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Ilex dimorphophylla \times cornuta 'Carolina Cone' is a hybrid made by Gene Eisenbeiss at the US National Arboretum in 1982. Though the sex was originally unknown, this specimen is now producing female flowers on old wood in mid-to-late season, and develops small red fruit with apparent help from a nearby male, *I. aquifolium* \times cornuta 'Sled Run'. Photo by Jim Resch.

ARE YOUR HOLLIES LOOKING FOR LOVE IN ALL THE WRONG PLACES?

Jim Resch

How good are you at matchmaking? Everyone loves to see lots of berries on their female hollies, and fruit production is always high on the list of criteria in selecting a new plant for the landscape. Too often, however, the choice of a male holly to ensure good pollination is based on anecdote, guesswork, and incomplete or misleading advice from plant catalogs and plant labels.

Nearly all hollies are dioecious, having male and female flowers on separate plants. While there are examples of self-fertile hollies, the fruit set on a female holly is invariably more abundant when a compatible male, or pollenizer, is planted nearby. A few holly species, notably *Ilex vomitoria*, *I. pedunculosa*, and perhaps *I. glabra*, appear to genuinely require a male of their own species to set fruit. But many others will settle for pollen from any related species which happens to be in bloom at the same time. Timing is everything, however, since most individual plants will flower for only about ten days to two weeks, and the practical window for pollination may be shorter due to adverse weather.

Phenology, the observational science of flowering dates, can help inform our selection of male holly pollenizers. Over the past two decades, I have collected first and last flowering dates on nearly two hundred plants in my holly collection, located in Bear, Delaware, in Zone 7a. The data show tremendous year-to-year variation depending on temperature and rainfall, and plants grown in containers or in full sun will generally come into bloom a few days ahead of those in partial shade. However, the sequence of blooming dates is remarkably reproducible from year to year, and these observations have helped us recommend male hollies that can provide optimum opportunity for good pollination to occur.

Depending on the species, hollies may flower on "old wood" (i.e., they will set buds on previous season's growth) or on "new wood" (the present season's growth). Here in the mid-Atlantic various old-wood bloomers typically begin flowering in early April, and do not finish blooming until mid-May. A gardener who has little space may choose to plant just one male that flowers on old wood, and the widely available 'Blue Prince' is often recommended for this purpose. 'Blue Prince' has the advantage of heavy, reliable flowering in the heart of the old-wood flowering season. Even so, 'Blue Prince' begins flowering a bit too late to provide optimum cover for some of our earliest hollies, and begins to tire

just as some of our later bloomers come into full flower. Our observations of flowering dates have led us to subdivide the holly blooming season into somewhat shorter periods, enabling us to recommend specific male cultivars for each.

Old Wood Flowering/Early Season

Our earliest-flowering hollies begin blooming in early April or even late March, sometimes putting their blooms and subsequent fruit production at risk due to late frosts and freezes. This group includes the Chinese holly (*I. cornuta*), Perny holly (*I. pernyi*), and many of their hybrids. 'Lydia Morris' and 'Dr. Kassab' are well-known female *I. cornuta* × *pernyi* hybrids. These, along with the *I. aquifolium* × *pernyi* hybrids like 'Meschick' Dragon LadyTM and 'San Jose' are often the first female hollies to flower in the early spring. Several of our Test Hollies, the *I. ciliospinosa* × *cornuta* hybrid 'B51517' (distributed in 2009), the *I. pernyi* cross 'HL 10-90' Christmas JewelTM (2012), and the complex hybrid 'Dapat' Miss PatriciaTM (2011) also seem to be quite early bloomers. Over the past twenty years, the most reliable male pollenizer for this earliest group has been *I. cornuta* × *pernyi* 'John T. Morris', a plant which

appears nearly white with flowers in early April and is highly attractive to pollinating insects. Other males which provide heavy, early season flowering are the *I.* × aquipernyi hybrids 'Aquipern' and 'Gable's Male', the *I. cornuta* males 'CH-121' and 'CH-122', and the *I. cornuta* × pernyi hybrid 'Brighter Shines'.

Old Wood Flowering/Midseason

These hollies flower come into bloom about a week later than the earliest varieties, and include most of the English hollies (*I. aquifolium*) as well as the Iranian holly (*I. spinigera*). Hybrids of *I. aquifolium* with *I. cornuta* (such as 'Nellie R. Stevens') also bloom at this time, as do hybrids with *I. perado* (termed *I.* × altaclerensis), and



Ilex opaca 'Rutzan' Red Beauty in flower. It blooms in midseason on old wood. Photo by Jim Resch.

hybrids with *I. rugosa* (termed *I. × meserveae*). The meserveae hybrids include the immensely popular first generation Blue Hollies ('Blue Princess', 'Blue Maid', and 'Golden Girl'), together with their second generation backcrosses to *I. aquifolium* ('Blue Angel' and 'Hachfee' Castle SpireTM). 'Blue Prince' and the very similar 'Blue Stallion' are heavy flowering males which provide ideal pollination for this entire midseason group, but they are by no means the only choices available. Any male *I. aquifolium*, such as 'Little Bull' or its variegated sport 'Monvila' Gold CoastTM will bloom in this midseason period, as will the handsome *I. aquifolium × cornuta* 'Edward J. Stevens'. A newer male introduction, *I. aquifolium × cornuta* 'Sled Run', blooms heavily over an even more extended period. Gardeners looking for something unusual, or with limited space, might consider the male 'Heckenstar' Castle WallTM, with an upright, narrow habit reminiscent of a Hick's yew.

Old Wood Flowering/Late Season

The last of the hollies to flower on old wood includes treelike hybrids of I. latifolia with I. aquifolium, collectively known as I. \times koehneana. Popular females of this cross include 'Lassie', 'Hohman', 'Martha Berry', 'Agena', and 'San Jose' (not to be confused with the $I. \times aqui$ pernyi of the same name). All have large, glossy leaves with small marginal spines. Other hybrids involving I. latifolia have a similar appearance, including 'Venus'. We have had excellent results with the male I. × koehneana 'Loch Raven', which is a vigorous and prolific bloomer, though other good choices include I. × koehneana 'Chieftain', 'Jade', and 'Ajax', or the related I. latifolia hybrid 'Adonis'. Another class of late-season bloomers has recently been released by Wavecrest Nursery, based on the breeding efforts of the late Robert Tomayer of Fennville, Michigan. Several of these putative hybrids (I. ciliospinosa \times I. \times meserveae 'Blue Prince'), including 'Blue Wave', 'Her Majesty', and the asyet unnamed 'A24', bloom in the late season at the same time as the much larger koehneana hollies. Wavecrest offers a particularly heavyblooming male, named 'Shimmering Lights', which seems to be good match for their late-flowering female cultivars.

New Wood Flowering/Early Season

Beginning in mid-May, the American holly, *I. opaca*, is among the first of the hollies to bloom on the current season's wood. It is rare to find any males of the old-wood group still in bloom by this time, and accordingly, it is important to have compatible male *I. opaca* in the landscape to ensure a heavy berry set on the females. A favorite male is 'Jersey Knight'

with its attractive, dark green foliage. Newer male introductions include 'Baltimore Buzz', 'Sir Landon', and 'Bear Station', but any male American holly planted within 100 ft (30.5 m) or so, including any indigenous males in the landscape, will provide adequate pollination. As an added bo-



I. opaca 'Bear Station' flowering in May. Photo by Jim Resch.

nus, I. opaca males will ensure the pollination Possumhaw the holly, I. decidua. Hybrids of *I. opaca* with *I. cassine*, designated $I. \times attenuata$, include the popular 'Foster's #2', 'Sunny Foster', and 'Longwood Gold' hollies. These hybrids come into bloom a few days later than I. opaca itself, but fortunately most I. opaca males provide adequate over-

lap. Gardeners desiring to plant an *attenuata*-type male may want to try 'North Wind', which has been a strong grower and heavy bloomer in our holly collection.

New Wood Flowering/Midseason

As the summer heat begins to build in around Memorial Day, the first of the winterberries begin blooming on the new growth of the current season. These are the so-called "Northern type" *I. verticillata* varieties, including 'Red Sprite', 'Cacapon', 'Shaver', 'Oosterwyck', 'Afterglow', 'Golden Verboom', and 'Maryland Beauty', and newer introductions with trademarked names such as 'Spriber' Berry NiceTM, 'Spravy' Berry HeavyTM, and 'FarrowBP' Berry PoppinsTM. One of our test hollies, *I. verticillata* 'Chickemmoo' (2009), which originated on Martha's Vineyard in Massachusetts, belongs in this early flowering group. Early flowering males need to be planted nearby to ensure adequate pollination of the Northern type winterberries, and the semi-dwarf 'Jim Dandy' is a good choice for this purpose. The newer introduction, *I. verticillata* 'Skipjack', appears to be another good early flowering male.

Winterberries of the "Southern type," including the very popular *I. verticillata* 'Winter Red' and 'Winter Gold', come into bloom a bit

later in the early summer, and may miss out on any significant overlap with the early flowering males. The same can be said of *I. verticillata* × *serrata* hybrids such as 'Sparkleberry', 'Autumn Glow', 'Harvest Red', and 'Scarlett O'Hara', and of the *I. serrata* species itself. Fortunately, several good males are available for these late-flowering winterberries – *I. verticillata* 'Southern Gentleman' and *I. verticillata* × *serrata* 'Apollo' are excellent choices. Fans of 'Scarlett O'Hara' have struggled to locate her long-lost holly mate 'Rhett Butler' but, alas, the former commercial sources of this male have gone with the proverbial wind. We hear of efforts to reintroduce 'Rhett Butler' to the trade, so perhaps tomorrow is indeed another day.

New Wood Flowering/Late Season

Japanese hollies (*I. crenata*) are often the last holly flowers in the landscape each season, but the blooming period on these plants can be quite variable due to inconsistent rainfall and heat in the early summer. The small black berries on female *I. crenata* aren't as showy as the fruits on other species, but growers who wish to encourage the best fruit crop will want to plant a male Japanese holly nearby. 'Black Beauty' is a cold-hardy, upright-growing male which never fails to flower heavily. Other handsome, reliable males include the upright 'Steeds', and the more rounded 'Hoogendorn'. Another Japanese holly species, *I. maximowicziana*, flowers even later into the summer, but may have some overlap with the last of the blooms from *crenata* males.

General considerations

Try keeping your own record of blooming dates. Depending on your climate, you may observe dates earlier or later than those cited in this article. You may wish to plant several different males of varying textures and bloom periods to complement the females in your collection, and to ensure as many opportunities for good pollination as possible. Many male hollies are very attractive specimens in their own right as well as being pollenizers. And if you run out of room, you might donate a male holly or two for your neighbor to grow just over the property line!

LEAF BUD CUTTINGS FOR PROPAGATION

Carmen Gianforte

 \mathbf{R} ead just about any text on holly propagation and you will find methods used such as seeds, cuttings, grafting, layering, and leaf bud cuttings. Today the accepted method seems to be cuttings. This is probably because this has been the most productive method. I have done a fair amount of holly propagation but had never tried leaf bud cuttings until this year. I chose to propagate $Ilex \times koehneana$ 'Martha Berry'.

The cuttings were take from the plant using a normal pair of clippers.

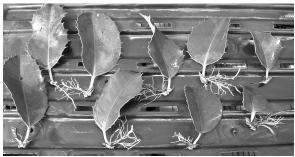
Each leaf bud was cut from the sprigs with a "Tina" pruning knife. I have found these knives to be of excellent quality and they even make a left-handed version for us "leftys." I cut only the leaf and the bud at the base of the leaf on most of the cuttings. For others I left a small section of the stem in place. As it turned out, the cuttings that retained a small portion of the stem formed a better root system than the ones which only included the bud at the base of the leaf.



Ilex × koehneana 'Martha Berry' leaf cutting with stem propagated by Carmen Gianforte. Photo by Carmen Gianforte.

The leaf bud cuttings were stuck into a 50/50 mixture of peat and perlite in 2" (5.1 cm) square peat pots and treated with Hormodin 3. The greenhouse temperature ranged from 70 to 95 °F (21.1 to 35 °C). The leaf bud cuttings were put in on June 23, 2013, and showed some root development after eight weeks. The propagating medium temperature stayed from 70 to 80 °F (21.1 to 26.7 °C) without the aid of bottom heat due to the time of the year. The automatic mist system was programmed to turn on at 8 a.m. and turn off at 8 p.m. The misting intervals were programmed to be on for 6 seconds and then off for 10 minutes. The photos show several cuttings pulled after 12 weeks when they were potted.

Carmen Gianforte is currently a Trustee of the HSA. He has been an HSA member since his father took him to a Holly Society meeting in 1954 and paid Carmen's dues. Carmen became a life member in 1983.



Ilex × *koehneana* 'Martha Berry' rooted leaf cuttings by Carmen Gianforte. Photo by Carmen Gianforte.

HOW TO GROW OUTSTANDING HOLLY

Harold L. Elmore

Editor's note: This article was contributed for publication by Fran Scheidt, a long time HSA member. Harold Elmore wrote it in 1991 and it is used with permission.

Site Selection

Hollies prefer full sun, but will prosper in half-day sunlight. They will survive with even less sun but are more open in their growth habit. Evergreen hollies prefer not to be exposed to strong winter winds so try to find a location that has some sort of natural or manmade windbreak. Since hollies can live for a century or longer, be sure to provide plenty of room for future growth.

Soil Preparation

As forest under-story plants, most hollies prefer a substantial amount of organic matter in the soil around their roots. If the selected site has soil that is a dark brown to black loam, your holly will thrive when planted directly in the topsoil from the hole. However, if the soil is a heavy clay, contains much rock or is almost pure sand, the soil will need to be amended by adding some type of organic matter such as peat moss, well composted sawdust or, perhaps best of all, with woods-dirt from a nearby forest. If required to specify a soil mix for holly that would work well anywhere, I would recommend blending equal amounts of peat moss, coarse sand, and clay. Hollies are not very particular about soil pH as long as it is not alkaline. A pH of 5.5 to 6.0 (moderately acid) is ideal. Although hollies have been known to survive in almost any type of soil, you will be royally rewarded for your extra efforts in soil preparation.

Hole Preparation

Dig a hole 2' (0.6 m) in diameter and 16" (41 cm) deep. This will look like the Grand Canyon when compared to the size of the holly, but remember, you won't have to do this again for another century! Make two piles, one of the topsoil, and the other of the subsoil. After the hole is completed, check to be sure drainage is adequate by filling the hole half full with water and stick a nail into the side at the water surface. After one hour refill to the original level. After the second hour, measure how far the water level has fallen. More than 1" (2.5 cm) per hour is fine. If less than this, allow the hole to stand overnight. If all standing water is not gone the next morning, drainage will need to be provided. Very few hollies can stand soggy soil conditions. (Exception: *Ilex verticillata*.) Begin refilling the hole by adding a small amount of topsoil and a like amount of the organic matter as required, mixing well and repeating until all topsoil has been used. If the subsoil is very poor it should be discarded and replaced with additional topsoil or mix. Once the hole is completely filled, soak it well to allow the soil to settle, preferably overnight.

Plant Preparation

Container plants can develop circling roots that ultimately choke off growth. To prevent this from happening, carefully remove the holly from its container and examine the root system. If any roots are observed circling the root ball, these should be pulled gently outward. Little or no pruning of the plant will be needed the first year. The more robust hollies will have been pruned at the nursery. This encourages many secondary buds to break and results in a busier, more compact plant.

Planting

The actual planting is easy. Simply scoop out a small hole in the center of the prepared site, place the holly in this hole and backfill with the material removed. The holly should be held upright and at a level so the top of the root ball will be at ground level. Gently firm the soil around the holly; then water to settle. Do not put any fertilizer in the planting hole.

Watering

This is the most crucial element in the survival of your new holly. As a container plant, it has been irrigated regularly, often several times a week during hot weather. Until its roots reach out and tap the ground water resources of its new home, you must provide the necessary water. During its first year this requires the addition of 1" (2.5 cm) of water (a good soaking) every week during which there is less than this much rainfall. During the second year, this supplemental watering is needed

only when there is no rainfall for two weeks. Thereafter, your holly will be able to take care of itself, except during severe droughts.

Mulching

Holly roots are rather shallow and appreciate the protection of a mulch which keeps the roots cool and moist during the heat of summer, and reduces the frost penetration during severe winter weather. Leaf litter, bark chips and many other organic materials make excellent mulches. Start by covering the entire planting hole; later, extend the line of mulch out to just beyond the dripline of the branches of the plant, as your holly grows. Leave an unmulched ring directly around the trunk to discourage rodents from setting up housekeeping under the mulch and using the bark of your holly for midwinter fare.

Fertilizing

Despite the fact that many homeowners never feed their hollies, these plants would like to be heavily fed and respond splendidly to regular fertilization. Perhaps the most important feeding is that given in late winter or early spring. Here in Knoxville, on the northern edge of Zone 7, I recommend all hollies be fed on March 1 at 2:00 PM. Such precision may not be absolutely essential, but somehow it emphasizes the necessity and urgency of this feeding, which results in a burst of vigorous growth, darker green leaves, more profuse blooms, and increased size and number of berries. Hollies can and will utilize almost any type of commercial fertilizer, although those with a 3-1-2 ratio provide the preferred N-P-K balance (for instance, something like 12-4-8). For such a formulation, use one pound for each inch of trunk diameter up to three inches (triple this ration above three inches). Thus, if your holly has a ½" (1.3 cm) trunk, use a half pound (0.23 kg) or about one cup (0.24 L). Simply scatter the fertilizer over the mulched area. Such feeding should begin the spring after the original planting. If you prefer natural or organic fertilizers, just remember to compensate for the relatively low level of nitrogen in most of the these sources. Additional light feeding can be given during the spring and early summer, but feeding should be stopped by midsummer to allow new growth to harden before the onset of frost. After the first good freeze, an additional light feeding will keep the root system vigorous and growing all winter.

Babysitting

Vacation time is often fatal to newly planted hollies. The caring and meticulous holly lover does everything just right until someone mentions "vacation." They take the African violets over to Aunt Martha's for TLC,

and board the English bull at an expensive kennel, but never give a thought to asking a neighbor to water the new and very thirsty holly. Sad, very sad!

Harold Elmore was the owner of Holly Haven Hybrids, Knoxville, Tennessee, a small nursery specializing in unusual holly. A nationally recognized authority on the genus Ilex, he served as president of the Holly Society of America as well as of the University of Tennessee Arboretum Society. The holly collection at the UT Arboretum bears his name.



 $\mathit{Ilex}\ (aquifolium \times cornuta)\ 'Hefcup'\ Buttercup^{\mathsf{TM}}\ .$ Photo by Carmen Gianforte



Ilex opaca 'Elizabeth'. Photo by Rich Larson

HOLLY ARBORETA 2012 ANNUAL REPORTS

Holly Society Official Holly Arboreta and Experimental Test Centers are public or semipublic institutions that educate plant lovers in the use of holly in the landscape and comply with HSA guidelines. These institutions maintain properly labeled holly collections and accurate accession records that include valid name, source, date and size (or age) when received, location, and other relevant information. Official Arboreta and Test Centers must submit annual reports to the Society in order to stay active. These reports include pertinent weather data, additions or deletions to the collection, notes on holly performance, and general information on holly collections and projects involving them. Test Centers must also report the status of ongoing research involving holly. Following are the Official Holly Arboreta and Experimental Test Center reports for 2012. Inventory lists for some arboreta may be found on the HSA website, www.hollysocam.org.

ARBORETUM BOKRIJK

3600 Genk (Limburg) Belgium (Hardiness Zone 7b)

There is not very much to say about 2012. A lot of damage from the gale in August 2012 forced us to clean up a lot of our collection. As described in the report of 2011, 50% of our woodland garden containing pines (*Pinus sylvestris*) over 100 years old were blown down into the location of the largest part of our holly collection. Perhaps we have to renew some of these plantings or take cuttings or scions of other ones and start again with small plants.

We had another very cold spell at the end of February. It was the coldest period in some 60 years and this time we had no snow cover! We had no damage at all because we had already lost so many plants the previous winter.

The only new addition to our collection is an *Ilex verticillata* 'Kolmat' Magical TimesTM that we received from Arie Blom, the manager of the firm "Magical World of Flowers and Plants" (www.magicalworld.eu) that specializes in cut flowers and berries. The cultivar he sent us is an orange berried cultivar with long lasting berries. We sent him several cuttings of other yellow or orange fruited cultivars of I. *decidua* or *I. verticillata*. He has started a breeding program for still better selections.

In 2012 for the first time we had a lot of berries on our *I. purpurea*. Most hollies have interesting berries but the berries of this species are a disappointment. Now I doubt if it is the true species. Our plant has dark purple-red berries and in the literature it is mentioned that I. *purpurea* has beautiful red berries. We received the seeds from a woman we visited in China more than 20 years ago.

Jef Van Meulder, Curator, Plant Collections

ARBORETUM DES PRÉS DES CULANDS CONSERVATOIRE NATIONAL D'*ILEX*

La Nivelle, 45130 Meung Sur Loire, France (Hardiness Zone 8)

The beginning of winter, January and February, were very mild. The end of winter, March, was very cold, with temperatures of -10 to -14 °C (14 to 6.8 °F). The sap was rising, and some trees did not tolerate the cold. We lost *Ilex cassine*, *I.* × *meserveae*' Blue Angel', *I. cornuta*' Willow Leaf', *I. cornuta* 'Ina Wilson', *I. aquifolium* Argentea Marginata Pendula, as well as several shrubs: *Escallonia*, *Ceonothus*, *Nandina*, and shrub and climbing roses. We had a normal summer and a beautiful autumn, and a very humid October, November, and December. Fruiting in *Ilex* was very poor after the freezes of spring.

Ilex that were particularly interesting for their habit and fruiting were $I. \times koehneana$, and $I. (cornuta \times aquifolium)$ 'Nellie R. Stevens'. No particular maintenance treatment is given to our Ilex, which permits us to learn the resilience or hardiness of one species compared to another. We noticed mealy bug and leaf miners only on certain species, principally I. aquifolium.

On June 1, 2012, we celebrated the 25th anniversary of the arbore-tum. Stephane Marie, host of a French weekly television gardening program (channel 5), "Silence ça Pousse," presided over this special occasion. Along with the *Ilex* collection, the celebration included the *Clematis* collection from the Arnaud Nurseries and the rose vines which form an enclosure. The *Clematis*, *Astilbe*, roses and the *Hemerocallis*, to mention only a few of our principal collections, allow us to have continuous flowering from April to October. We also enjoy the colors of autumn later on with the *Acer* collection, all planted among the *Ilex*.

Pierre Paris, Conservateur

BERNHEIM ARBORETUM AND RESEARCH FOREST

Clermont, KY (USDA Hardiness Zone 6a)

Bernheim has experienced another great year of growing and connecting people with nature. We welcomed over 200,000 visitors and were active in many projects within the Arboretum, our forests, and well beyond our borders. Our plant collections continue to thrive as we acclimate to the ever-wavering weather patterns. Rainfall was average, with a dry period in the summer that contributed to some leaf drop in the *Aesculus* collection that was quickly restored by late summer rainfall. The weather headline for us and many others this year was the record heat we experienced. Temperature readings well over 100 °F (37.8 °C), for extended periods, is a rarity for our region. As these weather extremes continue to evolve and become predictable events it will be interesting to see which collections are able to acclimate to these changes. Our minimum and maximum temperatures continue to climb, pushing zone boundaries for Bernheim and many others.

The holly collection has fared well with the seasons and continues to be a great attraction for visitors and holly enthusiasts alike. Bernheim shared cuttings from our collection throughout the country, helping to expand our outreach and offer cultivars of historical value. Growth is evident throughout the collection and berries were plentiful on all specimens. We have discovered that the rabbits are particularly fond of the *Ilex* × *koehneana*, keeping the lower 18" (45.7 cm) of each plant carefully pruned off the ground. Once thought to be marginally hardy in zone 6, these hollies have thrived, avoiding leaf burn in winter and enduring extreme heat and drought. We would recommend this plant to any holly fanatic who is looking for *Ilex* with a good temperament and a great form. While most of our hollies performed spectacularly, several *I. opaca* were outstanding this year: 'Chief Paduke' (1979-0029-00) with a slim, graceful form and broad leaves was fully berried and beautiful; 'Elephant Berry' (1977-0035-06) lived up to its name with large, plump fruits; 'William Hawkins' (1989-0039-00) with its odd habit and harsh leaf spines made for a good conversation piece. Leaf miner was a bit of a problem early in the year for some accessions but was not above tolerable thresholds.

Bernheim has begun construction on our Edible Garden project which is a step in another of our future horticultural missions: teaching the principles of growing sustainably and responsibly while reducing the disconnect between people and their food. You can keep up with our pro-

gress in this new endeavor and all of Bernheim's gardens and projects by visiting our website, **www.bernheim.org.**

Eric Garris, Curator, Hubbuch Holly Collection

CALLAWAY GARDENS

Pine Mountain, GA (USDA Hardiness Zone 7b)

Rainfall for the year 2012 was about 10" (25.4 cm) below average. Temperatures were slightly above normal, bringing an early spring to Callaway Gardens.

In 2012 we removed several specimens of *Ilex curtessii* from our collection because they were in decline. In October we added *I. vomitoria* 'Scarlet's Peak' and additional *I. pedunculosa* to the Holly Trail.

We began a rejuvenation program on some of the older hollies. A severe pruning and thinning of the tree canopy has yielded good results. We are starting to see significant new growth on some of the older hollies. We had very limited success with the cuttings we took before hat racking the plants last year.

Kathy Crye, Horticulture Department

CHOLLIPO ARBORETUM

Republic of Korea (Zone 7-8)

In 2012 the maximum temperature was 37.5 °C (99.5 °F) on August 2 and the minimum temperature was -12 °C (10.4 °F) on January 9. The precipitation was 1.86 m (73") and the mean humidity was 68.4%. The mean direction of the wind was N: 355.8°, the mean velocity of the wind was 132.84 km/h (82.5 mph) on November 6. The weather was very dry in May and June. We only received 13.6 mm (0.54") rainfall on May 14 and in June less than 3 mm (0.12") each on three days and 114 mm (4.49") of rainfall on June 30.

Mr. Yon-Hwan Jo, former Minister of the Korea Forest Service, was appointed as the fifth Director of Chollipo Arboretum on January 1, 2012.

On April 8, the Tenth Memorial Anniversary date of the Arboretum founder Carl Ferris Miller, his cremated remains were buried under a *Magnolia grandiflora* 'Little Gem'. The Magnolia was planted near a carved bust of Miller that was created in 2011. At the same time a Memorial Hall (museum) that displays Mr. Miller's Korean life was opened in his former office building.

Besides these events there was tremendous damage to the trees at the Arboretum due to the direct hit by the typhoon "Bolaven" last August. However, our hollies were safe!

In 2012, the arboretum recorded the following new seeds and plants:

Ilex aquifolium (Regen UBG.)

- I. glabra (Rogow Arb./ Poland
- I. laevigata (Rogow Arb./ Poland
- I. monticola (Rogow Arb./ Poland
- I. opaca 'Bountiful' (Beal Bot./ U.S.A).
- I. mucronata (Montreal BG./ Canada)
- I. integra (Agronomi HB/ Portugal)

We relocated one holly: $Ilex \times wandoensis$ (F)

The following cuttings were taken for propagation:

- I. aquifolium 'Ferox Aurea'
- I. aquifolium 'Silver Variegata'
- I. aquifolium 'Muricata'
- I. aquifolium 'Pendula'
- I. aquifolium 'Fructu Aurantiaca'
- I. aquifolium 'Yellow Variegata'
- I. aquifolium 'Silver Milkboy'
- I. aquifolium 'Silver Queen'
- I. aquifolium 'Crispa Aurea-Picta'
- I. crenata 'Argenteo Maginata'
- I. latifolia 'Variegata'
- I. x altaclerensis 'Lawsoniana'
- I. x attenuata 'Sunny Foster'
- $I.~[(cornuta~'Burfordii') \times (cornuta~'Burfordii' \times latifolia)~'James~Swan']]~'Frantastic'$
 - I. × wandoensis

We have relocated hollies that had been planted too densely. At this time they are growing very well and looking good. We have taken cuttings of four hybrid and eleven different cultivars for propagation.

The following hollies died:

- *I. aquifolium* 'Ingramii'(m)
- I. coriacea
- I. aquifolium

The following hollies looked especially nice in 2012:

- I. cornuta
- I. cornuta 'Dwarf Burford'
- I. decidua
- I. decidua 'Red Cascade'
- I. x koehneana 'Chestnut Leaf'
- I. (cornuta x aquifolium) 'Nellie R. Stevens'
- I. x wandoensis 'Min Pyong-gal'(f)

Many hollies produced superb fruits last year. Of course, numerous birds have also enjoyed the fruits in the arboretum. Interestingly, they don't attack the fruits of *I. decidua* 'Red Cascade', which is in the main area among the *Ilex*.

Submitted by Seo min-jung

CLARK-LANDSBAUM DEMING PARK HOLLY ARBORETUM

Terre Haute, Indiana (USDA Hardiness Zone 5b)

After two years of summer drought, the weather of 2012 was even more severe at the arboretum. The winter was quite mild, and March was the warmest on record. By the middle of April the hollies were growing and in bloom; normally they bloom after May 15. On April 11 and 12 we experienced temperatures of 29 °F (-1.7 °C) and 30 °F (-1.1 °C). All new growth and flowers were destroyed. The summer was then hot and dry. In July there were 18 days with temperatures over 100 °F (37.8 °C), which was the second hottest July on record. We had the worst drought since 1936, and the area fell into the category Level 4, "Exceptional Drought," for most of the summer. For the first time in several years the overhead sprinkler system was used to water the holly. Since the system covers only a portion of the arboretum, volunteers used hoses to water the hollies not reached by the sprinkler system. This was done twice a week for more than two months. Due to the weather, there was little or no growth and no berry production this year. A number of the hollies show signs of chlorosis and appear stressed.

Hollies deleted this year were:

Ilex crenata 'Green Lustre', 'Sky Pencil', 'Robert Culpepper', 'Snowflake', and 'Rotundifolia'

I. hybrid 'Conin' Robin™ (2)

I. hybrid Blue Holly 'Blue Prince' ®, and 'Gretchen'

Four hollies were added: *I. crenata* 'Sky Pencil', *I.* hybrids 'Blue Prince', 'China Girl', and 'China Boy'.

I. crenata 'Sky Pencil', *I.* hybrids 'Blue Prince'®, 'China Girl'®, and 'China Boy'®.

To promote and expand the planting of holly, we have planted a number of hollies throughout the area. Each local Master Gardeners class is given a tour of the arboretum. Ivy Tech Community College students enrolled in a woody landscape plants class toured the arboretum and took cuttings to root in their greenhouse. An ornamental horticulture class from Danville Community College toured the arboretum.

We celebrated the 20th Anniversary of our arboretum on September 23, 2012. We conducted garden tours throughout the day and the mayor of Terre Haute declared a proclamation honoring the arboretum. Then the Great Rivers Chapter of the Holly Society held their annual meeting in Terre Haute to help us celebrate our anniversary.

Robert Artis, Friends of the Arboretum

THE DAWES ARBORETUM

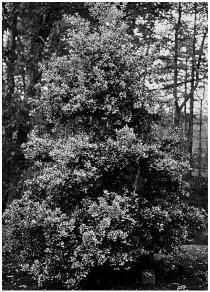
Newark, Ohio (USDA Hardiness Zone 5b)

The most telling element of any Midwestern garden report for the year 2012, whether it pertains to hollies or some other group of woody plants, would have to reflect the absolute severity of weather conditions prevailing over most of the growing season. The number of unique plants accessioned, propagated, planted or exchanged is unfortunately rather insignificant in my mind as I, along with the hollies I cultivate, had to endure a magnitude of heat and drought that I had never before experienced.

It began on the eve of 2012 as the average January temperature in 2012 for central Ohio was an astonishing 40.8 °F (4.9 °C). The lowest recorded January, on January 15, was 5.2 °F (-14.9 °C) and then on January 31, readings soared to 60.5 °F (15.8 °C).

Temperature readings from March 13 to March 31 were even more remarkable and discouraging with the highest recorded temperature on

March 21 of 84.4 °F (29.1 °C) and the average high temperature of 67.1 °F (19.5 °C). After this unusually warm period I observed the April defoliation of second-and-third-year-old leaves on a number of American hollies (*Ilex opaca*), thereby reducing the photosynthetic potential of many trees to the first year bud growth. Reflecting back, we were fortunate indeed that this species survived and generally performed adequately despite this potentially devastating event. Still, the noticeable dearth of good fruit production on our American hollies can most likely be traced back to this March anomaly.



Ilex opaca 'Brilliance' Photo by Rich Larson, The Dawes Arboretum

The summer of 2012 kicked our butts as it proved to be the third driest and the second warmest since the advent of modern record keeping. We recorded 42 days in excess of 90 °F (32.2 °C) and an average maximum temperature of 91.1 °F (32.8 °C), and 87 °F (30.6 °C) for July and August respectively. Significant precipitation deficits were also recorded for July, August and November. The holly collection was perhaps the only area in the Arboretum to escape widespread injury and death.

If we had we held an HSA annual meeting in 2012, members would have been generally dissatisfied with the aesthetic quality of our evergreen hollies. Bountiful American holly is a cryptic example. Last year I reported phenomenal fruiting on this cultivar, but this year I observed

nary a branch with fruit. One notable exception to the relative sterility of the collection in 2012 has been Satyr Hill American holly, which outperformed all other selections, bearing copious fruit clusters still visible as late as February 23, 2013. In consolation, however, our deciduous hollies bore above average fruit production during the winter of 2012–13. Colder temperatures in the first part of winter have kept fruits firm and retarded the mass harvesting by birds that normally commences by early January. Good fruit color and persistence was thus observed during the latter half of February 2013 on several common winterberry (*I. verticillata*) cultivars including 'Afterglow', 'Firestorm', 'Oosterwijk', 'Spriber' (Berry Nice™), and 'Winter Red'.

This past year I spent considerable time and effort attempting to rejuvenate our inkberries (*I. glabra*). It is generally accepted that this species does not age well and is recalcitrant to suckering with the tendency to form a top-heavy, vase-shaped shrub, often harboring a great deal of dead wood. Thus, cycling out old plants in favor of new propagules is customary as the species is exceedingly easy to asexually propagate. Fortunately, the diverse nature of plants always works against our oversimplification of matters and such is the case with one inkberry accession I observed this year. In November 1994 we received seed of this species from Reeseville Ridge Nursery, Reeseville, Wisconsin, collected from wild populations in Ocean Beach, New Jersey. Plants in our collection are now nearly 20-years-old and have continued to defy the norm by staying relatively compact, densely branched and suckering profusely.

The characterization of our American holly also bespeaks of this oversimplification. Many seem to consider this species a mere pejorative version of English holly (*I. aquifolium*) and thus focus too literally on the term "opaque." But this fails to take into account the many fine, dark foliaged selections that retain excellent winter color and, of course, are useful in colder climates where its European counterpart will ultimately fail. In this vein, one should list as noteworthy the American holly cultivars, 'Brilliance', 'Dan Fenton', 'Jersey Princess', 'Judy Evans', 'Mamie Eisenhower' and 'Richards'.

I say, kudos to plant diversity and man's application of this phenomenon.

In summary, 5 plants were removed from the collection in 2012, 2 of which, *I. ciliospinosa* (no established common name), and large gallberry (*I. coriacea*), are marginally hardy to central Ohio. Two deciduous cultivars, 'Byers Golden' possumhaw (*I. decidua* 'Byers Golden') and

Red Sprite common winterberry (*I. verticillata* 'Red Sprite') were removed because of weak growth or outright death as in the case of Vleck longstalk holly (*I. pedunculosa* 'Vleck'). 'Byers Golden' and 'Vleck' were both lost from the collection.

The fate of 'Byers Golden' possumhaw is worthy of further comment. The International Code of Botanical Nomenclature (ICBN) is the accepted authority that governs all registered cultivars including hollies. The ICBN states explicitly that cultivars should clearly display a distinguishing quality or phenotype unique to the species as well as the capacity for asexual reproduction and uniformity across successive generations. 'Byers Golden' is a great plant with fantastic fall fruits but is nearly impossible to propagate asexually and exceedingly difficult to cultivate. The Arboretum has had three successive failures with this cultivar even though, in each case, plants were vigorous and well sighted. This highlights the importance of establishing a plant's reproductive capability before registration. Otherwise, like 'Byers Golden', some selections may never prove to be more than a nice plant in someone's collection.

Thirteen different taxa were accessioned in 2012, many of which were re-propagations of existing American hollies exhibiting poor growth. A particularly exciting seed accession is Carolina holly (*I. ambigua*) collected and donated to The Dawes Arboretum by Alabama plantsman Mr. Wayne Webb from native populations in Wilcox Co., Alabama. According to personal observations by fellow holly enthusiast Ray Head, this population of Carolina holly produces the largest and most colorful fruits of any he has observed.

A total of 16 new hollies were planted in 2012 bringing the total number of distinct holly taxa on grounds to 393.

Richard A. Larson, Nursery Manager

EBERSOLE HOLLY COLLECTION

Sandhills Horticultural Gardens, Sandhills Community College Pinehurst, North Carolina (USDA Hardiness Zone 7B)

The year 2012 continued to provide us with many challenges for our Holly Collection. We continue to see decline in the older cultivars of our English Hollies and we are also struggling with the ever-increasing shade problem in our collection. When the majority of our hollies were planted in the early 1980s the longleaf pines in the garden were much smaller. Since then we have watched this dominant tree continue to grow much

larger and create a shade canopy over our holly collection. Many of our hollies continue to struggle with this problem.

The English holly collection remains the area with the most significant decline. We are watching the slow decline of most of the hollies in this collection. The cuttings that we had sent to Hefner's Nursery in Conover, North Carolina did not arrive in good condition so we did not receive many grafted English hollies back to us for replanting. We do plan one more attempt to save the ones that are still hanging on.

In our Japanese holly collection we continue to deal with the root rot problem that seems to be plaguing them here in the Sandhills of North Carolina. We have lost two more 'Stokes' hollies as well as a 'Tiny' cultivar. The one shining star in the Japanese Holly Collection is 'Snow Flake'. It seems to be performing well, even with the continued shading problem. Cultivars 'Convexa' and 'Heller' also seem unaffected by the root rot and shade situations.

Our American holly collection and our Chinese holly collections still seem to perform the best in our arboretum. The American hollies are affected the most by our excessive shade problem as they are not as dense as we would like for them to be. In situations where the shade is not an issue, they look much better. One particular cultivar, 'Fallow', is an excellent example of this and is by far one of the better performing hollies in this part of the gardens.

We spent a lot of time last year cutting back our deciduous hollies, hoping for some rejuvenation of these species, but they have been very slow to recover. We may have to apply more water this summer to encourage their re-growth. This past summer was probably the hottest summer on record in North Carolina. Recorded maximum temperature for the Holly Garden this past summer was 100 °F (38 °C), and that was in the shady canopy of the trees. We set records this year with temperatures of well over 104 °F (40 °C). We were again restricted in our irrigation practices so I do believe this may have affected their growth.

Some of the highlights of our garden include our planting of Ilex opaca 'Maryland Dwarf'. The mass of the three plants we have probably encompasses an area of over 400 sq ft (37.2 m²). It is definitely one of the most impressive plantings we have in the garden this year. It has never shown any sign of die-back or disease of any kind. The $\mathit{I.x.x}$ $\mathit{koehneana}$ hybrids also appear as stars in this garden. They are dark green and pyramidal in shape with absolutely no pruning. The $\mathit{I.rotunda}$ (Korean seedling) that was planted in 1982 is an absolutely beautiful tree. I am

not very familiar with this species, but I definitely think it is noteworthy and worth mentioning in my report.

I have listed the plants from the Holly of the Year program below and have indicated pros and cons.

- *I. opaca* 'Satyr Hill' This holly is in total shade now and struggles. It has become very thin and sparse.
- $I. \times koehneana$ 'Lassie' Even though this holly has become shaded out, it has managed to perform fairly well. It has lost several branches on the bottom of the tree but remains very thick on top where it is in more sun.
- I. × attenuata 'Sunny Foster' This holly continues to do very well for us here in the South. Our plants are in full shade so the brightness of the new foliage is not very evident. In another area of the garden where shade is not an issue, it is much brighter. Overall, it performs very well for us.
- I. 'Scepter' For some reason we have experienced a lot of die-back on this plant. The top quarter of the plant has been lost to dieback as have some lower branches. Other cultivars nearby seem to be fine and not affected by the dieback.
- I. (aquifolium \times cornuta) 'Nellie R. Stevens' It is hard to not sing the praises of this holly here! Even though many people think it is being overused, it is hard to beat this holly for its drought resistance and overall toughness.
- *I. pedunculosa* Considering the amount of shade this plant experiences it has done surprisingly well in our garden. It has held on to quite a few berries from last year and has maintained a nice dark green color.

Even though we are struggling with many plants in our collection here in the Horticultural Gardens of Sandhills Community College, we continue to work with what we have to try to improve the collection as well as save as many of the plants as we can. We still have some very beautiful specimens and invite all to visit when you are in the area.

Johanna Westmen

MISSOURI BOTANICAL GARDEN

St. Louis, Missouri (USDA Hardiness Zone 6b)

2012 was our warmest year on record. The year started with a very mild winter with little snow. Spring was early with warm temperatures and good moisture levels. This resulted in a very beautiful spring as everything bloomed together. This was followed by a very hot, dry

summer and a warm, dry fall. The end of June and early July gave us ten days in a row of over 100 °F (38 °C) and a total of nineteen days with temperatures over 100 °F (38 °C). We ended the year over 8" (20.3 cm) short on rainfall.

These weather conditions resulted in a very heavy fruit set on the hollies and most other trees and shrubs. This also resulted in sparse leaf growth. We are concerned about growth in 2013 because most plants produced so much fruit this year. The hollies were beautiful this fall with very heavy fruit set. In late summer many of our older hollies lost branches due to the drought. These branches suddenly turned black, lost their leaves, and died.

We lost two very old *Ilex opacas* this summer to root rot. One was taken down and the other was uprooted in a storm. Several other old *I. opaca* are hollow and declining.

Additions of *Ilex* to the Missouri Botanical Garden include *I. myrti-folia* 'Woodlander Weeping', *I. colchica*, *I. opaca* 'Villanova', *I. opaca* 'Dan Fenton', and *I. opaca* 'Lake City'.

Walter Behrendt, Senior Horticulturis

THE MORRIS ARBORETUM OF THE UNIVERSITY OF PENNSYLVANIA

Philadelphia, PA (USDA Hardiness Zone 6)

Two main weather events stand out for 2012: a very mild winter and another hot and dry summer. We had many days with highs from 50 to 60 °F (10 to 15.6 °C) or higher in January and February. Flowering times of spring trees and shrubs appeared to be about two weeks earlier than typical. In July we had many days with highs in the upper 90 °F (32.2 °C) range and only 1.5" (3.8 cm) of rain, officially almost 3" (7.6 cm) below normal. As always, I am impressed with the resilience of established hollies, which never seem to show any symptoms despite the extremes in weather.

As of 31 December 2012, we have 170 taxa of *Ilex* planted in our collection.

In 2012, we planted 13 plants of 7 taxa, three of which were new (*) to our collection (one plant unless noted):

Ilex × *altaclerensis* 'Captain Royal'*

I. × altaclerensis 'James G. Esson'

- I. 'Dapat' Miss Patricia™
- I. 'Doctor Kassab' × latifolia*
- I. glabra 'Peggy's Cove'* (3 plants)
- I. × koehneana 'Lassie'
- *I. serrata* (5 plants)

We lost 24 plants from our collection during 2012 (10 taxa, 6 taxa lost (**) from the collection; one plant each unless noted):

- *I.* × *aquipernyi* 'Meschick' Dragon Lady™ (6 plants)
- I. glabra 'Chamzin' Nordic™**
- I. glabra 'Shamrock' (6 plants)
- I. × koehneana 'San Jose'**
- I. leucoclada**
- *I. macropoda*** (5 plants)
- I. opaca 'Jersey Knight'
- I. opaca 'Mrs. Santa'**
- I. 'Raritan Chief'
- I. yunnanensis**

This year there seemed to be very poor fruiting on the *I. opaca* at the Morris Arboretum. I am not sure what accounts for this but it was consistent across all of our plants. Other plants that I have been impressed with are:

- I. 'Conive' FestiveTM 2007-250*A excellent fruit set and foliage quality.
- $I. \times koehneana$ 'Ajax' 2002-349*B excellent form and leaf quality; strong central leader.
- $I. \times koehneana$ 'Hohman' 2001-220*B excellent form and leaf quality.
- *I.* × *koehneana* 'Lassie' 2007-010*A denser branching structure than other cultivars on site.
- *I.* × *koehneana* 'Ruby' 2001-213*A planted in May 2010; well-established with good new growth and excellent foliage quality; no fruit at this time.
 - I. latifolia 96-002*A & B male; excellent form and leaf color
- *I.* 'Rutzan' Red Beauty[™] 2006-040*C dense shape and slow growth good for landscape use.
 - *I.* 'Edward J. Stevens' 96-007*A –excellent form and leaf quality.

We are in an ongoing process of rejuvenating our older specimens, particularly $I.\ opaca$ that were planted in the early 1950s. This process has been occurring for several years and we have started to be a more aggressive in our hatrack pruning, so that we can give definition to these

older plants. There are one or two older cultivars (e.g., *I. opaca* 'Mrs. Santa') that we removed but we made sure that we propagated and distributed this variety before removing the original plant.

We do not have *I. opaca* 'Satyr Hill', *I. × attenuata* 'Sunny Foster', *I. aquifolium* 'Lewis', *I.* 'Scepter', *I. (cornuta × aquifolium)* 'Nellie R. Stevens', or *I. aquifolium* 'Proud Mary'.

- *I. crenata* 'Sky Pencil': One plant that does not look good due to poor siting, although 'Sky Pencil' usually performs very well in our area.
- $I. \times koehneana$ 'Lassie': Two plants with very nice structure, dense lower branching and good fruit set.
- *I. verticillata* 'Maryland Beauty': Two plants with good shape and densely branched structure; excellent fruit set, though the fruit is eaten early by the birds.
- *I. verticillata* 'Red Sprite': Several mass plantings with good growth; fruits well, but stripped early in season by birds.

Tony Aiello and Elinor Goff

PLANTING FIELDS ARBORETUM STATE HISTORIC PARK Oyster Bay, NY (USDA Hardiness Zone 7a)

2012 was an interesting year. We had a mild winter with very little snowfall. Spring and summer brought average temperatures and above average rainfall. This provided our hollies with good growing conditions and above average fruit production. However, fall was not so kind. Hurricane Sandy provided us with 90 mph (145 km/hr) winds and flood conditions. We had approximately 300 trees down and many more with broken limbs. A Nor'easter hit right after Hurricane Sandy that brought down more trees and limbs. Some of our hollies were affected by the downed trees but most fared well. The fruit on the deciduous hollies did not last long due to the storm and birds.

According to our records, we did not lose any hollies in 2012 and we added the following:

Ilex cassine v. angustifolia 'Tryon Palace'

- I. decidua 'Red Cascade'
- I. integra 'Green Shadow'
- I. crenata 'Soft Touch' (3)
- I. × meserveae 'Honey Maid'
- I. verticillata 'Red Sprite' (2)

Our planting of I. × 'Mary Nell' as a privacy hedge has done very well after the storms and put on a lot of growth in 2012. Our I. pendunculosa responded very well to the iron injections in 2011 and grew nicely in 2012. I. crenata 'Sky Pencil' has always been a great plant in our land-scape with no problems. We have added many cultivars of I. verticillata within the past 10 years, including 'Red Sprite' and 'Maryland Beauty', and all have done very well. We added I. × 'HL 10-90' Christmas JewelTM (2012 Test holly) in 2005; however, it did not survive. We hope to add Christmas JewelTM again and I. aquifolium 'Proud Mary' in 2013/2014.

Kenneth Provenzano, Plant Curator

THE POLLY HILL ARBORETUM

West Tisbury, Martha's Vineyard, Massachusetts (USDA Hardiness Zone 7a)

As of March 2012 the living collection at the Polly Hill Arboretum includes 97 *Ilex* taxa represented by 186 individual plants. The observations and data on which this report is based were collected by Thomas E. Clark, Collections & Grounds Manager, and Nancy Weaver, Volunteer Coordinator and Plant Recorder.

The weather during 2012 can be characterized as having been generally warmer and drier than average. The lowest temperature recorded was 1 °F (-17.82 °C) on January 24, and the highest temperature recorded was 91 °F (32.8 °C) on July 22. Total precipitation was 3.67" (9.32cm) below the annual average. April and October were distinctly wetter than average, and March, May, July and December were distinctly drier. On August 28 Hurricane Irene passed well to the west of Polly Hill Arboretum as a significant tropical storm and brought strong winds with gusts to near 60 mph (96.6 km/hr) but very little rain. In fact, rainfall for the entire last week of August was less than ½ inch (1.3 cm), remarkable considering the heavy rain and extensive flooding related to Irene that occurred in other parts of the northeastern United States. Some wind damage was evident in the living collection but only minimal damage to any *Ilex* was observed. More damaging than the wind was the salt-laden mist swept across the island by the strong winds. Salt-burn was evident on a large number of plants including I. verticillata 'Winter Red' and 'Southern Gentleman' which were largely exposed to the brunt of the storm. Surprisingly, little or no salt-burn was observed on any evergreen hollies. Table 1 details the 2012 weather.

Table 1. Temperature and precipitation summaries for 2012¹

	Monthly	Monthly	Departure
Month	mean temperature	precipitation	from norm
January	38 °F (3.3 °C)	3.04" (77.22 mm)	-0.64" (-16.26 cm)
February	37 °F (2.8 °C)	2.14" (54.36 cm)	-1.08" (-27.43 cm)
March	45 °F (7.2 °C)	1.03" (26.16 cm)	-3.23" (-82.04 cm)
April	50 °F (10.0 °C)	1.62" (41.15 cm)	-2.40" (-60.96 cm)
May	60 °F (15.6 °C)	5.51" (139.95 cm)	1.90" (48.26 cm)
June	65 °F (18.3 °C)	1.59" (40.39 cm)	-1.84" (-46.74 cm)
July	73 °F (22.8 °C)	4.49" (114.05 cm)	1.61" (40.89 cm)
August	73 °F (22.8 °C)	2.41" (61.21 cm)	-1.31" (-33.27 cm)
Septembe	er 64 °F (17.8 °C)	3.43" (87.12 cm)	0.31" (7.87 cm)
October	58 °F (14.4 °C)	3.63" (92.2 cm)	0.25" (6.35 cm)
Novembe	er 42 °F (5.6 °C)	2.79" (70.87 cm)	-1.56" (-39.62 cm)
Decembe	r 39 °F (3.9 °C)	6.07" (154.18 cm)	1.73" (43.94 cm)
2012 Tota	ıl	37.75" (958.85mm)	-6.26" (-159 mm)

¹Weather data was recorded in Edgartown, Massachusetts

No new *Ilex* taxa were accessioned in 2012 but several were repropagated for maintenance of the collection. Eighteen hollies (15 taxa) were removed from the collection primarily due to overcrowding, and/or poor performance, but some represented surplus plants.

Ilex performed generally quite well in 2012. Many clones of Ilex opaca performed exceptionally well and more than a few are among the mostly highly rated hollies for 2012. Ilex opaca cultivars of note for excellent performance and heavy fruit set include 'Barnard Luce'* 'Canary', 'Chief Paduke', 'Jersey Princess', 'Martha's Vineyard'*, 'Miss Helen', 'St. Mary', 'Villanova'* and f. xanthocarpa. Damage to American hollies caused by holly berry midge (Asphondylia ilicicola) continues to be a sporadic problem, though damage was very limited this year. Ilex × altaclerensis 'Camelliifolia' proved again to be a wonderful plant for its large, showy fruit and its lustrous, dark green, entire to nearly entire leaves on a distinctly upright plant. Ilex 'Pernella'* and I. aquifolium 'Evangeline' also performed exceptionally well in 2012. For deciduous hollies, I. decidua and several cultivars including 'Council Fire', 'Pocahontas', 'Sundance' and 'Warren's Red' had moderately abundant fruit. (* indicates Polly Hill selections)

There are currently no official holly related research projects underway at Polly Hill Arboretum.

2012 HSA Holly of the Year – *Ilex aquifolium* 'Proud Mary': This clone is not currently being grown at PHA

Thomas E. Clark, Collections & Grounds Manager

RUTGERS GARDENS

New Brunswick, NJ (USDA Hardiness Zone 6b)

2012 began with mild weather, with lower than average precipitation. January 16 and 17 both marked our yearly minimum temperature, falling to 10 °F (-12.2 °C). March tied 1945 as the warmest March on record, with 8 days above 70 °F (21.1 °C), and ended the warmest 12 month period on record for New Jersey-and one of the lowestranking snow seasons on record. April days reached over 80 °F (26.7 °C) (It was 91 °F [32.8 °C] on April 17!), but ended with several days below freezing, falling to a low of 30 °F (-1.1 °C) on April 28. May was the end of our streak of 16 consecutive months of above-average temperatures in New Jersey, and the first month of the year with near-average precipitation. Spring 2012 (March—May) was the warmest on record for the state. The end of June saw five days exceeding 90 °F (32.2 °C). Record highs of 99 °F (37.2 °C) on June 8 and 101 °F (38.3 °C) on June 19 (also our 2012 maximum temperature) punctuated a very dry month of July. Average precipitation in August diminished again to a dry September. October was warmer than usual, but brought our first below-freezing nights on October 13 and 14. It is not surprising that October was wetter than average with the arrival of Hurricane Sandy, which brought nearly 2" (5.1 cm) of precipitation between the 29th and 30th. November was drier than normal, with half of our 1.68" (4.3 cm) of precipitation delivered by a nor'easter on November 8. December averaged about 10 °F (5.6 °C) above normal, with above-average precipitation – more than 5" (12.7 cm).

Our hollies did not fruit heavily in 2012, in part because the unseasonably warm March and freezing late April days affected flower production and in part due to alternate-year bearing. Berries on the Winterberry hollies (*Ilex verticillata*) were particularly decimated by the hurricane in late October. The deciduous *I. decidua* 'Simpson', however, boasted quite a display of fruit. The hollies in the southwest part of the garden, behind the Holly House, continue to decline due to damage caused to the tile drains when water mains were installed several years ago. A number of our hollies appeared a bit thinner, and we will be fertilizing this year to help revitalize them. A few of our larger, overgrown hollies seem to be responding well to "hat racking" treatments administered two and three years ago for rejuvenation.

Our holly collection began as an evaluation of varieties in the 1950s and became the foundation of Dr. Elwin Orton's American Holly (*I. opaca*) breeding program. The original planting, together with some of Dr. Orton's recent selections, including 'Dan Fenton', 'Jersey Princess', 'Jersey Delight', and 'Jersey Knight', make up one of the largest American Holly collections in the United States. In addition, our collection includes a wide range of other *Ilex* species and hybrids, including noteworthy specimens of *I. opaca* (such as 'Gaylean Gold' and 'Boyce Thompson'), *I. perado* (Madeira Holly), *I.* × *altaclerensis* 'James G. Esson', and other interesting hybrids. Also represented are numerous English Hollies (*I. aquifolium*), Chinese Hollies (*I. chinensis* and *I. cornuta*), Japanese Hollies (*I. crenata*), Inkberry Hollies (*I. glabra*), and well over 50 deciduous hollies (including *I. decidua*, *I. montana*, *I. serrata*, *I. verticillata*, and others).

Clayton Leadbetter, Ornamental Breeding Coordinator

UNIVERSITY OF TENNESSEE ARBORETUM

Oak Ridge, TN (USDA Hardiness Zone 7a-6b)

The Holly Task Force had a full schedule of events over the past year with three successful work days during the summer, fall and spring. In April the task force fertilized, weeded, and mulched the collection assisted by 13 University of Tennessee Arboretum Society (UTAS) volunteers and Arboretum staff. Twenty-one new posts and signage were installed and significant headway was made pruning the overgrown *Ilex* crenata collection. There is ongoing concern for the collection during the summers which prompted Holly Task Force volunteers to continue focus on deep watering of the collection during the July workday. UTAS volunteers and Arboretum staff also completed several other tasks including selective pruning and general cleanup of the collection. On a beautiful November morning volunteers, lead by Holly Society members Dr. Will Witte and Fran Scheidt, fertilized the younger plants, mulched, and pruned. Holly Society members Carmen and Josie Gianforte took cuttings for propagation at their greenhouse. The collection was inspected and they documented plant conditions, dead plants, and tasks needing completion. Additional deer fencing is needed, and hollies #13, 'Snowflake', and #19b 'Soft Touch", both I. crenata, did not survive the summer. Also not surviving were #22, I. colchica, and

#88, I. aquifolium \times (aquifolium \times rugosa) 'Jean Bissonnette'. A replacement is being sought by the Holly Task Force.

The Holly Task Force has identified the following goals for 2013:

- Add additional deer fencing around specific plants.
- Water the *I. crenata* 'Schillings' planting around the patio entry garden throughout the summer.
 - Reprint the Elmore Holly Collection brochure.
 - Add the Elmore Holly Collection to the Arboretum trail map.
- Review the long-standing plan for a trail extension through the American Holly Collection from the existing Heath Cove Trail to the main access road with natural mulch and log materials.
- Dr. Witte, Fran Scheidt, and Kevin Hoyt will complete an onsite re-inspection and inventory of the collection focusing on plant vigor, signage, labeling, spacing requirements, removing dead plants, and more.
- Secure funding from the UT Arboretum Society for adding new plants to the collection.
 - Seek potential plant donations from area nurseries.

The UT Arboretum Society and the UT Forest Resources AgResearch and Education have placed an emphasis on outreach and membership development for 2013.

For more information on our programs and collections please visit the Arboretum webpage, http://forestry.tennessee.edu/arbpage.htm.

Kevin P. Hoyt, Director

Dennis Superczynski, UT Holly Task Force Chair

U.S. NATIONAL ARBORETUM

Washington, DC (USDA Hardiness Zone 7b)

The months of January and February in 2012 were warmer than normal, although we did have several nights in the teens during early January. Our average low for January was 36 °F (2.2 °C) and for February it was 32 °F (0 °C). There was one snowfall event which produced less than 1" (2.5 cm) of snow in January. March was an incredibly warm month with temperatures in the upper 70s to upper 80s °F (~ 26 to 31 °C) from March 14 to March 24. These above average temperatures caused the early blooming hollies to drop their flowers before allowing them to set fruit. We did have normal rainfall, but it all occurred during two days at the beginning of the month. The rest of the spring continued with

above average temperatures and below average rainfall. By the last two weeks of May, we had temperatures in the mid to upper 80s and low 90s $^{\circ}$ F (\sim 31 to 34 $^{\circ}$ C). This trend continued throughout the summer.

During the late evening of June 30, a *Derecho** came through the mid-Atlantic region causing major damage due to the high winds as well as power outages. We lost several large trees on the grounds of the arboretum, but there was minimal damage to the *Ilex* collection. During July, we had five days with temperatures over 100 °F (37.8 °C).

The only hurricane to affect our region was Hurricane Sandy which produced 6" (14.2 cm) of rain. We had minimal damage as compared to the states in the Northeast. The rest of the year had fairly normal temperatures, but rainfall was still less than normal.

There were very few additions to the *Ilex* collection. We added *I. rotunda*, *I. pedunculosa*, and *I.* Winter BountyTM.

Hollies that performed well this year were: I. 'Conot' PatriotTM, I. purpurea, I. verticillata 'Winter Red', I. × meserveae 'Honey Maid', I. 'Scepter', I. 'Centennial Girl', and the I. × koehneana cultivars.

We removed many of our *I. aquifolium* cultivars that had been suffering over the past few years due to our hot and dry summers. Several cultivars were left and we will evaluate them this year for propagation and removal if needed. In addition, we focused on the propagation of our wild-collected accessions as well as our introductions that we only represented by one plant.

As far as the HSA Holly of the Year plants, *I. opaca* 'Satyr Hill', *I. crenata* 'Sky Pencil', *I. × attenuata* 'Sunny Foster', *I.* 'Scepter', *I. verticillata* 'Red Sprite', and *I. (cornuta × aquifolium)* 'Nellie R. Stevens' are all doing well. We currently don't have any holdings of *I. × koehneana* 'Lassie', *I. aquifolium* 'Lewis', *I. verticillata* 'Maryland Beauty' and *I. aquifolium* 'Proud Mary'.

Carole Bordelon, Supervisory Horticulturist

- * A widespread, long-lived straight-line, windstorm that is associated with a fast-moving band of severe thunderstorms.
- ** A complete US National Arboretum *Ilex* inventory is on our website, www.hollysocam.org.

WASHINGTON PARK ARBORETUM UNIVERSITY OF WASHINGTON BOTANIC GARDENS

Seattle, Washington (USDA Hardiness Zone 8a)

Rainfall for 2012 was slightly higher than normal, but well within normal ranges. Temperatures were also fairly average for the Seattle's climate. There was a cold period in January, with low temperatures about 25 °F (-4 °C). There was one snow event in January but no significant breakage or freeze damage to the *Ilex* collection occurred. We experienced a long wet spring and then entered into a very dry summer.

The most significant collection development and implementation in the *Ilex* collection was the addition of another berm in the American clade section. We brought in 120 yd³ (91.7 m³) of soil and shaped it into a raised berm. Eight new American clade specimens, *I. opaca* cvs and *I. rubra* (see 2012 additions list below) have been added from our container nursery inventory, with more to come in 2013.

Progress addressing our drainage and hydrology issues in the Eurasian clade area was achieved in 2012. Three graduate students in our School of Environmental and Forest Sciences completed a thorough study and report, "Washington Park Arboretum Saturated Soil Study, Fall of 2011." We now know the primary source is ground water seep and not surface runoff. We are also clients for a UW-Restoration Ecology Network class, which began its program in the fall of 2012. A student design/build team is enhancing the *Ilex* watershed in this Eurasian clade area. They have designed a sustainable weir pool system and planting plan using Pacific Northwest native riparian species in the wettest lower section, as well as around the upper swale. We look forward to implementation of their design this coming spring quarter.

During this watershed work we also removed several poplar trees and invasive plants in the adjacent undeveloped uphill greenbelt area. This has improved site aesthetics and has opened up areas for the development of future collections.

The *Ilex* collection continues to be a major site for volunteer groups and organizations that primarily assist the horticulture staff in controlling weeds and mulching the *Ilex* berms. In 2012 for Earth Day and the United Way Day of Caring, our two largest volunteer events during the year, we partnered with the Student Conservation Association, Century Link Pioneers, and Microsoft employees. Over 200 hours of volunteer labor were tallied in the *Ilex* collection in 2012.

Lastly, CenturyLink Pioneers funded the installation of five interpretive signs. One overview sign explains what a "clade" is and there is now one sign in each of the four clades. [Clade: a group of biological taxa (as species) that includes all descendants of one common ancestor.]

David Zuckerman, Manager of Horticulture / Plant Records Ryan Garrison, Horticulturist, *Ilex*

2012 Taxon Added*	
I. aquifolium 'Crispa Aurea	I. fargesii spp fargesii–2
Picta'	I. fargesii spp melanotricha
I. aquifolium 'Ferox Argentea'	I. integra
I. aquifolium 'Golden Queen'	I. macropoda–3
I. aquifolium 'Myrtifolia Aurea	I. opaca 'Canary'
Maculata'–2	I. opaca 'Farage'-2
I. aquifolium 'Recurva'	I. opaca 'Osa'–2
I. Bioritsensis	I. perado spp. perado-3
I. canariensis–3	I. pernyi
I. ciliospinosa–3	I. 'Rock garden'
I. colchica–3	I. rubra–3
I. crenata	I. suaveolens
I. crenata f. watanabeana I. crenata v. Paludosa–2	*Quantity is 1 unless otherwise noted

2012 Taxon deaccessions in nursery, all grounds, and gardens*			
I. ciliospinosa–2	I. opaca 'Trisco'		
I. colchica	I. spinigera		
I. integra–2	$I. \times '$ September Gem'		
I. macropoda	*Quantity is 1 unless otherwise		
I. opaca 'Canary'	noted		

TEST HOLLIES FOR 2013: WITH SPINES AND WITHOUT Jim Resch

The Test Holly Program, initiated in 1986, gets new cultivars into the hands of Holly Society members who provide feedback on the plants' performance in a variety of climates and growing conditions. While the overall sample size for the Test Holly program is much too small to be considered scientifically or statistically sound, we continue to gather useful anecdotal data on these new holly cultivars in a variety of "real world" gardening locations and climates. Two plants of very different appearance are planned for distribution at this year's Annual Meeting.

Ilex 'Cherry Bomb'

This aptly named holly hybrid boasts numerous large red fruit and deep green, nearly spineless leaves. 'Cherry Bomb' is a hybrid of *Ilex* (aquifolium × cornuta) 'Nellie R. Stevens' and I. integra made before 1960 by William F. Kosar at the U.S. National Arboretum in Washington, D.C. Designated NA 28255, it was never formally named or released. When the National Arboretum deaccessioned much of the *Ilex* collection following Gene Eisenbeiss' death in 1997, the original plant was destroyed, but fortunately a few arboreta had already obtained cuttings and were growing this cultivar. At the J. C. Raulston Arboretum in North Carolina, 'Cherry Bomb' is said to be slow-growing, 3' to 4' (0.91 to 1.2 m) tall and wide, but the plant can ultimately reach 12' by 12' (3.7 by 3.7 m). Tony Avent of Plant Delights Nursery has called it, "One of the finest evergreen hollies on the market today." Dr. David Creech at Steven F. Austin University in Texas named the plant, and it has become somewhat popular in that state. We will be especially interested to see how 'Cherry Bomb' fares in more northern settings.

Ilex 'Dragon Claws'

This is a female seedling of I. ($aquifolium \times pernyi$) 'Meschick' Dragon LadyTM, with the male parent almost certainly being I. ($cornuta \times pernyi$) 'John T. Morris'. 'Dragon Claws' has an upright growth habit like Dragon LadyTM, but its leaves display even sharper, and more strongly recurved apical spines, suggestive of some I. cornuta character. In addition, the leaves and fruit of 'Dragon Claws' are somewhat larger than those of Dragon LadyTM. The original 'Dragon Claws' germinated in 2006 in my Bear, Delaware garden, and it is already over 6' (1.83 m) tall and just 2' (0.61 m) wide. Experience with this cultivar is still quite limited, so we will be looking to other growers for advice before registering this plant.

INTERNATIONAL ILEX CULTIVAR REGISTRATIONS Michael R. Pontti

1-13 *Ilex verticillata* 'Firestorm' Registered: January 15, 2013 Richard A. Larson for The Dawes Arboretum 7770 Jacksontown Road, SE Newark, Ohio 43056 Female

This selection was one of three specimens received from Eastern Plant Specialties of Georgetown, Maine in 1993, 20 years ago. Ongoing evaluation at Dawes is still underway and in November/December 2011 it was last observed and evaluated. The specimen exhibited excellent plant density, larger drupes than the species, abundant clusters of fruit, a semi-dwarf habit of less than 2 m (6 ½ ft) tall, and variable spreading.

This deciduous shrub exhibits a rounded plant shape, 2 by 2 m (6 ½ by 6 ½ ft), with an upright branching habit. Leaf length is 4 to 6 cm (1 $^{9}/_{16}$ to 2 $^{3}/_{16}$ in) with a width of 2 to 3 cm ($^{13}/_{16}$ to 1 $^{3}/_{16}$ in). Petiole length is 1 to 1.5 cm ($^{3}/_{16}$ to $^{9}/_{16}$ in), with an average yearly growth of 14 to 24 mm ($^{9}/_{16}$ to $^{13}/_{16}$ in). The leaf shape is oval with an acuminate leaf apex and an acute-entire base. The leaf margin (side view) is serrulate to crenulate while in top view is crenulate, wavy. Fruits are oval to 1 cm ($^{3}/_{16}$ in), orange red, Red Group, 42A-44A, on the Royal Horticulture Colour Chart, 1995.

Selection was based on attractive light gray stems, contrasting well with red to orange fruit, and a plant that suckers and regenerates freely, maintaining excellent branch density over the plant's life.

Voucher specimens are on deposit in the herbarium of the U.S. National Arboretum (NA), Washington, D.C. 20002.

'Firestorm' is featured on the cover of this volume of the Journal. – Editor

NEW HSA MEMBERS

We welcome the following new Society members:

Mr. Scott Beuerlein, Cincinnati, OH 45244 Michael R. Lehmann, Siler City, NC 27344

PROPOSED SLATE OF OFFICERS AND TRUSTEES

This is the proposed slate of officers and trustees that will be voted on at the Annual Meeting. It represents a large geographic area and has members with a great deal of experience with the HSA and knowledge of holly. Former HSA President Mr. James Ray Head has chaired the Nominating Committee.

Officers:

President: John Swintowsky

Executive Vice-president: April Sanborn Administrative Vice-president: Paul Lightfoot

Trustees:

Jane Christy
Jim Resch
Richard Larson
Chuck Wiley (fills Paul Lightfoot's remaining term)

IN MEMORIAM

Emily Jernigan

We remember with fondness and extend our sympathies to the families of the following people. Hollies, and membership in the Holly Society of America, were important in their lives. More extensive remembrances can found on our website, www.hollysocam.org.

Dr. William L. (Bill) Ackerman

Dr. Bill Ackerman died July 6, 2013, at the age of 89. He was a member of the Holly Society. According to Jim Resch, Bill was best known for his work in hybridizing about 50 different cold-hardy camellias, but he also produced some amazing holly hybrids, including 'B51517', one of our Test Hollies for 2009.

Sybil C. Przypek

Sybil C. Przypek of Yorktown, Virginia, a founding member of the Colonial Virginia Chapter of American Holly Society, died on July 25, 2013, at age 76. She was a past Chapter president and wrote many articles for their newsletter. She was also a charter member of the Hampton Roads Horticultural Society, the Azalea Society of America, and a member and former President and Vice President of the MAC Chapter of the American Rhododendron Society.

Catherine Foote (Kit) Richardson

Kit Richardson, a life member of the Holly Society, died in Maryland on August 14, 2013, at age 94. She was a very active member of the HSA for many years and served as Society secretary from 1981 to 1991. At her home in Ruxton, Maryland, she had a collection of about 150 holly cultivars, one of the largest in the state. She is remembered with great fondness by many HSA members, including Charles Anderson and Bill Cannon. Her husband, Edward H. Richardson, Jr., died in 2010. He was also an enthusiastic member of the HSA. Her daughter Linda Parsons, of Wichita, Kansas, has also been very involved with the Holly Society and currently serves as its technical advisor. Previously, Linda was editor of the *Holly Journal*. Besides Linda, Kit is survived by her son, Edward H. Richardson III, another daughter, Nancy P. Richardson, and several grandchildren.



Ilex opaca 'Steward's Silver Crown'. This is one of the few variegated American hollies. Photo by Paul Lightfoot

ANNUAL MEETING 2013

The 2013 Annual Meeting will be held in New Harmony, Indiana, from November 6–10. We will stay at the New Harmony Inn, a relaxing resort destination located less than 30 minutes from Evansville, Indiana. The Inn's grounds are beautifully landscaped with gardens, waterfalls, and sculptures located throughout the winding paths.

The Society will explore the lower Ohio River Valley area that includes New Harmony, Evansville, and Vincennes, Indiana. We have an excellent lineup of tours and speakers, including an Early Arrivals Tour on Thursday to the Bee Tree Pottery, the Hartman Arboretum and Mesker Park Zoo and Botanic Garden. The Friday Annual Tour will be to the Azalea Path Arboretum, Wit's End Garden, and Simpson Nursery.

Our speakers include Dr. Winston Dunwell, professor of horticulture at the University of Kentucky; Scott Beuerlein, horticulturist at the Cincinnati Zoo and Botanical Garden; Michael Hayman, an arborist with the City of Seneca, Kentucky; and Keven Tungesvick, a restoration ecologist with Spense Restoration Nursery.

April Sanborn has worked with Great Rivers Chapter members Paul Bouseman, and Karen and Fred Vallowee to organize this meeting. See the Holly Letter or visit our website, www.hollysocam.org, for more information or to register. You may now register and pay online.



Ilex opaca 'Chief Paduke'. Photo by Rich Larson.

TREASURER'S REPORT, MARCH 31, 2013

Dennis Superczynski

Treasurer Dennis Superczynski distributed the Treasurer's report as of March 31, 2013. Net loss for the fiscal year totaled \$539, leaving an adjusted net worth balance of \$89,495 on March 31, 2013. Revenue for the year totaled \$34,179, offset with expenses of \$34,718 resulted in the loss. Highlights for the year include:

- Annual meeting and auction revenue of \$22,689 with expenses of \$12,293 resulted in a favorable net income of \$9,766, favorable to the budget by \$4,766.
- New and renewing membership \$4,195. This was \$1,195 favorable to budget and \$2,270 above last year.
- Interest income from Trust Fund investments totaled \$2,294 and negative appreciation on Trust Fund Assets totaled \$746. Deposits were made into the operating funds for interest earned on Treasury Notes in the Research Trust Fund for \$1,800. Deposits were also transferred from the Research Trust Fund in the amount of \$2,632 and the Wolf Memorial Fund in the amount of \$2,206. Ending trust fund assets were \$80,253 as of March 31, 2013, a decrease of \$5,090 from the beginning balance of \$85,343. It was necessary to transfer trust funds to overcome an operating deficit occurring in the early month of the fiscal year.
- Trust fund donations received during the year totaled \$1,015, as budgeted.
- Honorariums paid for the year were \$11,400, and expenses paid for the two Board meetings was \$4901, \$599 favorable to budget in total.
- Holly *Journals* Volume 30 (1) & (2) and a single expanded *Journal* 2009 Volume 27 (1) & (2) were published at a cost of \$3,615. This was \$1,185 favorable to budget.

The actual loss for the year was favorable to budget by \$9,351 primarily due to increased revenue from a successful annual meeting and plant auction, increased membership renewals, and lower printing expense for *Journals* and newsletters.

*Note: Beginning 2010, appreciation on trust funds is being reported. This reflects the market value of CD's and US Treasury Notes as of closing date March 31, 2013.

Respectfully submitted, Dennis Superczynski, Treasurer

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MEETING SPONSOR 2013

The Espoma Company Millville, New Jersey www.espoma.com

HSA ANNUAL MEETING SITES

66TH MEETING NEW HARMONY, INDIANA November 6–10, 2013

67TH MEETING RUTGERS UNIVERSITY NEW BRUNSWICK, NEW JERSEY October, 2014