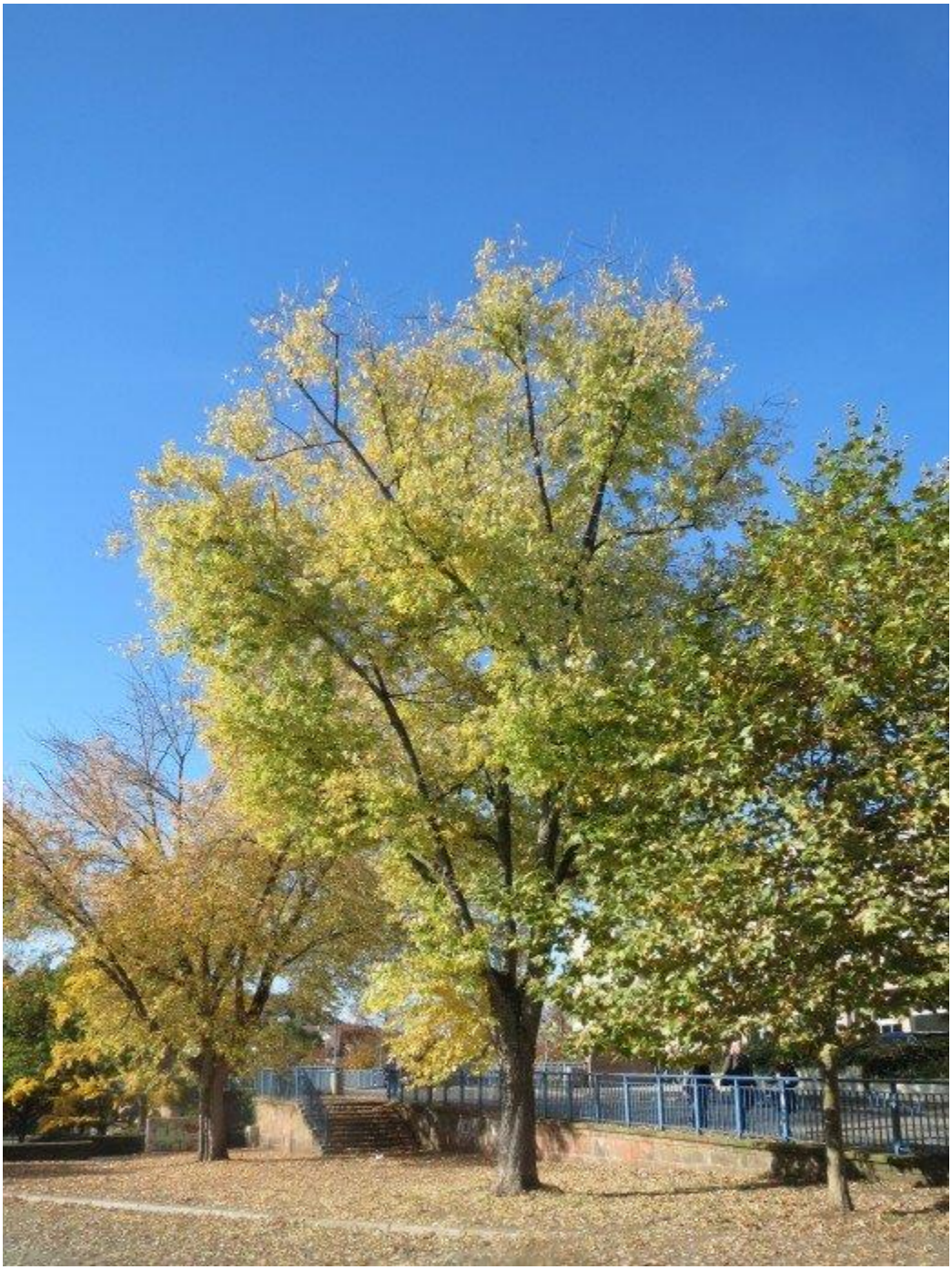
Plant Propagation Protocol for *Acer saccharinum*
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/*ACSA2.pdf*



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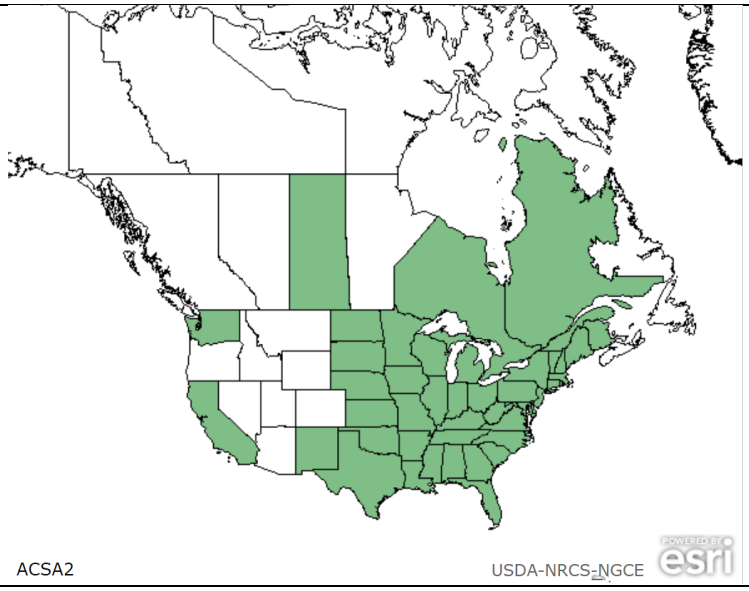
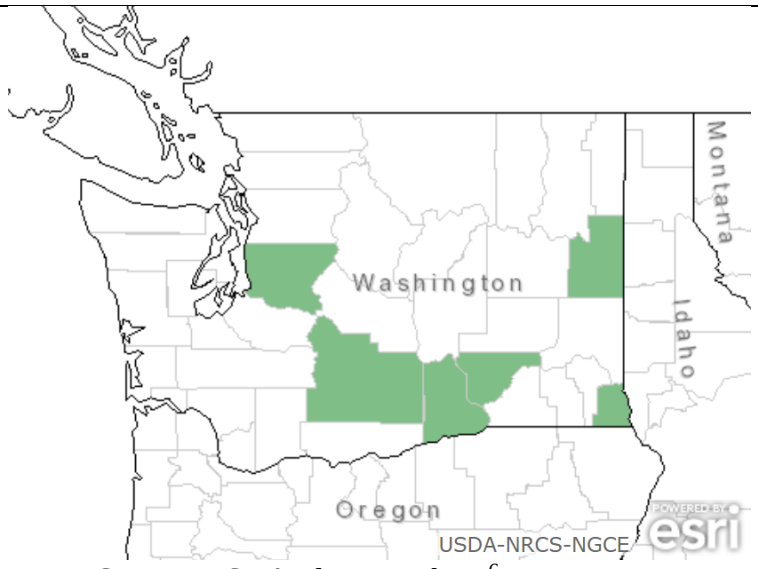
TAXONOMY	
Plant Family	
Scientific Name	Aceraceae
Common Name	Maple family
Species Scientific Name	
Scientific Name	*Acer saccharinum* L.
Varieties	
Sub-species	
Cultivar	
Common Synonym(s)	*Acer dasycarpum* Ehrh.[6] *Acer saccharinum* L. var. laciniatum Pax[6] *Acer saccharinum* L. var. wieri Rehder[6] *Argentacer saccharinum* (L.) Small[6]
Common Name(s)	Silver Maple, creek maple, silverleaf maple, soft maple, large maple, water maple, swamp maple, white maple.[1]
Species Code (as per USDA Plants database)	
GENERAL INFORMATION	
Geographical range	

	 Image Source: USDA Plant Database[6]
Ecological distribution	Grows on stream banks, flood plains, and lake edges. Most often grows on alluvial soils. [1]
Climate and elevation range	Distributed in climates where annual total precipitation is between 810 and 1520mm and growing season precipitation is 200-810mm. The mean frost-free period in their preferred climate is 120-240 days. [1] Lives in Hardiness Zones: 3,4,5,6,7,8, & 9[8]
Local habitat and abundance	Major associated species: American Elm, sweetgum, pin oak, swamp white oak, eastern cottonwood, sycamore, and green ash. Understory associated species: willow, redberry elder, red-osier dogwood, greenbriar. Herbaceous associated species: wood-nettle, jewelweed, poison-ivy, cardinal flower, Joe pye-weed, swamp milkweed, boneset. [1]
Plant strategy type / successional stage	Poor competitor, colonizes along streams. [1] Tolerant to occasional flooding and drought.[8]
Plant characteristics	Medium sized tree, grows 50-80 feet.[5] It lives 130 years or more, with rapid growth in its early life. [1]
PROPAGATION DETAILS	
Ecotype	South Central Missouri[2]
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Bareroot (field grown)
Stock Type	1+0
Time to Grow	8 months[2]
Target Specifications	Height: 36 in Caliper:0.25 to 0.50 in. Root system must balance top growth. [2]

Propagule Collection Instructions	The indehiscent fruit is two fused samaras that mature from April to June. [2]
Propagule Processing/Propagule Characteristics	Samaras can be de-winged by rubbing collections over a screen but are usually planted without de-winging. Empty samaras can be removed from the seed lot using a gravity table. [2] There are 1,990 to 7,070 seeds per kilogram (900 to 3,200 seeds per pound).[3] Silver maple seeds are recalcitrant. Seeds can be stored for about one year if seed moisture levels are maintained at about 80%. [2]
Pre-Planting Propagule Treatments	Sow seeds in May after processing by hand into prepared field beds. [2]
Growing Area Preparation / Annual Practices for Perennial Crops	Soils: Silty clay loam field soils. [2] The spring before planting, amend the soils with 700 lbs/acre of 1N:3 P205:5K20, grow a soybean cover crop, and fumigate in the fall. Use Roundup Ready soybeans so we can control weeds by using glycosate herbicide without harming the cover crop. During early August, disk under the cover crop and disk the soils several times during the next 6 weeks to obtain a smooth soil surface. Soils are fumigated in late September. [2] Field Bed Preparation: Mark out and form beds as needed. Beds are prepared with a rototiller/seedbed former and are typically 4 to 6 inches high and 4 ft wide. Fields are cultivated for weeds as needed throughout the growing season. [2] Irrigation: Use overhead irrigation with two-inch PVC pipe that can be moved from field to field each year. Principle water source is from 3 on-site wells and is very good quality water. [2]
Establishment Phase Details	Sow seeds at least .25 inches deep to protect them from deer, rodents and birds. Seeds are covered and irrigated when soils appear to be drying out on warm days. Apply old sawdust and hydromulch after sowing. [2]
Length of Establishment Phase	1 month[2]
Active Growth Phase	Fertilization: Apply ammonium sulfate 21-0-0-24 with a mechanical spreader. Put on the first application the last week of May and to only those 1+0 seedlings that have been germinated for at least 5 or 6 weeks. Put down last application during the last week of July. Apply fertilizer at the rate of 125 lbs/acre. Frequency of application depends on the species and how they look that season. Irrigate for at least 45 minutes following all fertilizer applications. This ensures that foliage will not burn and incorporates fertilizer into the root zone. [2] ROOT PRUNING PROCEDURES:

	Pruning depth is at least 10 inches for 1+ 0 stock. Irrigate heavily for 2 to 3 days prior to pruning to saturate the root zone. Set pruning blade to slightly wrench seedlings as they are pruned. Check pruning depth frequently and adjust as needed. Irrigate for a minimum of 2 hours following root pruning to settle soil back around roots. This step is critical to eliminate post root pruning mortality. Irrigate field heavily for 2 to 3 days to further settle the soil. [2] TOP PRUNING PROCEDURES: Top prune only to keep seedlings from being damaged by the mechanical lifter. Clients prefer seedlings that have not been severely shoot pruned. [2]
Length of Active Growth Phase	4 months[2]
Hardening Phase	Hardening begins during August. No fertilizer is applied after August. Irrigation frequency and duration is shortened and applied only when needed. [2]
Length of Hardening Phase	3 months[2]
Harvesting, Storage and Shipping	Lifting window is from late November to April. Try to obtain a large a root mass as possible. Try to lift when the majority of leaves have dropped. Seedlings are hand lifted after the seedling beds have been undercut at an average depth of 10 or 12 inches using a lifter. Lifted nursery stock is immediately stored in cooler until graded and bundled. The majority of species are graded, bundled and shipped during February. [2]
Length of Storage	2-3 months[2]
Guidelines for Outplanting / Performance on Typical Sites	
Other Comments	
PROPAGATION DETAILS	
Ecotype	Cucmberland Gap National Historical Park[4]
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Plug
Stock Type	
Time to Grow	8 months[2]
Target Specifications	Sapling, up to 84” in 3-gallon containers. Root balls should fill container without being root-bound.[4]
Propagule Collection Instructions	The indehiscent fruit is two fused samaras that mature from April to June. [2]
Propagule Processing/Propagule Characteristics	Samaras can be de-winged by rubbing collections over a screen but are usually planted without de-winging. Empty samaras can be removed from the seed lot using a gravity table. [2] There are 1,990 to 7,070 seeds per kilogram (900 to 3,200

	seeds per pound).[3] Silver maple seeds are recalcitrant. Seeds can be stored for about one year if seed moisture levels are maintained at about 80%. [2]
Pre-Planting Propagule Treatments	none
Growing Area Preparation / Annual Practices for Perennial Crops	Germinate seeds in greenhouse on blotter paper under mist.[4] Growing media: Transfer into Sunshine #5 plus 180 day Nutricote SR 18-6-8 at@ 20 oz. per batch or 0.15 lb. per cu. ft. mix. Larger container plants are potted in a woody mix (3.8 cu ft. bale Sunshine #1, 4 cu. ft. of pine bark mulch, 20 oz. of 270 day Nutricote and approximately 20 oz. endo-mycorrhizae).[4]
Establishment Phase Details	Sow in late spring when seeds are collected. Germination begins in 3-5 days. Seeds should remain in the greenhouse for the length of the establishment phase.[4]
Length of Establishment Phase	2 months[4]
Active Growth Phase	Transplant from small pots to 3-gallon containers outside greenhouse. [4]
Length of Active Growth Phase	3 seasons, until plants have filled container. [4]
Hardening Phase	Harden seedlings outdoors. [4]
Length of Hardening Phase	2 weeks. [4]
Harvesting, Storage and Shipping	Containers are laid on their side on weed barrier fabric and covered with 2 layers of a microfoam insulating blanket. The blanket is secured over plants by threading a rope over the blanket between rebar anchors on either side of a block of plants. [4]
Length of Storage	Can be stored from December to March. [4]
Guidelines for Outplanting / Performance on Typical Sites	
Other Comments	
PROPAGATION DETAILS	
Ecotype	
Propagation Goal	Plants
Propagation Method	Vegetative
Product Type	
Stock Type	
Time to Grow	
Target Specifications	30cm tall, 6 mm root collar diameter.[1]
Propagule Collection Instructions	Take softwood cuttings in July and October for highest rooting percentage (92-100%). Hardwood cuttings can be taken in winter and stored in cool place for 2 months with 84% rooting. Cuttings from young trees root more easily than mature trees.[1]

Propagule Processing/Propagule Characteristics	
Pre-Planting Propagule Treatments	Treat softwood cuttings with 1000ppm IBA in talc rooting hormone. Hardwood cuttings benefit from application of 8000ppm auxin in ethanol solution rather than IBA.[7]
Growing Area Preparation / Annual Practices for Perennial Crops	
Establishment Phase Details	Rooting hormone treatment will provide maximum rooting in cuttings.[1]
Length of Establishment Phase	
Active Growth Phase	Can follow procedures for container or bareroot growing in earlier sections.
Length of Active Growth Phase	See earlier sections.
Hardening Phase	See earlier sections.
Length of Hardening Phase	See earlier sections.
Harvesting, Storage and Shipping	See earlier sections.
Length of Storage	See earlier sections.
Guidelines for Outplanting / Performance on Typical Sites	
Other Comments	Vegetative propagation can also be done using layering or micro-propagation.[1,7] Stumps 30cm or less in diameter can produce many young sprouts.[1]
INFORMATION SOURCES	
References	1. Gabriel, William J. (1990). "*Acer saccharinum*". In Burns, Russell M.; Honkala, Barbara H. (eds.). *Hardwoods*. *Silvics of North America*. Washington, D.C.: United States Forest Service (USFS), United States Department of Agriculture (USDA). **2** – via Southern Research Station (www.srs.fs.fed.us) 2. Hoss, Gregory. 2005. Propagation protocol for production of Bareroot (field grown) *Acer saccharinum* L. plants 1+0; George O. White State Forest Nursery Licking, Missouri. In: Native Plant Network. URL: http://NativePlantNetwork.org (accessed 2020/05/25). US Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources. 3. Zasada JC, Strong TF. 2004. The genus Acer. In: Woody Plant Seed Manual (on-line version) URL: http://wpsm.net/Acer.pdf

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This propagation protocol template was modified by J.D. Bakker from that available at: http://www.nativeplantnetwork.org/network/SampleBlankForm.asp