

Production of Specimen *Ilex* Species in Virginia, U.S.A.

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The holly cultivars we produce at Mobjack Nurseries have been selected for: 1) popularity in the U.S. mid-Atlantic states, 2) cold hardiness in this market area, and 3) cultural requirements that our production system can fulfill.

We are constantly searching for new hollies to meet these criteria. The following taxa are currently being produced:

- *Ilex* 'Nellie R. Stevens', a putative hybrid between *I. aquifolium* and *I. cornuta*, is a large dark-green evergreen shrub or small pyramidal tree 5 to 8 m high. It is hardy in areas which normally experience winter temperatures as low as -23C. This holly was introduced by G.A. Van Lennep, Jr. of St. Michael, Maryland, U.S.A., in 1954 (Dirr, 1983).
- *Ilex* 'Edward J. Stevens', is a large male clone useful for pollinating 'Nellie R. Stevens'. It is more narrow in growth habit but essentially similar.
- *Ilex* \times *attenuata* 'Foster's Number 2' is one of a group of five interspecific hybrids of *I. cassine* and *I. opaca*. It has a compact, narrow growth habit to 10 m, is heavily fruited with small red berries, and is hardy to -23C. This plant was selected by E.E. Foster of Bessemer, Alabama, U.S.A. (Dirr, 1983).
- *Ilex* \times *attenuata* 'Foster Brilliant' a selected seedling of 'Foster's No. 2' is more compact but grows more rapidly than its parent. The leaves have an olive green color and the bright red fruit is larger. It was selected by Charles Shreckhise of Weyers Cave, Virginia, U.S.A. It is as cold hardy as 'Foster's Number 2'.
- *Ilex* 'Doctor Kassab', is a beautiful dark green evergreen of broad pyramidal form that will reach 7 m. This hybrid between *I. cornuta* and *I. pernyi* is hardy to -28C and was introduced by Dr. Kassab, a gardener from Philadelphia, Pennsylvania, U.S.A. (Dirr, 1983).
- *Ilex* \times *koehneana* 'San Jose' is one of a group of interspecific hybrids between *I. aquifolium* and *I. latifolia*. *Ilex* \times *koehneana* is the grex name for a group of vigorous evergreen hollies. Named and introduced in 1919, these outstanding hollies have been overlooked (Dirr, 1983).
- *Ilex* \times *aquipernyi* 'meschik' Dragon Lady® holly, is a dense pyramidal shrub to 4 m with shiny dark green jagged-edged foliage. Large bright red berries show well on this holly which is hardy to -23C.
- *Ilex opaca* 'Miss Helen', a selected cultivar of *I. opaca*, native to North America, is an excellent broadleaf evergreen growing rapidly to 15 m. Introduced in 1944 by Steward H. McLean, U.S.A., this holly is hardy to -28C (Poore, 1984).

- *Ilex pedunculosa*, one of the hardiest of the evergreen hollies, has smooth dark green leaves and long stalked bright red berries. Introduced into England from the orient in 1893, it is hardy to -29C (Poore, 1984).

PROPAGATION

The *Ilex* cultivars we grow can be propagated from cuttings during most of the summer, fall, or winter months, so we take cuttings when we have time and space available. The bottom leaves are removed and the cuttings are bound together with rubber bands as they are taken in the field. After immersion in a fungicide solution they receive a basal dip of 10,000 ppm aqueous solution of the potassium salt of indolebutyric acid. The cuttings are stuck into flats of 75-mm peat pots containing a medium of 3 milled pine bark : 1 perlite (v/v). These flats are set under a mist system in warm weather or over bottom heat with mist in cool weather. By spring the cuttings have enough roots to be planted into 150-mm (2.8 litre) plastic pots.

Our growing medium is 6 milled pine bark : 1 washed concrete sand (v/v) with approximately 1 kg of finely ground dolomitic limestone and 500 g of urea (43:0:0) added per cubic meter. These pots are filled and set into our growing areas during late fall and early winter (off season). The cuttings will usually flush new growth so they receive one trimming before planting out in mid to late April. They are dibbled by hand into the pots at this time.

CULTIVATION

Liners for field planting are grown in 1-gal pots for one year. They are sheared flat to produce a dense branched base. After the land is prepared and limed with 4500 kg of dolomitic limestone per ha, the hollies are planted out into rows 2.1 to 2.4 m wide on 1.5-m centers. Irrigation is provided by 16-mm tubing with in-line emitters 600 mm apart, which delivers approximately 2 litre/h/emitter. A preventative spray program using Orthene, either Benlate or Bravo, and a miticide is applied every 2 to 3 weeks as needed with a mist blower type sprayer.

Cultivation between the rows is not used. Instead, red fescue and perennial white clover are fall planted in the alleyways and mowed as needed during the summer. Herbicides, pre-emergence and post-emergence, are applied through low-volume nozzles using a small narrow-gauge farm tractor. Weeds which escape control are treated with backpack applications of Roundup. Fertilizer is applied by hand three times per year. The first application is of 10 : 10 : 10 in early spring, the second is of 43 : 0 : 0 after the spring flush, and the last application is applied after frost.

Our hollies are shaped by one of two methods. Those not listed for spring sales are heavily sheared to a narrow pyramidal form during the winter or early spring. Those listed for sale are trimmed lightly to assure uniform size and shape. After the spring flush the plants not scheduled for summer sales are sheared again to a fairly tight pyramidal form. During the rest of the summer our hollies are given a light clipping to maintain shape, to keep tops narrow and tight and to encourage continued growth.

HARVESTING

Virtually all of our field-grown plants are harvested with a hydraulic tree spade. A plant after digging is brought in the spade to the head of the row and put into a

wire basket lined with burlap on a low farm wagon. The burlap sack is secured around the trunk, the top of the basket is laced and drawn tight around the trunk with poly twine, and any loose wires are twisted with a hook to tighten them. The size of the ball can be adjusted to the size of the plant by lowering or raising the tree spade with the adjustable legs. An operator and three workers can produce 75 to 100 trees per day on wagons ready for loading into semitrailers.

LOADING

Our semitrailers are equipped with steel racks along the sides which support 50 mm by 250 mm pine shelving. Field-grown plants are loaded horizontally on the floor and container plants are then loaded onto the shelves. Our farm wagons are backed up to the semi-trailer and a ramp is made using shelving boards. The plants are then pulled up the ramp into the trailer. We feel this method is far safer than the use of loading equipment by unskilled workers.

CONCLUSIONS

We endeavor at the nursery to keep the plant's environment weed free and to protect them from insect pests. A sandy loam soil to grow in, sufficient moisture, and the adequate supply of nutrients are just the basic requirements. The single factor which is the strongest contributor to our plant quality is timing. The proper timing of both shearing and feeding enables us to induce the maximum amount of growth where it is most needed during the development of the plant.

We have learned that root elongation and nutrient uptake is highest when shoot elongation is at its lowest during the growing season. We try to ensure that nutrient availability is highest just before the plants begin to grow. In late spring we attempt to stop growth with our heavy shearing and again feed heavily. We shear just before our hollies would normally finish their growth cycle. During the second growth in mid-summer we trim very slightly to maintain shape and to encourage multiple breaks on new shoots where needed.

These procedures have enabled us to produce specimen hollies of very high quality which command the best price in our marketplace as well as being a lot of fun to grow.

LITERATURE CITED

- Dirr, M.A.** 1983. Manual of Woody Landscape Plants, 3rd ed. Stipes Publishing, Champaign, Illinois.
- Poore, J.M.,** (ed). 1984. Plants That Merit Attention. Vol. 1 - Trees. Timber Press, Beaverton, Oregon.