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MIKE EVANS: You mentioned that you do not fertilize the *Darlingtonia* plants. Do you need to feed them insects?

DOUGLAS BURDIC: Not at all. It is almost impossible to keep insects away from them. In fact, sometimes the traps are almost bent over due to the weight of the insects in them. Wasps are especially attracted to the nectar.

VOICE: What are the winter temperatures at which you hold these carnivorous plants?

DOUGLAS BURDIC: In the coldest months in my greenhouse the night temperature is about 30° F and in the day about 49° F. In nature they become frozen in winter, although they are mulched by the surrounding grasses.

VOICE: Can you feed meat to these carnivorous plants?

DOUGLAS BURDIC: Sure, hamburger or cheese — any kind of a protein substance.

CUTTING PROPAGATION OF *PAXISTIMA MYRSINITES*, *VACCINIUM OVATUM*, *RIBES SANGUINEUM*, AND *ACER GLABRUM* V. *DOUGLASII*

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***PAXISTIMA MYRSINITES*. OREGON BOXWOOD**

Its common name, Oregon boxwood, accurately describes the foliage of this evergreen shrub, which is similar to that of box in size and color. This species is found on well-drained

sites in full sun or open shade, from British Columbia to Oregon and east to Alberta and the Rocky Mountain states. It is variable in habit, sometimes prostrate, but more often upright and spreading, reaching a maximum height of three feet.

Paxistima myrsinites is readily propagated from cuttings, which may be taken at any time after the new growth has firmed in mid-summer until bud break in the spring. Cuttings will root in high percentages without hormone treatment, but the application of 0.8% IBA in talc will produce a larger, more branched root system in the same interval of time. In one trial, 965 out of 1,000 cuttings were well-rooted. Percentages such as this make direct sticking of cuttings an economical alternative. Contact polyethylene film propagation maintains the cuttings in excellent condition, and is the method I would recommend in the fall and winter, but mist is also quite satisfactory. With either method, basal heat is provided (70°F, 21°C), and cuttings are ready for potting in eight weeks.

It should be noted that *Paxistima myrsinites* is susceptible to *Pythium irregulare*, a soil-borne fungus which slowly destroys the root system. The symptoms of infection are a progressive decline, beginning with cessation of growth, followed by dulling, then browning of leaves and gradual defoliation. An outbreak which we experienced was traced to the peat used in our container medium. The only practical control is pasteurization of the medium and avoidance of re-contamination.

VACCINIUM OVATUM. EVERGREEN HUCKLEBERRY

Although it is one of our most ornamental native shrubs, evergreen huckleberry is rarely encountered in nurseries. In landscape effect it is similar to Japanese holly, both bearing small, dark, glossy leaves, but evergreen huckleberry surpasses the holly in beauty, with fawn to reddish-colored new growth and pale pink flowers in profusion.

Vaccinium ovatum is reported to perform well in sun or shade (2), reaching from 3 to 5 ft. in height in full sun and taller, to 15 ft. in shaded sites. Its growth is somewhat slow and irregular, with strong shoots emerging from the base and branching at their tips, similar to the behaviour of *Pernettya mucronata*.

Evergreen huckleberry can be propagated by cuttings from fully matured shoots taken in fall and winter. Cuttings made from the previous year's growth taken the third week in April rooted 100%. Tip cuttings can be used, and the unbranched basal shoots can be sectioned into 4 to 6 in. cuttings as well. A talc-based rooting hormone containing 0.3 to 0.4% IBA is sufficient to promote rooting, in combination with basal heat (70°F,

21.C). Rooting is slow, three months normally being required to produce a root system large enough for potting. *Vaccinium ovatum* has proven amenable to container production, tolerating an occasional drying out with no signs of injury.

RIBES SANGUINEUM. RED FLOWERING CURRANT

Ribes sanguineum is probably the best appreciated flowering deciduous shrub native to the Pacific Northwest. Ranging from British Columbia into California on the coast, and to the eastern slope of the Cascades in Washington and Oregon, this species bears flowers ranging from cerise to pale pink and even white. The size of the inflorescence is also variable, and several cultivars have been selected for intensity of flower color and/or length of flower clusters.

Red flowering currant is easily propagated by softwood cuttings, which can be taken throughout the summer into early September. Plants overwintered in a polyethylene-clad "tunnel" made early growth, which permitted the taking of cuttings in May. Cuttings treated with 0.8% IBA in talc and stuck under mist with basal heat (70°F, 21°C) are ready for potting in four to six weeks. Many of the root systems are large enough to permit potting directly into one gallon containers.

Ribes sanguineum can also be propagated from hardwood cuttings taken in January. The cuttings are made with a short "heel" of two-year-old wood and tied in bundles. The cutting bases are dipped in 0.8% IBA in talc, then the bundles of cuttings are heeled in right-side-up in a basally heated (70°F, 21°C) frame in an otherwise unheated structure. After two to three weeks, short roots begin to emerge, and at this point the cuttings should be lined out in the field or potted and placed in a shade house. The potted cuttings should not be placed in a glass or plastic covered structure, where it will become too warm on sunny days. Rather they should be maintained at outdoor temperatures to delay bud break until sufficient roots have formed.

ACER GLABRUM SUBSP. DOUGLASII. DOUGLAS MAPLE

Douglas maple is a small tree, often multi-stemmed, found on rocky slopes from the Rocky Mountains west to the coast (1). It bears three to five-lobed leaves, up to 4 in. in width. In some individuals the leaves are so deeply cut that the leaf blade is divided into three leaflets. Fall leaf color varies from orange and red to yellow. Douglas maple shows good drought tolerance in cultivation. I believe that it has promise as a small tree for urban use, and that there is much potential for the

selection of superior ornamental forms, as has been done with red maple (*Acer rubrum*).

In order to propagate selected clones of this maple, vegetative methods must be used. When it was requested in 1981 that I propagate a plant of *Acer glabrum* subsp. *douglasii* with compound leaves, I decided to try cuttings. Because material was in short supply, single node cuttings were used, similar to the method developed for red maple (3). Cuttings were taken on August 11, 1981, and three hormone treatments were contrasted, with eight cuttings per treatment. After hormone application, the cuttings were stuck into a flat filled with a mixture of equal volumes of peat and perlite and placed under mist. On October 7, 1981, rooting was assessed. Of eight cuttings treated with 0.8% IBA in talc, six were rooted. All eight cuttings treated with 0.25% IBA in 50% ethanol were rooted. Only three cuttings treated with 0.5% IBA in 50% ethanol were rooted. Because difficulties were anticipated in overwintering the rooted cuttings, only a few with large root systems were potted, and the rest were left undisturbed in the flat. One of the two leaves on each rooted cutting was removed and the cuttings were given 24 hour daylength in an attempt to induce shoot growth, but none was produced that fall. The rooted cuttings were overwintered in a cold greenhouse maintained above freezing. In the spring of 1982, all of the rooted cuttings which had been potted died without making new growth, while the majority of cuttings which had not been disturbed broke bud and grew vigorously. Although the number of cuttings inserted was small, this trial established that Douglas maple can be rooted from single node cuttings and thus provides an efficient method for propagating superior clones.

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VOICE: Have you rooted *Physocarpus capitatus* (nine-bark)?

CHARLES TUBESING: Yes, we can root them — if we use very soft cuttings. If they start to firm up a bit, however, then they deteriorate before rooting.

DON RUSK: Do you get better plants of *Ribes sanguineum* when you use hardwood rather than softwood cuttings?

CHARLES TUBESING: There is a potential for getting a bigger plant by using heavy, 2-year-old wood cuttings, with a large diameter. You get a stouter plant right away. It is a less expensive method than using your valuable mist space for leafy cuttings.

VOICE: I find in the Portland area that *Vaccinium ovatum* will propagate from cuttings very readily taken almost any time during the year. Here it grows best in the shade.

PROPAGATION OF SOME NATIVE DECIDUOUS SHRUBS

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Propagation of deciduous native plants can be accomplished by seed or, in many cases, softwood and/or hardwood cuttings. The choice of techniques is usually species specific though, in some cases, may be dependent on availability of the propagating material.

This paper will deal with the following species: *Alnus crispa*, *Amelanchier alnifolia*, *Rosa acicularis*, *Rosa woodsii*, *Shepherdia canadensis*, and *Vaccinium parvifolium*. The paper will summarize approximately 7 years of experience with these species as well as results from controlled experiments.

PROPAGATION BY SEED

Many of the species grown at Reid, Collins Nurseries come from northern British Columbia or Canadian prairie provinces. Species such as *Shepherdia canadensis*, *Rosa acicularis*, *Rosa woodsii*, and *Amelanchier alnifolia* exhibit both physical and physiological seed dormancy. Physical dormancy is usually due to hard seed coats, whereas physiological dormancy is directly due to metabolic conditions within the embryo.

Methods of Breaking Seed Dormancy. A standard method of breaking dormancy due to hard seed coats is soaking of the seed in concentrated sulfuric acid for various periods of time, or by warm stratification. This is followed by cold stratification to break the physiological dormancy.

Table 1 shows that optimal results are obtained from a warm stratification followed by cold stratification. Extensive