

# 2011 Collection Trip

## New York and Pennsylvania



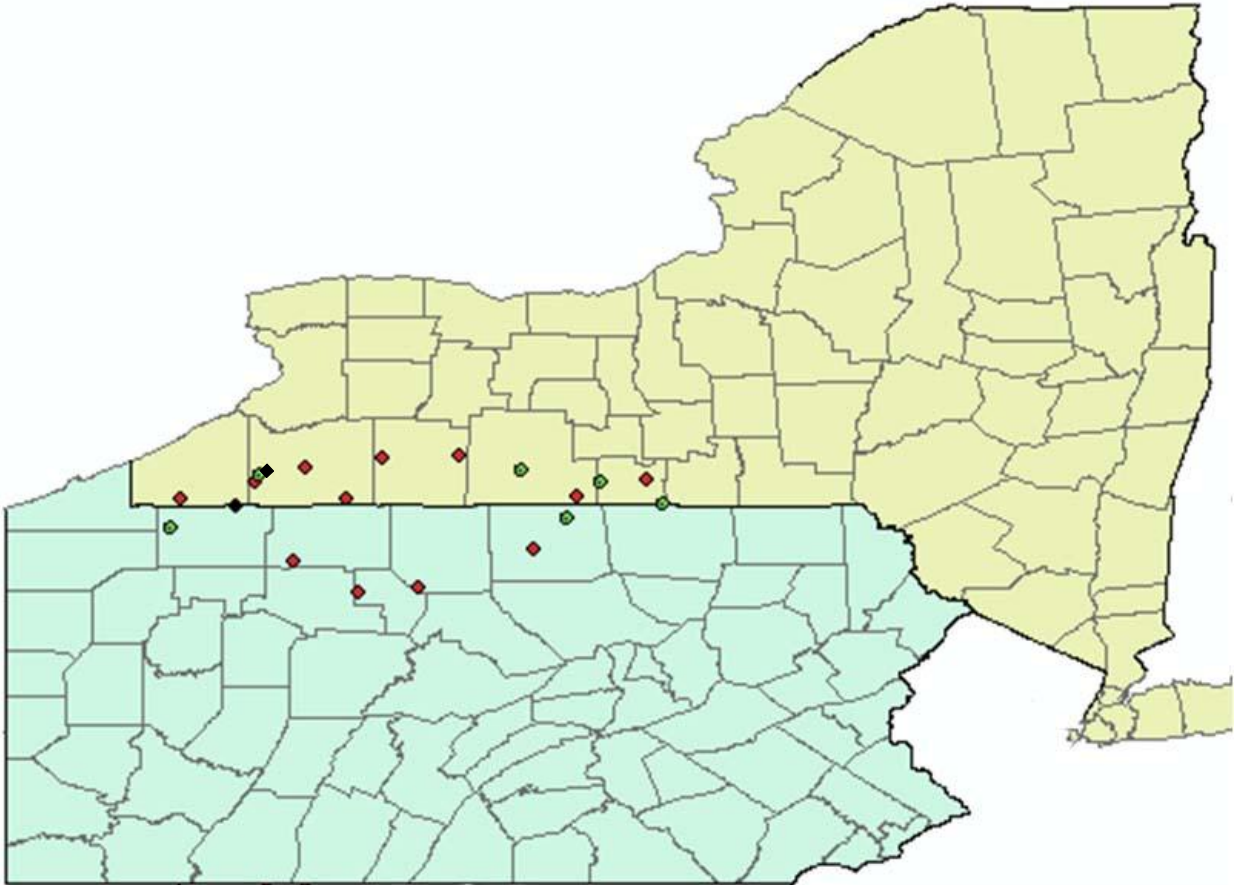
The United States Department of Agriculture

The Arnold Arboretum of Harvard University

The Brenton Arboretum

**September 9-20, 2011**

# *Fraxinus* Sites



● *F. pennsylvanica* (6)

● *F. americana* (12)

● *F. nigra* (2)

Cover: Image of hillside noting numerous *Fraxinus americana* specimens (Ames 31080), located west of Wellsboro, Pennsylvania (Tioga County).

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# Introduction

The USDA-ARS Plant Introduction Station (Ames, IA) completed a collection trip to New York and Pennsylvania in 2011. Funding was supported by the USDA Plant Exploration Program, which is coordinated by the Plant Exchange Office, National Germplasm Resources Laboratory, USDA-ARS, Beltsville, Maryland. Participants included:

- **Jeffrey D. Carstens**, Agricultural Science Research Technician, USDA-ARS Plant Introduction Station, Ames, IA (left)
- **Michael S. Dosmann**, Curator of Living Collections, The Arnold Arboretum of Harvard University, Jamaica Plain, MA (middle)
- **Andrew P. Schmitz**, Horticulturist, Brenton Arboretum, Dallas Center, IA (right)



The objectives were to:

- Identify and collect *Fraxinus* populations and potentially other NPGS genera in New York and Pennsylvania in 2011.
- Store and backup collections at the USDA-ARS Plant Introduction Station and the National Center for Genetic Resources Preservation in Fort Collins, Colorado, respectively
- Ultimately conserve and preserve genetic diversity of *Fraxinus* germplasm

# Collection Trip Plan

**Friday, 9 September 2011**

Head towards Big Flatts, New York

**Saturday, 10 September 2011**

Chemung County, New York

**Sunday, 11 September 2011**

Chemung and Steuben Counties, New York

**Monday, 12 September 2011**

Allegany County, New York

**Tuesday, 13 September 2011**

Allegany and Cattaraugus Counties, New York

**Wednesday, 14 September 2011**

Chautauqua County, New York

**Thursday, 15 September 2011**

Warren County, Pennsylvania

**Friday, 16 September 2011**

Elk, Cameron, McKean, and Potter Counties, Pennsylvania

**Saturday, 17 September 2011**

Tioga County, Pennsylvania

**Sunday, 18 September 2011**

Cayuga and Tompkins Counties, New York

**Monday, 19 September 2011**

Head back towards Ames, Iowa

**Tuesday, 20 September 2011**

Return to Ames, Iowa

# Collection Trip Daily Log

## Friday, 9 September 2011

With an early morning departure and having spent a couple hours on the road, we (Andrew Schmitz and Jeff Carstens) decided to stop at Starved Rock Cave State Park in La Salle County, Illinois to stretch our legs. Through personal communication with Mark Widrechner, a potential harvest of *Fraxinus quadrangulata* was possible on some of the high cliffs adjacent to the Illinois River. Unfortunately, only a handful of mature specimens were noted near Horseshoe Bend and unfortunately no seed was noted. Further exploration resulted in a nice collection of *Hydrangea arborescens*, and before leaving we found one specimen of *Fraxinus nigra* with seed. Future exploration may result in finding additional fruiting specimens of both blue and black ash.

We decided to make a second stop at Potato Creek State Park in St. Joseph County, Indiana to try to locate *Gymnocladus dioicus* as historical herbarium records indicated the species presence. After a long hike on trail #2, we finally came across a complete shift in flora by noting a small, localized patch of *Quercus muhlenbergii* along with a single specimen of *Gymnocladus*. Further exploration resulted in finding additional coffeetrees along Potato Creek. Due to the lack of seed set, only a few seeds were obtained for the Brenton Arboretum's collection.

## Saturday, 10 September 2011

We decided to make good time towards Big Flatts, NY in order to complete one *Fraxinus* collection before the end of the day. Shortly after crossing the New York border in Chautauqua County, we stopped to collect from *Tsuga*, *Diervilla*, and *Cornus*. We also harvested the *Monarda didyma* population that was marked during the reconnaissance. While traveling through Weston Mills, NY, we spotted an amazing specimen of *Aesculus flava* growing in a drainage ditch which feeds into the Alleghany River. We also noted a few more specimens very close to highway 417 adjacent to a urban wetland. Fruits were abundant and foliage quality was exceptional. It was slightly odd finding this species, but its context leads us to believe it is of native origin. Before daylight was gone, we were able to meet up with Michael Dosmann and harvest a *F. pennsylvanica* population just outside of Big Flatts, NY.



*Aesculus flava* – Ames 31048

# Collection Trip Daily Log

## Sunday, 11 September 2011

Our first site of *Fraxinus americana* (A31082) was accompanied by a collection of *Carpinus caroliniana*. Our second site of *F. americana* (A31081) also resulted in a collection of *Betula lenta* and *Viburnum lentago*. Our last site for the day near Cameron resulted in additional exploration to higher elevations resulting in a nice find of *Cornus florida* and *Carya ovata*. The fruit display on the *C. florida* was outstanding. Andy pointed out an interesting group of shrubby *Quercus*, and through taking a herbarium specimen, turned out to be *Quercus ilicifolia*. Due to the low quantity of acorns, it was decided not to include the sample as a NPGS collection.



*Cornus florida* – Ames 31062

## Monday, 12 September 2011

Our first site near Turnpike State Forest resulted in a successful harvest of *Fraxinus americana* (A31072). The second site at Hanging Bog WMA was interesting due to some confusion in properly identifying *Fraxinus* (*F. pennsylvanica* and *F. americana*). A few plants seemed to exhibit characteristics of both species. It was decided to harvest from individuals that seemed to best represent *F. americana*. While looking for ash, we noticed *Prunella vulgaris* growing along the roadside making an easy harvest and the first and only collection of *Prunella* from New York. It was fun to run across this interesting swamp where harvests were made from *Spiraea alba*, *Ilex verticillata*, and *Aronia* sp.. The *Aronia* population seemed to be very uniform suggesting all plants are of similar genetic origin or apomictic. *Viburnum cassinoides* was noted as a plant associate. We had hoped to find *Fraxinus nigra*, but no specimens were found.

## Tuesday, 13 September 2011

Our first *F. americana* site (A31074) was accompanied by a collection of *Carya cordiformis*. Specimens were growing in a habitat (dry, upland) similar to where one would find *Carya ovata*, which was nearby. Our second site near Rock City State Forest resulted in harvests from very tall (70' plus) specimens of *F. americana*. Further exploration around large, rock outcroppings resulted in collecting a few fruits from *Viburnum lantanoides*.

# Collection Trip Daily Log

## Tuesday, 13 September 2011 (cont'd)

The next site of *Fraxinus americana* (A31076) was one to remember due to the overwhelming abundance of seeds and also surprisingly showy, ornamental characteristics of the samaras. One specimen in particular seemed to stand out due to the bright yellow samaras.



*F. americana* – A31076

Our last site for the day was at Conewango Swamp Wildlife Management Area, where a nice population of *F. pennsylvanica* was sampled along Swamp Road. In addition, a small, localized population of *Fraxinus nigra* was also sampled in the same area. Although the black ash specimens were close to the road, standing water and thick vegetation made sampling extremely difficult. Unfortunately only small seed samples were harvested from 9 black ash individuals. Seed quality was low due to the high percentage of empty seeds. Skunk cabbage was noted as a plant associate, which is similar to black ash habitats in Wisconsin that were sampled in 2009. There were numerous other species listed as plant associates, including some not normally found in wet habitats – including feral *Malus* – suggesting that hydrology had been altered by humans.

## Wednesday, 14 September 2011

It was decided to head closer to Lake Ontario in hopes to make additional collections from *Fraxinus nigra*. Our first collection was a roadside sample of *Diervilla lonicera*. We then decided to take a walk along Chautauqua Creek, resulting in collections of *Allium tricoccum* and *Euonymus obovatus*. While heading south to the next site, we obtained a seed collection of *Fagus grandifolia*. Timing of seed harvest for *Fagus* in this area seemed optimum. While driving to our next site we picked up another *Spiraea alba* collection near Beaver Meadow Brook watershed. After harvesting large amounts of seed from *F. americana* (A31077), we stopped at Watts Flats Wildlife Management Area. Surprisingly, no green or black ash specimens were found, but samples of *Viburnum cassinoides*, *Aronia* sp., and *Asclepias incarnata* were collected.

## Thursday, 15 September 2011

Our first collection site for the day was originally targeted as *F. profunda*, due to a herbarium record which indicated the presence of specimens along Spring Creek adjacent to the railroad tracks.



# Collection Trip Daily Log

## Thursday, 15 September 2011 (cont'd)

Initial samples all keyed out to be *F. pennsylvanica*, but we did come across one sample with characteristics of both *F. profunda* and *F. pennsylvanica*. It is possible that further exploration in the region may result in finding specimens of pumpkin ash, or possible hybrids.

The last site for the day (State Game Lands #282) resulted in the collection of multiple accessions including *Viburnum lentago*, *Betula alleghaniensis*, *Fraxinus nigra*, and *Tsuga canadensis*. Before calling it the day, a large seed sample of *Carpinus caroliniana* was gathered. One specimen that was sampled had an extremely large basal area (approx. 3' diameter).

## Friday, 16 September 2011

Our first site for the morning outside of Kane, PA was a very localized population of white ash where we only harvested from 6 individuals. We continued our way to Ridgway, PA to harvest another white ash population, but quickly realized due to traffic and steepness of the hillside that collecting would be quite dangerous. We decided to skip this population, but made our stop worthwhile by grabbing samples of *Rhododendron maximum*, *Hydrangea arborescens*, *Diervilla lonicera*, and a *Hypericum* sp. The next site of white ash was a densely forested area along Pennsylvania highway 120 in Cameron County. Before making it to our next site, we spotted a small population of *Cornus florida* along Pennsylvania highway 120 along with some miscellaneous *Carya* spp. Our last site, identified by Tim Frontz (Pennsylvania forester), was spread out along the Sinnemahoning River in Potter County. We were also able to grab a sample from a couple specimens of *Fagus grandifolia* and *Tsuga canadensis* along the same watershed.

## Saturday, 17 September 2011

Our first collection of the morning was harvested just west of Wellsboro close to a golf course. White ash seemed to be the dominant tree species throughout the area. Throughout this collection trip, fall color on *F. americana* was typically presented by various tones of yellow and/or orange-yellow. However, this population seemed to display shades of pink and red.

# Collection Trip Daily Log

## Saturday, 17 September 2011 (cont'd)

Numerous times throughout the trip trees were considered quite showy solely based on the color of seeds (*F. americana* only), especially when a single mother tree was overly abundant with seeds.

Our next site that followed along the Tioga River was a *F. pennsylvanica* accession where a majority of the specimens sampled had very pubescent twigs and buds. In addition, one of the specimens was enormous with multiple trunks (pictured on the right).



*F. pennsylvanica* – A31090

The last site for the day was an urban-disturbed floodplain forest of *Fraxinus pennsylvanica* along the Chemung River. This was the first site where we actually noted *Celtis* as an associate species. Numerous woody invasives were also noted, including *Rosa multiflora*, *Toxicodendron radicans*, *Polygonum cuspidatum*, and *Elaeagnus umbellata*.

## Sunday, 18 September 2011

Since all *Fraxinus* populations targeted for collection were completed, we spent the entire time on our last day searching for *Gymnocladus dioicus*. Kentucky Coffeetree is rare within its native range but even more so in New York. Fortunately, a historical herbarium record from the 1880s documents this species growing on the east side of Cayuga Lake in Tompkins County providing initial information for hopes in tracking down living specimens.

Correspondence with various horticulturists throughout New York led us to Robert Wesley of Cornell University, who helped provide us with a list of several locations where we might be able to find Kentucky Coffeetree.

The first site was Buttermilk Falls State Park in the area of Buttermilk Creek and Lick Brook, where Robert has observed small to medium sized Kentucky Coffeetrees. We explored this area and were unable to locate any specimens. The habitat was definitely appropriate for *Gymnocladus* and would be considered a high quality, natural area worth exploring. We concluded that one could easily overlook *G. dioicus* during a time of year when tree canopies are persistent with leaves.

# Collection Trip Daily Log

## Sunday, 18 September 2011 (cont'd)

We then headed into Ithaca and relocated specimens between Hector and Cliff Streets (42.442070, -76.515571) and also Elm and Floral Streets (42.440764, -76.515859). According to local botanists, these trees are offspring from a native population growing in the Cayuga Inlet floodplain. There were dozens of juvenile and adult trees growing at each location, but no fruiting trees were noted.

We then headed north along the east side of Lake Cayuga, out of Tompkins County and into Cayuga County, where the species has been reported along various small streams flowing into Cayuga Lake.

Significant time was spent exploring Great Gully and Great Gully Cove road, which is botanically interesting, but no *G. dioicus* specimens were found. Before leaving this area, a nice population of *Physocarpus opulifolius* was sampled along steep cliffs adjacent to the east shore of Cayuga Lake.

While passing through Union Springs, we observed specimens growing on private property (42.833946, -76.696153). At least twelve mature fruiting and non-fruiting trees in a large clump were noted. Since the homeowner was not home to ask for permission to collect, we decided to move on to the next site.

We stopped along Highway 90 at Paine's Creek, but could not see any coffeetrees from the road. It was posted as private property so we did not venture into this area. Upon owner permission, this area would be an excellent/appropriate site to hike into and explore.

# Collection Trip Daily Log

## Sunday, 18 September 2011 (cont'd)

While driving through the town of Aurora, we spotted a very large specimen growing in a homeowners' front yard. This tree was extremely large, beautiful, and in excellent health, prompting us to take photographs and measurements.

Upon returning back to Iowa, measurements were submitted to the New York Department of Conservation to nominate this specimen as the new state champion Kentucky Coffeetree. At the time of this report, unofficially, with a score of 305, this specimen will become the new, New York State Champion *Gymnocladus dioicus*!



*Gymnocladus dioicus* (male)– Aurora, NY

After being rewarded with such a wonderful find in Aurora and the daylight fading, we finally collected some seed from a fruiting specimen at McKinney's Point (42.478936, -76.508085) in Tompkins County along the railroad tracks adjacent to Highway 34. We also observed 22 mature specimens, growing on private property on the opposite side of the highway.

# Trip Summary

In total, we obtained 64 accessions (12 *F. americana*, 6 *F. pennsylvanica*, 2 *F. nigra*, and 34 miscellaneous genera) which have been accessioned into the NPGS.

This collection trip provided an opportunity to obtain *Fraxinus* germplasm from numerous populations throughout New York and Pennsylvania where collection gaps existed. This is the region where white ash logs are harvested for baseball bats and other tool handles. A wide variety of other important woody ornamentals were also collected.

*F. americana* could be classified as common in the area explored, while *F. pennsylvanica* is uncommon and *F. nigra* could easily be considered rare. Seeds were abundant and of exceptional quality for both *F. americana* and *F. pennsylvanica*, but not *F. nigra*. Very few ash seed weevils were noted in *F. americana* and *F. pennsylvanica*. The average number of trees sampled per population are as follows: *F. americana*, 10; *F. pennsylvanica*, 9; *F. nigra*, 6.

Timing of seed harvest was near perfect for *F. americana* and *F. pennsylvanica*, but approximately 2-3 weeks late for *F. nigra*. Additional time should be warranted around Spring Creek (Warren Co., PA) in hopes to identify and harvest specimens of *F. profunda*. A few specimens in this area seemed to exhibit partial characteristics of *F. profunda*.

It was interesting to spend some time harvesting and examining *Carya* species found during exploration. It is obvious after close inspection that *Carya* species are quite precocious in the ability to hybridize with each other. It was also apparent that taxonomic keys based on morphological measurements are not definitive for this genus.

Highlights of the trip included harvesting from two populations of both *Fraxinus nigra* and *Cornus florida*, an *Aesculus flava* population with exceptionally clean foliage, a nice community of *Rhododendron maximum*, and locating *Gymnocladus* in New York because of its rarity.

# Alphabetical List of Germplasm Collected

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<u>Taxonomy</u>	<u>Voucher</u>	<u>NPGS #</u>	<u>Collection #</u>	<u>Locality</u>
<i>Aesculus flava</i>	Y	Ames 31048	357	Cattaragus County, New York
<i>Allium tricoccum</i>	N	Ames 31049	370	Chautauqua County, New York
<i>Aronia sp.</i>	Y	Ames 31050	364	Allegany County, New York
<i>Aronia sp.</i>	Y	Ames 31051	375	Chautauqua County, New York
<i>Asclepias incarnata</i>	N	Ames 31052	374	Chautauqua County, New York
<i>Betula alleghaniensis</i>	N	Ames 31053	380	Warren County, Pennsylvania
<i>Betula lenta</i>	N	Ames 31054	359	Steuben County, New York
<i>Carpinus caroliniana</i>	Y	Ames 31055	358	Chemung County, New York
<i>Carpinus caroliniana</i>	N	Ames 31056	381	Warren County, Pennsylvania
<i>Carya cordiformis</i>	N	Ames 31057	367	Cattaraugus County, New York
<i>Carya cordiformis</i>	N	Ames 31058	389	Cameron County, Pennsylvania
<i>Carya glabra</i>	Y	Ames 31059	387	Cameron County, Pennsylvania
<i>Carya laciniosa</i>	Y	Ames 31060	388	Cameron County, Pennsylvania
<i>Carya ovata</i>	Y	Ames 31061	361	Steuben County, New York
<i>Cornus alternifolia</i>	Y	Ames 31028	703	Warren County, Pennsylvania
<i>Cornus florida</i>	Y	Ames 31062	362	Steuben County, New York
<i>Cornus florida</i>	N	Ames 31063	386	Cameron County, Pennsylvania
<i>Cornus rugosa</i>	Y	Ames 31029	710	Steuben County, New York
<i>Cornus sp.</i>	N	Ames 31064	356	Chautauqua County, New York
<i>Diervilla lonicera</i>	N	Ames 31065	354	Chautauqua County, New York
<i>Diervilla lonicera</i>	Y	Ames 31066	369	Chautauqua County, New York
<i>Diervilla lonicera</i>	Y	Ames 31067	383	Elk County, Pennsylvania
<i>Euonymus obovatus</i>	Y	Ames 31068	371	Chautauqua County, New York
<i>Fagus grandifolia</i>	Y	Ames 31069	372	Chautauqua County, New York
<i>Fagus grandifolia</i>	N	Ames 31070	391	Potter County, Pennsylvania
<i>Fraxinus americana</i>	N	Ames 31071	390	Potter County, Pennsylvania
<i>Fraxinus americana</i>	Y	Ames 31072	693	Allegany County, New York
<i>Fraxinus americana</i>	Y	Ames 31073	695	Allegany County, New York
<i>Fraxinus americana</i>	Y	Ames 31074	697	Allegany County, New York
<i>Fraxinus americana</i>	Y	Ames 31075	698	Cattaraugus County, New York
<i>Fraxinus americana</i>	Y	Ames 31076	701	Cattaraugus County, New York
<i>Fraxinus americana</i>	Y	Ames 31077	702	Chautauqua County, New York
<i>Fraxinus americana</i>	Y	Ames 31078	705	McKean County, Pennsylvania
<i>Fraxinus americana</i>	Y	Ames 31079	707	Cameron County, Pennsylvania
<i>Fraxinus americana</i>	Y	Ames 31080	708	Tioga County, Pennsylvania
<i>Fraxinus americana</i>	Y	Ames 31081	711	Steuben County, New York
<i>Fraxinus americana</i>	Y	Ames 31082	712	Chemung County, New York
<i>Fraxinus nigra</i>	N	Ames 31083	352	La Salle County, Illinois
<i>Fraxinus nigra</i>	N	Ames 31084	377	Warren County, Pennsylvania
<i>Fraxinus nigra</i>	Y	Ames 31085	699	Cattaraugus County, New York

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<u>Taxonomy</u>	<u>Voucher</u>	<u>NPGS #</u>	<u>Collection #</u>	<u>Locality</u>
<i>Fraxinus pennsylvanica</i>	Y	Ames 31086	691	Chemung County, New York
<i>Fraxinus pennsylvanica</i>	Y	Ames 31087	692	Steuben County, New York
<i>Fraxinus pennsylvanica</i>	Y	Ames 31088	700	Cattaraugus County, New York
<i>Fraxinus pennsylvanica</i>	Y	Ames 31089	704	Warren County, Pennsylvania
<i>Fraxinus pennsylvanica</i>	Y	Ames 31090	709	Tioga County, Pennsylvania
<i>Fraxinus pennsylvanica</i>	Y	Ames 31091	713	Tioga County, New York
<i>Hydrangea arborescens</i>	N	Ames 31092	353	La Salle County, Illinois
<i>Hydrangea arborescens</i>	Y	Ames 31093	384	Elk County, Pennsylvania
<i>Hypericum</i> sp.	N	Ames 31094	385	Elk County, Pennsylvania
<i>Ilex verticillata</i>	Y	Ames 31095	366	Allegany County, New York
<i>Monarda didyma</i>	Y	Ames 31096	696	Allegany County, New York
<i>Physocarpus opulifolius</i>	N	Ames 31097	393	Cayuga County, New York
<i>Prunella vulgaris</i>	N	Ames 31098	363	Allegany County, New York
<i>Prunus pensylvanica</i>	Y	N/A	694	Allegany County, New York
<i>Rhododendron maximum</i>	Y	Ames 31099	382	Elk County, Pennsylvania
<i>Spiraea alba</i>	Y	Ames 31100	365	Allegany County, New York
<i>Spiraea alba</i>	N	Ames 31101	373	Chautauqua County, New York
<i>Tsuga canadensis</i>	N	Ames 31102	355	Chautauqua County, New York
<i>Tsuga canadensis</i>	N	Ames 31103	379	Warren County, Pennsylvania
<i>Tsuga canadensis</i>	N	Ames 31104	392	Potter County, Pennsylvania
<i>Viburnum cassinoides</i>	Y	Ames 31105	376	Chautauqua County, New York
<i>Viburnum lantanoides</i>	N	Ames 31106	368	Cattaraugus County, New York
<i>Viburnum lentago</i>	N	Ames 31107	360	Steuben County, New York
<i>Viburnum lentago</i>	N	Ames 31108	378	Warren County, Pennsylvania