SOME OBSERVATIONS ON NATIVE AND CULTIVATED ERICACEAE IN NEW YORK STATE

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In the past several years, ericaceous plants have become increasingly popular in landscape plantings on New York State home properties. Here, Rhododendrons, Mountain Laurel, and *Pieris* essentially reach their northern limit of hardiness.

In a survey conducted through the New York State Nursery Notes in 1962 to which 90 nurserymen responded, 80 replies indicated many nurserymen growing Rhododendrons and Azaleas. In New York State, the sale of broadleaf evergreens, many of which are ericaceous plants, increased from 234,000 in 1949 to 615,000 in 1959.

The Literature

A check of the literature shows that studies have been conducted into the taxonomic, ecological and anatomical aspects of ericaceous plants, as well as the applied cultural phases of soils, nutrition, site selection, and propagation. Even the pharmaceutical aspects have been explored.

A list of selected references has been prepared to accompany this discussion today.

Some Hardiness Observations

In the last 9 years of extension travels it has been possible for me to observe, both superficially and in some depth, native stands and cultivated plantings of Ericaceae in New York State, and to arrive at some conclusions — and raise some questions — concerning their requirements and culture. Several persons have shared in either making the observations or interpreting them.

These recent observations in New York State tend to confirm findings of several Cornell staff members in the 1930's concerning rhododendrons and azaleas. They concluded that these plants, so long as hardy types are chosen, do well in areas free of excessive sun and wind, in a mulched, well aerated, well-drained soil. Assuming hardy species are chosen, the emphasis is placed upon factors other than temperature, namely those of site selection and soil preparation.

Soil Preparation

In Cornell extension publications, we emphasize soil structure and texture, as well as available moisture, over pH. It is undoubtedly easier for home gardeners to maintain plantings in acid soils, and observations of native stands indicate that these seem to almost uniformly grow on very acid soils. However, with the advent of chelated iron and of fertilizers with nitrogen in the desired ammonium form, pH become a less formidable factor. Incorporation of peat in the growing medium, regular

annual mulching and nutrient applications help maintain conditions in which the plants thrive.

To overcome the problem of soils with poor internal drainage, raised bed plantings are appropriate, and have been used.

Native Stands

In 1960, observations were made at 5 sites of either blueberry, mountain laurel and/or rhododendron in Sullivan County, New York. These Catskill Mountain locations are in USDA's Zone 5A with an average annual minimum temperature of 20° below zero. Soils, topography, associated plants, growth and flowering patterns were studied. It was found that blueberry and mountain laurel were generally growing in more open conditions and in somewhat heavier soils than was the case where *Rhododendron maximum* grew. All sites of the 3 genera had soils with a pH reading no higher than 4.5.

In locations where *Rhododendron maximum* was found growing, both soil aeration and internal drainage were good. At a site by a stream in Upper Ferndale there was decaying organic matter 2 - 4″ deep over a uniform layer of sand 2 feet or more deep. On the top of a bank 10 - 15 feet above a stream, decaying organic material 4 - 6 inches deep was present over a clay loam sub soil. One section of a second site near Camp Chippinaw revealed a 6 - 7 inch depth of organic material over a clay loam sub soil.

On a relatively level bog site beyond coniferous woods blueberry and mountain laurel were found growing. Sphagnum hummocks 6″ deep were present in the bog over a 6″ layer of white clay and a layer of sand underneath the clay.

The Factors of Temperature, Site and Soil

There are a number of old plantings in the coldest parts of New York State (listed as Zone 4 by U.S.D.A.).

One of these is a forty year old site in Essex County, not far from Keene Valley, New York in the Adirondack Mountains. The soil is favorable, a natural mulch is present, and wind protection is afforded by surrounding mountains. *Rhododendron carolinianum, R. maximum, R. catawbiense, R. nudiflorum, Pieris floribunda, Kalmia latifolia,* and a Ghent Azalea (or one of the parent species) are growing well here.

The second is at White Pine Camp of Paul Smith's College, Paul Smith's, New York. Favorable site and soil conditions have created a growth of rhododendrons comparable to that seen in areas in Pennsylvania or farther south. Average annual minimum temperature here is apt to be in the 20 - 30° below zero range, according to the U.S.D.A. map.

Plantings in Poorly Drained Sites

In areas with poorly drained soils, raised bed plantings have been successfully employed, from both the horticultural and landscape design standpoints. The following slides show such raised plantings at Buffalo, Syracuse and Ithaca, New York each

having naturally heavy soils with impeded internal drainage. The principle of raised plantings is shown first, with both a bed sloped to the soil surface and one with a retaining wall depicted. In the Buffalo and Ithaca slides the new planting and one several years older are shown.

Chlorosis

Chlorosis is evident where either physical or chemical causes exist.

Where chemical causes are involved, the application of iron, as in the case of the illustrated *Pieris japonica* grown under pot conditions at pH 6.8 should help, if applied at the right time in the growing season. In this case, NPK plus iron sulfate were used at the right, while iron sulfate alone was used in the middle pot. This photo is from an old New Jersey experiment. Chelated iron would more likely be used today.

Should chlorosis occur as a result of physical causes, correcting of the physical factor must be accomplished.

Some Usefully Hardy Ericaceae

Usefully hardy Ericaceae in upstate New York include Rosebay Rhododendron, *Rhododendron maximum,* Carolina Rhododendron, *R. carolinianum,* and some hybrids of it, Catawba Rhododendron, *R. catawbiense,* as well as several "Ironclad" cultivars known to be reliable in Central New York (U.S.D.A. Zone 5) and milder areas, Drooping Leucothoe, *Leucothoe fontanesiana, Kalmia latifolia,* Mountain Laurel, Mountain Andromeda, *Pieris floribunda,* Redvein Enkianthus, *Enkianthus campanulatus,* Tree Andromeda, *Oxydendrum arboreum,* plus a considerable number of deciduous azaleas. The latter include Pinxterbloom, *Rhododendron nudiflorum,* Roseshell Azalea, *R. roseum,* Pinkshell Azalea, *R. vaseyi,* and Flame Azalea, *R. calendulaceum,* Sweet Azalea, *R. arborescens,* and Swamp Azalea. *R. viscosum.* A type related to Flame Azalea, the Cumberland Azalea, *R. bakeri,* has been grown successfully in Ithaca for many years and deserves more attention from plant propagators looking for a late-flowering, cold-hardy plant.

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MODERATOR DUGAN: Our next speaker is a seed technologist at the New York State Agricultural Experiment Station and has operated an experimental nursery for testing seed quality and sources for the past twenty years. Mr. C. E. Heit.

THE IMPORTANCE OF QUALITY, GERMINATIVE CHARACTERISTICS AND SOURCE FOR SUCCESSFUL SEED PROPAGATION AND PLANT PRODUCTION

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The importance of seed quality and germinative characteristics can not be stressed too strongly if the nurseryman or plant propagator desires the most success in his plant production program. For many years nurseryman thought that tree seed could not be tested accurately in the laboratory for germination as other kinds of seeds. Some seed dealers and collectors have also clung to this belief too long and have even passed such information to the seed buyer through their catalogues, correspondence or conversations.

To-day the seed laboratory which is properly equipped with modern, automatic light germinators and manned with experienced, ingenious seed analysts can test any kind of tree and shrub seed, no matter how dormant or how difficult they are to germinate. Our New York laboratory tests hundreds of tree and shrub seed yearly now on a service basis for nurserymen, seed dealers, collectors and private planters. Our seed testing service is maintained for residents of New York State but we also test tree seed for persons from other States especially when