

## Grafting *Ilex* for Increased Vigor and Durability<sup>®</sup>

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### INTRODUCTION

Numerous forms of *Ilex* have been assembled over the years at Hefner's Nursery for evaluation. Variegated leaf forms, slower growing forms, and forms with unique habits such as fastigiate or pendulous growth have been entered into trial for evaluation. Although all of the *Ilex* in trial can be easily rooted at the proper time of year, many have not grown off well in container or field production. This is primarily due to the lack of vigor in the root system. Factors such as heat in container production and compact clay soils in field production have led to the lack of durability in these unique and marketable plants. In the year 2000, grafting of some of these hollies was tried on a small basis to evaluate potential for increased vigor and eventually durability in the landscape.

### UNDERSTOCKS

*Ilex* 'Nellie R. Stevens' was initially chosen as an understock due to its vigor and durability in the southeast of the United States. It was also chosen because of its similar genetic make-up to the unique *Ilex* forms in trial, namely *I. aquifolium* and *I. cornuta* cultivars. Other forms that have been evaluated as understocks include *I. × koehneana* 'Wirt L. Winn', *I.* 'Emily Brunner', *I.* 'Ed Stevens', and *I.* 'Mary Nell'. Currently 'Nellie R. Stevens' is being used for base grafting as well as top grafting of *Ilex* at Hefner's Nursery. Three-inch (7.6 cm) liners that are 15 to 20 cm (6 to 8 in.) tall, trade 1-gal liners that are 61 to 76 cm (24 to 30 in.) tall, and trade 3-gal liners that are 91 to 122 cm (36 to 48 in.) tall are utilized for grafting. All liners are from terminal cuttings and trained to have a straight trunk. Understocks are brought from the growing area and stored in a greenhouse prior to the first freeze of the fall season to prevent bark split of the vigorous growing understocks. They are held at 1.7 °C (35 °F) with minimal moisture needed until later in the winter. Any side branches on the understocks that remain are removed upon storing, but all leaves are left in place along the stem to aid in food production. Understocks are warmed with 18 to 21 °C (65 to 70 °F) bottom heat for about 3 weeks to initiate root activity prior to grafting. Most of the grafting is completed in late January and February but can be accomplished successfully until the understock starts growing actively. Success in grafting *Ilex* starts with proper growing and preparation of the understock.

### GRAFTING

The side wedge graft is primarily utilized for lower grafts on 3-in. liners. Dormant, 7.6 to 10.2 cm (3 to 4 inch) scions of current season wood is collected from desired *Ilex* forms. Two sloping cuts are made on each side of the scion and then a thin flap is cut into the understock so the scion can match on both sides. The scion is held in place by 12.7 × 0.3 cm (5 × 1/8 in.) budding rubber. To protect the scion and graft union from drying out, the graft is covered with a pleated sandwich bag that is stapled in place. The humidity in the heated house is also supplemented with

intermittent mist. The apical wedge graft is utilized for top working the trade 1- and 3-gal liners. A similar scion is prepared as with the side wedge graft however the understock is trimmed horizontally across the stem and then a vertical cut is made to a depth that will accommodate the scion. The scion will form the graft union faster if the cambium on the scion matches on both sides of the understock. It is important to graft and match as close as possible to form a compatible union. Wrapping and covering is the same as above with the side wedge graft.

### AFTERCARE

The potted grafts are checked on a regular basis to make sure they do not dry out and that the humidity is adequate. The grafts will usually show signs of activity about 3 weeks after grafting. The pleated sandwich bags are removed when new growth is about 1/2 inch long to not retard growth. The understock above the graft union on the side wedge grafts is trimmed flush when the bag is removed. The parafilm and budding rubbers will usually fall off but should be removed if any girdling is noticed. The grafts stay in the greenhouse until mid April and then are potted up in larger sizes for growing on or planting out.

### CONCLUSION

Unique forms of *Ilex* grafted on 'Nellie R. Stevens' have shown remarkable growth in container and field production. Although the unit production cost of each plant is higher because of grafting the production time is far less. The grafts are also far more durable because of the coarser more vigorous root system of 'Nellie R. Stevens' compared to plants on their own roots.

### List of *Ilex* Cultivars Grafted on *Ilex* 'Nellie R. Stevens'.

- *Ilex aquifolium* 'Argentea Marginata Pendula'
- *Ilex aquifolium* 'Argentea Marginata'
- *Ilex aquifolium* 'Ferox Argentea'
- *Ilex aquifolium* 'Pendula'
- *Ilex aquifolium* 'Phantom Gold'
- *Ilex aquifolium* 'Fastigiata Sartori'
- *Ilex aquifolium* Unnamed media picta weeping form
- *Ilex cornuta* 'Emerald n Cream'
- *Ilex leucoclada* 'Superberry'
- *Ilex x altaclerensis* 'Belgica Aurea'
- *Ilex* 'Hefcup' pp#8537
- *Ilex* × *koehneana* Unnamed variegated form
- *Ilex* × *koehneana* Unnamed media picta form
- *Ilex* 'Nellie R. Stevens' Unnamed cream variegated form
- *Ilex* 'Rock Garden'
- *Ilex* 'September Gem'