

3. Waxman, Sidney, 1957. Effects of daylength on the germination of *Sciadopitys verticillata*. *Proc. Inter. Plant Prop. Soc.* 7:71-72.
4. Waxman, Sidney, 1960. Propagation of *Sciadopitys verticillata*. *Proc. Inter. Plant Prop. Soc.* 10:178-181.

PETER ORUM: Are the cuttings completely submerged or are only the cutting bases?

SYDNEY WAXMAN: Only 2 inches of the stem are submerged.

BILL FLEMER: Do the rooted cuttings reproduce the original plant form?

SYDNEY WAXMAN: They reproduce the parent form. There is no need to stake them.

CARMINE RAGONESE: Is there any special position on the plant that you take cuttings from?

SYDNEY WAXMAN: We take them from all areas with no problems.

VOICE: Do you have any problem breaking dormancy in the spring?

SYDNEY WAXMAN: None. We pot the cuttings up after they are rooted and put them in a cold frame after a short stay in the greenhouse.

· JOERG LEISS: Does the cutting location have any influence on resin production?

SYDNEY WAXMAN: No, it is the cultivar.

RICHARD FENICCHIA: Are the cuttings from current season's growth?

SYDNEY WAXMAN: Yes. Two-year cutting wood will also root.

VOICE: What type of auxin treatment do you give the cuttings?

SYDNEY WAXMAN: We treat the cuttings with Hormodin 2.

## **PROPAGATION OF RHODODENDRONS FOR SOUTHERN ONTARIO**

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The program for the development of hardy rhododendrons for southern Ontario had its beginning in 1958 at the Horticultural Research Institute of Ontario, Vineland Station, Ontario.

Seed was obtained from various sources, as well as plants of various species and cultivars. As hybridizing took place it naturally followed that propagation by seed and cuttings of selected plant material was of prime importance.

**Seed Propagation.** Propagation by seed using various peat and peat-perlite mixtures has met with a varied degree of success. The use of long fibered sphagnum moss has given the best results during the past three seasons.

Seed is gathered the last week in August or early September depending on the season. The seed pods are dried in an oven at 100°F (37.8°C) for 3 days and prepared for sowing about the 5th to the 10th of September. Long fibered sphagnum moss is thoroughly soaked in pails of water, wrung out as you would a sponge, and firmly packed in plastic trays or seed flats. Holes for drainage are essential. Dividers can be used depending upon the number of crosses and amount of seed to be sown. The seed is sown directly on the moss and lightly watered. The flats are placed on a propagating bench which maintains a temperature of 22-24°C (72-75°F) by use of fin type steam pipes located under the bench. The seeds are misted by a time clock control 24 hr a day. Depending on weather conditions, 5 sec every 30 min has proven satisfactory.

Germination is evident after 16 days. When seedlings are large enough to handle, they are transplanted into flats containing a medium of 6 parts peat, 4 parts perlite and 2 parts shredded sphagnum moss. Seedlings are fertilized with Peter's rhododendron special 15-45-5 diluted to half strength (1 tbsp per gal) every 4 weeks. The seedling flats are transferred to a shadehouse when all danger of frost is over, approximately the first week in June.

**Propagation by Cuttings.** Rhododendrons can be divided into three groups: deciduous azaleas, evergreen azaleas and lepidote rhododendrons, and elipidote rhododendrons. The propagating season begins with deciduous azaleas, primarily Exbury and Knaphill hybrids and a few azalea species. In the Vineland area cutting propagation of the deciduous types usually takes place the last week of May until the second week of June, depending on weather conditions.

As deciduous azalea cuttings must be soft and pliant, most cuttings can be obtained while plants are in bloom and producing new growth. It is advisable to select cuttings on a day to day basis as rooting ability diminishes as cutting material becomes firmer. As the cuttings are gathered they are immediately immersed in water in labeled beakers or jars and carried back to the work area. The cuttings are then given a quick dip in a Benlate solution and trimmed below a node leaving a cutting 6 to



10 cm long. They are then treated with Seradix #1 rooting hormone powder (0.1% IBA). The cuttings are then stuck in "Kadon flats" 2-1/2 inches deep containing a medium made up of 60% peat and 40% perlite. The Kadon flats afford perfect drainage and eliminate any risk of water build-up.

Approximately 40 cuttings are stuck in each flat. The cuttings, after watering in, are placed in the propagating house. An automatic mist timer is set for 5 seconds every 8 minutes. The setting can be decreased on dull days and increased during extra hot weather conditions. Shade must be given at all times as any direct sunlight will prove fatal. No bottom heat is necessary at this time as greenhouse temperatures are quite satisfactory (70°F-80°F, 22-25°C).

Supplemental lighting from the middle of August is essential to give the cuttings 14 to 16 hours of daylight. Most cuttings should be rooted in 14 weeks, some will take longer. The cuttings, after rooting, are transplanted to Kadon flats 4" deep containing a medium composed of one 6 cu. ft. bale of peat, one bag perlite, 1 cu. ft. long-fibered sphagnum moss and 2 lbs of regular Magamp fertilizer. The flats are transferred to a cool greenhouse for growing on. Supplemental lighting is given until the end of the year.

In early January the flats are placed in a plastic greenhouse with a minimum temperature of 35°F (3°C). The plants continue their growth cycle in the spring, and are then transplanted to the shadehouse area after all danger of frost is over.

Cuttings of evergreen azaleas and lepidote type rhododendrons are usually taken between August 15 and October 15. Cuttings are approximately 5 to 7 cm in length. Both types are treated with Seradix or Stimroot rooting powder #2 and stuck in a propagating bench containing a medium made up of 60% peat and 40% perlite. Cuttings are misted 5 seconds every 20 minutes by a time clock control. Most cuttings will be ready for transplanting into flats in 8 weeks time. The flats are then transferred to a cool house until spring.

Propagation of lepidote rhododendron hybrids has been undertaken from August to January with a variety of results. The optimum time appears to be between October 15 and November 15. Cuttings are gathered, rinsed in a solution of Benlate (1 tbsp./gal) and then shortened to 8 cm (shorter cuttings will root just as easily). Large leaves are trimmed back about 1/3 to avoid overlap in the propagating bench and terminal buds are removed.

Cuttings are wounded approximately 2 cm on both sides. Cuttings appear to develop a more balanced root system with this procedure. Cuttings are then dipped in Seradix #3 or simi-

lar hormone and stuck in a propagating bench containing a medium of peat and perlite (60/40 mix). Bottom heat is maintained at 72 to 75°F (22 to 24°C) supplied by fin type steam pipes directly below the bench. A time clock controls the misting which is set at 8 seconds every 20 minutes. This can be adjusted as weather conditions change.

Most cuttings will have rooted in 10 to 12 weeks. If they are not rooted in 17 weeks time, cuttings are discarded. Unrooted hybrids or cultivars are recorded for future trials using different hormone strengths and times of year cuttings are taken.

Rooted cuttings are transplanted into Kadon flats (4" deep) containing a medium of 6 parts peat, 4 parts perlite and 2 parts shredded sphagnum moss. The addition of sphagnum moss to the medium has produced a better root system and diminishes transplanting losses. Plants are then grown on in a cool greenhouse and transplanted into a shadehouse area about the first of June.

Over a 3 year period using the same 60 cultivars, rooting percentages averaged 72% in a 12 week period, 78% in 15 weeks, and 81% in 17 weeks. Using 30 Vineland hybrids in similar trials, rooting averaged 56% in a 12 week period, 70% in 15 weeks and 77% in 17 weeks.

## **PROPAGATION OF HOLLY IN SOUTHERN ONTARIO**

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Good, broadleaved evergreens for northern gardens are not plentiful and selection of suitable species which will survive even the reasonably mild winters of Southern Ontario is difficult. The area of interest in establishing additional broadleaved evergreens is that bordering the Great Lakes from, roughly, Toronto west to Windsor and Sarnia in the area of Detroit. This is within the area defined as Zone 6B or 7A on the Canadian Hardiness Zone Map.

The small leaved hollies, *Ilex crenata* and its cultivars, have been grown with moderate success for many years, but have never become popular. No studies have been undertaken by Canadian institutions to determine the adaptability of any or all of the species of *Ilex* which might succeed under the climatic extremes suggested.

In 1958 the Horticultural Research Institute of Ontario