

Development of Double Flowering (Petaloid) Lepidote Rhododendrons

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Lepidote rhododendrons in the landscape are generally perceived by the casual observer as different from large leaf rhododendrons. Because their foliage and growth is normally only about half the size of the large leaf rhododendrons, lepidotes often appear to more closely resemble evergreen azaleas. This creates an intriguing situation. Evergreen azaleas thrive in non-stressful planting locations and are well suited for gardens where winters are moderate, but they generally perform inconsistently in northern landscapes. In USDA Zone 5 and colder, many of the so-called evergreen azaleas retain few leaves over the winter, and those that remain often suffer unsightly burning from sun and wind. Flower buds on many evergreen azalea cultivars are less able to tolerate sharply variable and low winter temperatures, often opening unpredictably in northern gardens.

Because of this winter hardiness deficiency there is a need for more reliability in evergreen-azalea-type plants in northern landscapes. The lepidote rhododendrons have the potential to fulfill this need even though most of today's lepidotes are more vigorous and upright growing than a typical evergreen azalea. In fact, their superior tolerance of winter wind and sun may help improve garden appearance if a few of their shortcomings can be corrected. The development of double flowering lepidotes serves to further enhance their potential, and may create an opportunity for better looking gardens.

The term "double flowering" can be confusing and is ambiguous in nursery industry usage. Some of the hybrids I will describe have completely double flowers (all of their stamens have been transformed into petals), some are only semi-double (some of the stamens are partially or fully transformed into petals), others are "hose-in-hose" (one set of petals within the other), and still others are combinations of double and hose-in-hose. There is often variation among individual flowers on the same plant as well. A more appropriate term for "double flowering" might be "petaloid", implying any modification of stamens into petals. I am also aware that other breeders have done work with double flowering lepidotes, but this presentation will focus upon only those developed at Weston Nurseries.

Edmund V. Mezitt grew up immersed in horticulture and worked with his parents, Peter J. and Anna, at their nursery in Weston, MA. He and his dad had often lamented the dearth of winter hardy colorful rhododendrons suitable for New England. They had worked to improve the selection over the years by recognizing, selecting and vegetatively propagating plants with superior characteristics from seed grown populations. They had also begun to try some of the new cultivars becoming available from other sources. However, after graduating from Cornell in 1937, Ed came to realize that real improvement would only occur with more direct hybridization and selection efforts.

Ed's very first attempt at hybridizing in 1939 was extremely fortuitous. It resulted in the now familiar *Rhododendron* 'P.J.M.' hybrids which, in addition to being superior plants in their own right, have become parents for many new

hybrids, including all of our petaloid hybrids. The pollen parent of this hybrid was an unidentified species (later recognized as *R. dauricum* var. *sempervirens*) which Ed and his dad, Peter J. Mezitt, had received from a missionary who collected plants in China. The seed parent was a selected plant of *R. carolinianum*, a common New England landscape choice, from Peter Mezitt's home landscape. It seems probable that the petaloid characteristics that occur in later hybrids are carried in the genes of the *R. dauricum* because we have observed no doubles in crosses of *R. carolinianum* alone. It is still unclear whether petaloid-prone genes are unique to the specific individual *R. dauricum* that was the 'P.J.M.' parent.

Although Ed performed additional crosses after the 'P.J.M.' cross, no records exist until 1950 and 1958 when he documented 33 and 37 crosses respectively. Most of his 1950 attempts were between different species of rhododendrons/azaleas and intended to generally expand the season of color. By 1958 he had begun to focus upon specific characteristics within the groups; those crosses performed with lepidotes attempted to develop an early blooming white similar to 'P.J.M.' Several lepidote cultivars that we grow today resulted from those 1958 crosses: cross #33 ('P.J.M.' on *R. carolinianum* 'Album') produced *R.* 'Balta' and *R.* 'Laurie'; cross #36 (*R. mucronulatum* 'Cornell Pink' on *R. carolinianum* 'Album') produced the "Shrimp Pink" series from which he selected 'Caronella', 'Llenroc' and 'Vallya'.

In 1963 Ed Mezitt recorded 129 crosses and began a hybridizing/selection program that continued every year (excepting 1965) until his death in 1986. About one third of his 1963 crosses involved lepidotes. From his records and in my frequent conversations with him regarding hybridizing goals, it is evident that he recognized substantial potential for the lepidote rhododendrons in the New England landscape. Even though to my knowledge he never expressed the desire to replace the evergreen azalea with lepidotes, he was well aware of their superior characteristics for this climate. Superior winter hardiness, wider choices of color, attractive foliage year-round, expanding the season of color, and generally to maximize the ability to thrive in the climate and soils of central and northern New England were his prime breeding objectives.

It was in 1963 that he documented his first attempt to create double flowering plants by using a 'P.J.M.' that occasionally exhibited an extra petal (he called it "double P.J.M.") as a parent. Cross #66 [his "evergreen pink *R. mucronulatum*" (probably a selected pink *R. dauricum* var. *sempervirens*) on "double P.J.M."] was the first one to actually produce truly double flowers. Cross #90 (pink *R. mucronulatum* on 'P.J.M.') produced two seedlings that, while not double themselves, each produced a petaloid plant (*R.* 'Counterpoint' and *R.* 'Staccato') when self-pollinated.

A major breakthrough occurred in his 1964 cross (#201) between a *R.* 'P.J.M.' and *R. mucronulatum* 'Cornell Pink'. This was one of 146 crosses he performed that year, and it resulted in one remarkable fully-double pink plant which he named 'Weston's Pink Diamond'. These first four petaloid hybrids expanded Ed's awareness of the possibilities for new hybrids and formed the basis for all the petaloid rhododendrons we grow today.

Many of the features of petaloid lepidote rhododendrons can help to increase the appeal of New England landscape plantings. The ones we've developed are extremely early blooming plants, among the first woody plants to welcome the spring. Most of the ones we grow flower consistently earlier than *R.* 'P.J.M.'

cultivars. They have tested winter hardy throughout most of southern New England (USDA Zone 5), and seem to thrive in open, exposed planting locations normally considered unsuitable for rhododendrons and azaleas. All have a propensity to blossom at a very young age, often when only inches tall. Because of their precocious tendency to set flower buds after only a few weeks growth, they tolerate shearing without sacrificing the next spring's bloom. All seem to be easy to propagate conventionally or by micropropagation. Since their stamens have been modified to form additional petals, they produce very little pollen and tend to be sterile; by setting no seed heads they require no deadheading to maintain clean appearance and vigor. Colors currently range from pure white to pink, and provide a welcome supplement to the familiar lavender rhododendrons (*R. mucronulatum* and *R. dauricum*) that bloom at the same season.

These new hybrids also have disadvantages. Because they are so very early to bloom in the spring, they are susceptible to damage from late frosts and freezes. Choosing a planting location with adequate air drainage is important because damaged flower heads are unsightly and can linger on the plant until new growth covers them. Most of these hybrids tend to be more upright growing than spreading. Most are rather vigorous and require periodic shearing, particularly when young, to maintain shape. Additionally, most retain relatively few leaves in winter. While most are not entirely deciduous, their winter foliage (although often colorful) is not one of their best features. A major problem, which they share with most other lepidotes, is their susceptibility to root diseases such as *Phytophthora*; this is best prevented by planting healthy plants in well-drained soil and maintaining plant vigor with proper cultural practices,

A major objective in our current breeding programs is to improve winter foliage retention so that the plant presents an attractive appearance in the landscape all year. We are also working on enhancing the flowering characteristics to include a wider range of colors, more intense flower colors and increased frost resistance. Breeding to move the flowering season later would avoid the frost danger and would also help make them look more like an evergreen azalea to the ultimate consumer.

We've found that a significant challenge in introducing a new plant is the vast amount of time necessary to overcome skepticism and induce the consumer to change from current preferences. This situation is exacerbated when potentially important features of the plant are disappointing or when the long term performance of the new plant is not proven. With the lepidote rhododendrons, thanks largely to the success of *R. 'P.J.M.'*, many people are already familiar with some of the attributes of lepidotes. While this helps overcome some apprehension, much testing must still be done to truly evaluate their value to the landscape.

Whether or not these new hybrids ultimately prove to be appropriate alternatives to the evergreen azaleas remains to be seen. But these petaloid lepidote rhododendrons are already, on their own merits, important assets in Zone 5 gardens. And as we achieve the improvements I've described, it seems inevitable that they will become an essential component of tomorrow's gardens.