseases do not occur in this species and stocktype. Seedlings must be hand-weeded every 6 weeks (3).

Length of Active Growth Phase	3 months (3)
Hardening Phase	Hardening begins in the late summer with a reduction in the frequency of irrigations. Generally seedlings are hardy to any nighttime low temperatures that are encountered in the fall and winter months. For winter freezes where temperatures reach into the low teens, seedlings are either brought into unheated greenhouses or tree storage facilities until the event has passed. Roots will circle and amass at the bottom of the containers due to the container design. Per client request, the bottom inch of the root plug will be pruned during the hardening phase. This is accomplished by pulling the plug from the container and cutting off the end of the plug with an industrial-strength paper cutter. Clients with containers that will remain for two years will often chop the bottom inch of the container off using a chop saw with an abrasive blade. This leaves the bottom of the container completely open, which prevents spiraling the second year but makes the container unusable after extraction (3).
Length of Hardening Phase	3 months (3)
Harvesting, Storage and Shipping	Seedlings are not extracted from their container or stored prior to shipping. Containers are stood up in cardboard and are transported in enclosed refrigerated and non-refrigerated trucks. Many orders are simply shipped on the transportable steel racks. Empty containers are returned in the summer after the seedlings have been planted (3). Seed collection and storage are best done when minimum moisture content is reached before the start of the autumn rains. Seeds in this condition can be stored without further drying for at least 1 year at 1° C (34° F) with only a slight loss in viability. Seeds collected after the moisture content has increased are usually killed by redrying, but they can be stored for up to 6 months at the field moisture content with a 30- to 40-percent reduction in viability. Seeds stored in this way produce vigorous seedlings when planted in nursery beds (4).
Length of Storage	Up to 6 months (4)
Guidelines for Outplanting / Performance on Typical Sites	No information found.

Other Comments	Big-leaf maples have been used by Native American tribes to make medicine for sore throats. It is called the ‘paddle tree’ in many Native American languages because the wood was often used for paddles as well as spindle whorls and other tools (8). The large leaves were used as temporary containers. The sap is sometimes used for making maple syrup, although *Acer macrophyllum* produces much less sap compared to Acer saccharum the sugar maple (9). Bigleaf maple is not a pioneer species that rapidly invades disturbed areas; however, it is often present in undisturbed stands and is able to respond with vigorous sprout growth after disturbance. Fungi are responsible for much of the defect in bigleaf maple (4). Big-leaf maples often grow with many trunks and will drop its lower branches as it matures, creating many nooks and crannies in the tree. This provides ideal housing for birds and small mammals (10).
INFORMATION SOURCES	
References	See below
Protocol Author	Max Wang
Date Protocol Created or Updated	05/23/25

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