Discussion Group: Native Plant Propagation

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The native plant propagation session began with a discussion centered on the definition of a native plant. Some participants questioned why native plants should be grown when there are other, nonindigenous plants that may be more attractive, more disease-free and/or more insect-resistant. It was suggested that the California Native Plant Society has provided an excellent definition of "native plant". To be considered a native plant in North America, the plant must have been present from the time of pre-European settlement. Reasons to grow native plants were cited; these included propagation of site-specific material to preserve the genetic integrity of a site and tolerance of naturally occurring climatic conditions, especially drought. Another question was "are native plants actually lower maintenance"? It was generally agreed that they use less water than many introduced species. More vigorous mulching and use of pre-emergents can keep maintenance down.

The next topic of discussion was the use of mycorrhizae. Endomycorrhizae make phosphorous readily available to plants in soils where phosphorous availability is low. Jeff Boehn of Tree of Life Nursery stated that in Southern California, the dominant form of mycorrhizae is endomycorrhizae which colonize root tips. Ectomychrrhizae are associated with forest trees. In nursery production, the intent is to get the mycorrhizae onto plants as soon as possible since it is least expensive to incorporate them in seed flats or at the time of first transplant. Jeff stated that in order to introduce mycorrhizae into a nursery, you must first look at the whole program. Different strains of mycorrhizae may require adjustment of soil pH, fertilizer program, etc. He recommended that you go with "weedy, dominant" strains of mycorrhizae and mentioned VAM-80. Tree of Life cultivates their own strains. When you get mycorrhizae from under plants in the wild you don't know what you are cultivating. He recommends you add mycorrhizae to your container plants in a solution of 1 tsp gal^{-1} of solution. In field-grown crops, ectomycorrhize blow back in after soil fumigation and will make a comeback in the 2nd year. Mycorrhiza.com was recommended as an excellent website. Bitterroot Nursery stated they innoculate. Another grower working with native endangered plants in Oregon stated that most don't require mycorrhizae, however *Astragalus applegatei* does respond to innoculation with field-collected soil. Osmocote18N-6P-12K works well with endomycorrhizae.

Wilbur Bluhm mentioned that Ben Holden had a poor rooting percentage on *Arctostaphylos uva-ursi*, but with inoculum of a slurry of native soil the rooting percentage nearly doubled from 50% to 95%.

Use of pumice versus vermiculite as a rooting medium was discussed, with denser rooting of Oregon grape occurring in vermiculite than in pumice. Douglas fir sawdust promoted good rooting, but tops showed nitrogen deficiency. It was mentioned that it is tough to mix different media in the same house.

Use of Root Shield fungicide (*Trichoderma*) was discussed. Bob Briggs requested clarification between the products "Green Shield", a disinfectant, and "Root Shield", a biological fungicide. APEX came out with a new fertilizer – "Native Mix" for native Northwestern species of plants, "native blend".

Another topic of discussion was how to determine when to take cuttings of native species and what type of cuttings to take. Bruce Briggs discussed the use of mature vs. softwood for *Arctostaphylos uva-ursi* (kinnikinick) and *Ceanothus* spp. and recommended that you run tests every few weeks to find out what's best for a species in your particular region. Sometimes you only have a successful window of 2 weeks. It always varies, but you work it out on a particular plant and go with that. Jeff Boehn agreed that "everybody tweaks plants." Every species has a specific cycle and we have to work with that in propagation. Tree of Life uses about 50% cuttings and 50% seed in their nursery. For site specific projects, they use mostly seed. Their market is half restoration and half landscaping. Landscape architects specify the same old plants and this leads to reduction of diversity of native species used in landscapes.

PROPAGATION OF THE FOLLOWING SPECIES WAS DISCUSSED:

***Mahonia aquifolium* (syn. *Berberis aquifolium*).** Wilbur Bluhm mentioned that at one time a propagator he knows was getting 25% take on cuttings. He gave some of the cuttings to an electrician who got 100% take when rooting them in vermiculite, rather than in pumice. For seed propagation, pick seed on the soft side.

***Chrysolepis sempervirens* (syn. *Castanopsis chrysophylla*).** Althouse Nursery stated they germinate, grow to a few inches, and then die over night. They collect seed from Hood National Forest to California and have a difficult time finding seed. They clean seed with a weed eater in a steel garbage can, then use a leaf blower to separate seed from casings. (This also works with *Cercis occidentalis*.) Direct plant seeds. Althouse uses warm stratification from Christmas to March. When asked what this meant, he stated you don't want the seeds to go dormant. Just plant them when warm and let the seedlings go dormant in winter. No one present had grown or heard of successful rooting of chinquapin (*Chrysolepis*) cuttings. It was mentioned that Matsutakes grow under madrone and *Chrysolepis* sp.

Chrysolepis chrysophylla (syn. *Castanopsis chrysophylla*) seed or *Garrya fremontii* and *G. elliptica* also germinate after warm stratification.

***Garrya elliptica* 'James Roof'.** This plant will root readily if you extend the bottom of the cutting below the node 1 inch. Take cuttings in fall and space far apart.

Crataegus. Native *Crataegus* is a summer plant. Fruits in June or July. Trees seed every 2 to 3 years. *Crataegus douglasii* (black hawthorn) reacts like it is native to plains. Give 90 to 120 days warm, 150 to 180 days cold (there will be some germination), followed by 90 to120 warm, 150 to 180 days cold. (There will be higher germination.) Another recommended germination regime was acid treatment followed by 3 months cold stratification, then sow. It was mentioned that native hawthornes are used to make English hedges.

Malus fusca. The native Oregon crabapple, (syn. *Pyrus fusca, P. diversifolia, Malus diversifolia*), found North of Port Orford was discussed. Leaves are dark green with a hairy petiole, or shiny with no hairs. Some wondered if it was a flowering crabapple that has gone wild. Wilbur Bluhm recommended collecting seed from one that has characteristics which "fit the mold best".

***Arctostaphylos* seed.** Anecdotal ways to get manzanita seed to germinate included fire and "force-feeding the bear". Several participants had heard of a propagator in Washington who gets *Arctostaphylos uva-ursi* to germinate from seed by collecting bear scat.

Another person mentioned a pasture mix in Tilamook of seed that would not germinate unless it went through a cow. Methods of burning flats were discussed. Excelsior was tried but didn't burn. Suggestions of trying a crock pot on low, boiling seed and using an electric fry pan to open closed-cone pines were discussed.

***Sphaeralcea rivularis* (syn. *Iliamna rivularis*) - stream-bank globe mallow.** Herbaceous native perennials. Burned every year for 5 years with no results. Finally oven-germinated.

Trichostema lanatum. The Arboretum at Flagstaff got good germination with 3 to 5 months outdoor stratification through winter season.

***Oemleria cerasiformis* (syn. *Osmaronia cerasiformis*) - Indian plum or oso berry.** For seed germination, Craig of Althouse Nursery removes fruit from plant, takes seed out, and gives it a 21-day cold treatment. Seeds germinate readily, then he plants them. The hard part with *O. cerasiformis* is it doesn't go dormant for the winter. He has difficulty with "falling over disease". Jan Busco did tip cuttings with #8 IBA at Theodore Payne Foundation with good success. Bob Briggs took softwood cuttings of *O. cerasiformis* successfully for state highway planting.

Aristolochia californica does better growing with poison oak.

***Toxicodendron diversilobum* - poison oak.** Propagate from seed; excellent wildlife and restoration plant. Hard for nursery workers as they can only work with it for a limited time.

***Clematis armandii* - evergreen clematis.** Blooms in February. Pick seeds in May just before the winds come when seed is just starting to turn. Put in flats in June; plants come up in fall. Dr. Krause and Duane Sherwood harvest seed before it matures. "Mother nature puts dormancy into seed last." Plant seeds before dormancy.

***Abronia umbellata* subsp. *breviflora*.** Tom Kaye was asked about the germination of "pink sandverbena". How does the seed germinate with protective capsule? It was removed for the study. In nature, it would be scarified by blowing sand.

***Heterotheca foliolosa* (syn. *Chrysopsis foliolosa*).** Germinated when sown outdoors with fluctuating fall/winter temperatures.

Ceanothus horizontalis. Timing of cutting was discussed. Slow to callus in June.

***Purshia* sp.** Timing of year critical to rooting percentage.
Carolyn Scagel – USDA –ARS Horticulture was asked about practical applications of the relationships between amino acids, plants, protein, microorganisms, and hormones. How do you test for protein? For total protein – do a colorimetric lab test. Nitrogen is used for protein regeneration. Les Fujigami recommended application of urea in fall for regrowth in the spring.