

## Grafting Rhododendron on pH Neutral Understocks<sup>©</sup>

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Recently, I was vacationing in the Smokey Mountains and the mountains around Asheville, North Carolina. I was amazed by the vigorous growth of the wild rhododendron. The plants were small trees and were best pruned from the hiking paths not with propagation pruners but with bushhogs. Unfortunately many parts of North America lack a gardening soil even remotely close to the well-drained acidic organic mountain soils that allow these plants to thrive; hence the origin of this journey.

Before I begin to discuss grafting of rhododendron it might be best to introduce our company. Decker Nursery was founded in 1921 by my Grandfather, Paul Offenberg. He was a professionally trained horticulturalist from Holland and brought with him, along with many other European immigrants, the propagation skills necessary to found the Paul Offenberg Nursery. Through the Great Depression, World War II, and the emergence of horticulture in the post war era, Offenberg Nursery grew into another generation with Bernard Decker, Paul's son-in-law, as President. In 1981 the Offenberg Nursery relocated, reorganized, and changed its name to Decker Nursery, Inc.

Decker Nursery began to expand into wholesale production for the regional Ohio market. As propagation began to expand to supply liners to the trade, the Landscape Department was closed. Decker Nursery currently produces plants on 132 acres in Groveport, Ohio. It has field production for B&B trees and evergreens, 30 acres of container production, and about 5 acres of propagation and liner production facilities. The finished stock side of production at the Decker Nursery is primarily shipped to a regional Midwest market. The propagation department is national and is currently shipping to 38 states and Canada.

In the propagation department we produce in each year about a million hardwood and softwood cuttings. We root licensed plants in programs such as Proven Winners<sup>®</sup>, PlantHaven<sup>®</sup>, LCN Introductions<sup>®</sup>, Plants Nouveau<sup>®</sup>, UpShoot LLC<sup>®</sup>, and others. We also root non-licensed taxa. In addition to rooted cuttings, we graft approximately 120,000 plants each year. These grafted plants include *Acer palmatum*, *Ginkgo*, *Cornus*, *Aesculus*, *Fagus*, *Juniperus*, *Chamaecyparis*, *Pinus*, *Picea*, and last but not least, *Rhododendron*. The foundation has been laid and now back to the rhododendron journey.

We were approached in 2011 by Linda Guy of Plants Nouveau to ask if we would be interested in grafting hardy, proven North American cultivars of rhododendron onto a new licensed selection of *Rhododendron* understock that was developed in Germany. This is when we became introduced to INKARHO<sup>®</sup> rhododendrons.

The name INKARHO, according to the INKARHO website <[www.inkarho.de](http://www.inkarho.de)>, is short for INTER-essengemeinschaft Kalktoleranter RHODO-dendron. This translates as "lime-tolerant rhododendron." The history of these plants is that they were developed by a group of 15 German nurseries. In 1980 with the support of these nurseries, the German Federal Institute for Ornamental Plant Breeding (IZZ) began the 25 years of breeding and testing to develop rhododendrons with strong root vigor and tolerance to high pH soils. They believe after testing throughout Germany and other countries in Europe that with the INKARHO plants they have achieved this goal.

In addition to being alkaline tolerant understock, the INKARHO understocks are, according to the German Breeding Institute, able to instill a higher level of vigor in all grafted plants. The claim is that under all conditions, even normal native acidic soils, the understocks result in a more vigorous plant. It will take many years of testing to determine if this claim proves true in the USA.

In information collected from Linda Guy, it is believed that the INKARHO line was introduced into the USA through Dave Weil of Varieties International LLC based in Dundee Oregon. Dave arranged for the rhododendron understocks to be sent to Dieringer,

a rhododendron grower in Oregon. The Dieringer owners were working on perfecting a grafting technique when the business went bankrupt shortly after the year 2000. At this time, Tom Demaline, President of Willoway Nurseries, stepped in to try and rescue the pH Neutral Rhododendron Program.

The rhododendron grafting was picked up at Willoway. Through trial and error they determined that of all the numbered clone understocks, INKARHO #37 was the strongest grower and best suited for production in the USA. The propagation department at Willoway was given the task of grafting the plants with cultivars well known in North America. Since Willoway does little in-house grafting, the program has moved along with mixed results on the grafting success. It did, however, yield enough plants to allow Willoway to begin to introduce the INKARHO understock plants into the North American market.

The INKARHO #37 understock is a plant worthy of note as is. It has a lovely soft pink flower and is currently being sold at Willoway Nursery as Rhododendron INKARHO 'Lakeview Pink'. The INKARHO line of rhododendron at Willoway Nurseries is still being evaluated for customer acceptance. The line has been in Germany for several years but is still in need of evaluation in the USA.

In 2011-2012 Decker Nursery was supplied 100 INKARHO #37 understocks for grafting trial. One plant was dead on arrival, however, we were able to return 96 live grafts to Willoway Nursery the following summer. It was determined at Decker Nursery to do a more substantial trial program the following year.

In the 2012-2013 winter season we wanted to graft about 2,000 plants. Due to rooting problems Willoway Nursery was unable to supply INKARHO #37 understocks. As we were not experienced in the rooting of rhododendron cuttings, we solicited protocol advice from IPPS Eastern Region members at the 2011 October Annual Meeting in Pennsylvania. We combined valuable information from Shelby Ruffino of Prides Corner Nursery and Dave Geary of Willoway Nursery to come up with the following protocol for rooting rhododendron INKARHO #37 cuttings at Decker Nursery.

Rhododendron cutting protocol:

- Hortus dip 8000 ppm
- Wound: One side, vegetable peeler, shallow
- Overspray Hortus 2,000 ppm weekly
- Shade 50% on the house
- Mist as required (4 sec every 10-30 min., target 85% relative humidity)
- Flats under trays for extra drainage
- Medium: peat, coir, perlite (1 : 2 : 4.5, by vol.)
- Cuttings stuck in late October/early November
- Bottom heat 68-70°F

We stuck the cuttings shortly after the IPPS Eastern Region meeting. The cutting wood arrived and we made the decision to stick the larger cuttings in 4-in. pots for this season's grafting and the smaller cuttings were stuck in 2.5-in. plugs for the 2014 season. The 4,000 cuttings stuck rooted at nearly 100%. The larger cuttings in 4-in. pots were ready for grafting in mid-February.

It should be noted that Shelby Ruffino told me that he suspected the cuttings might be rooted satisfactorily by February for grafting. This off-the-cuff comment trimmed 1 year off the production cycle and dramatically reduced the cost of the grafts. (Talk about the value of the IPPS motto: to seek and share!)

We prepared a grafting tent placed directly on the bottom heat concrete floor. Scions of the following rhododendron cultivars were collected from Willoway Nursery:

- 'Nova Zembla'
- 'Roseum Elegans'
- 'Boursalt'
- 'Chionoides'
- 'Lee's Dark Purple'

The scions were stripped of any flower buds and leaves were trimmed similar to the

method for making cuttings. A short side veneer graft was made on the understock and a matching cut on the scion. It is interesting to note that in the 2011-2012 first grafting experiment the understocks were 1 year old and the wood was very difficult and brittle to cut. In the 2012-2013 season we were grafting on 1-year-old wood of cuttings that were only 2-3 months old. The wood was soft and easy to cut thus yielding better graft fits. The fresh grafts were mulched with aerated moist peat moss and placed in the grafting tent on bottom heat floors. After about 6-7 weeks the grafts were healed and showing good callous growth and the tent was gradually removed. The understocks flushed growth first. When the understock foliage began to be a shade threat, the understock growths were removed. This resulted in a quick flush of growth from the swollen budded scions. It should be noted that some of the grafting rubber bands were also removed from some grafts at the time of understock growth removal. I noticed that some of the graft unions "shattered" from the shock of the cut and we quickly discontinued rubber strip removal until a later date. The shattered grafts were the only substantial loss of any grafts in the entire crop.

The grafts continued to flourish and grow and a large number of assortment trays of 15 plants were given to existing liner customers that expressed an interest in trialing the INKARHO #37 understock rhododendron grafts. The remaining grafts will be up potted in the spring of 2014 to begin to develop larger plants for evaluation and propagation stock. The smaller cuttings of INKARHO #37 that were intended to be used as understocks for the 2013-2014 grafting crop were instead potted into 1-gal containers and will be both stock plants for cuttings and trial plants "as is" for the Willoway cultivar rhododendron 'Lakeview Pink'.

In conclusion it is clear that the pH neutral rhododendron INKARO #37 program in North America is in its infancy. The following facts though are beginning to be clear:

- The grafting of this plant is not difficult and can clearly be a commercial success.
- It is unproven if the INKARHO #37 understock will be a success in the North American environment. I have seen many successful plants from Europe that failed in the North American climate. Rhododendrons have been enough of a challenge to the American gardener to add another failure to the list.
- Tom Demaline has stated that the message must be sent that pH neutral does not mean "poorly drained soils". Soil drainage and moist organic soils are the key. Just like other rhododendrons, wet feet will lead to decline.
- The INKARHO rhododendrons also have selections of "fragrant hedge cultivars." These plants should also be trialed in North America to determine if they have a place in the landscape. They do not require grafting.

