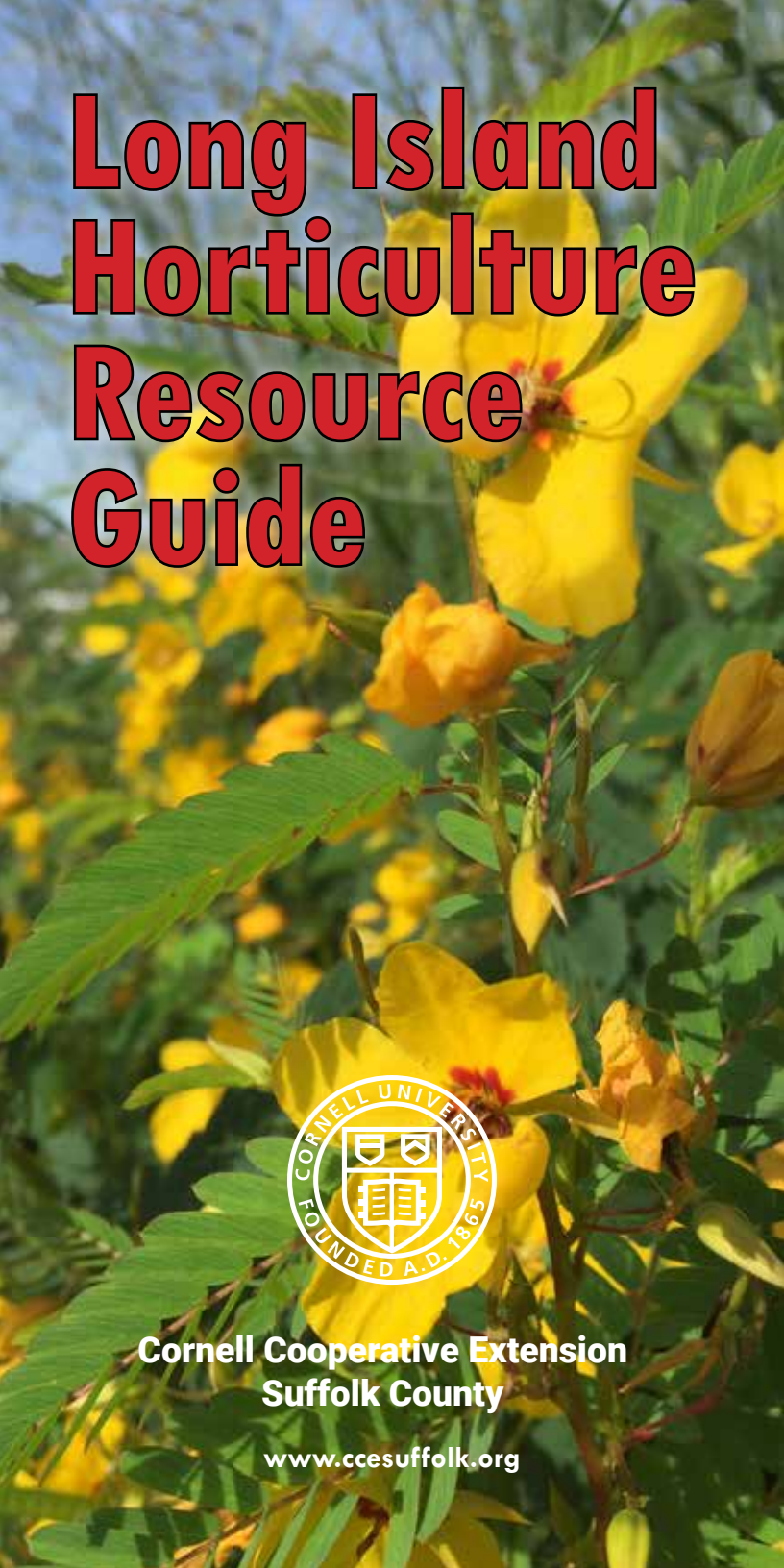
Long Island Horticulture Resource Guide



Cornell Cooperative Extension
Suffolk County

www.ccesuffolk.org

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Cornell Cooperative Extension

Building Strong and Vibrant New York Communities

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- develops local leaders who use CCE knowledge to inform decisions;
- promotes youth development through 4-H clubs and other experiences;
- strives to help participants make informed choices using the best knowledge available;
- connects learners with educational resources found in locations throughout the world;
- consults with individuals and groups on multiple topics;
- provides numerous types of resources.

Cornell Cooperative Extension is a partnership involving...

- 56 Extension Associations throughout New York State;
- Faculty and staff in Cornell's New York State Colleges of Agriculture and Life Sciences, Human Ecology, and Veterinary Medicine;
- 50,000 volunteers participating in both program and organizational leadership;
- 111 land-grant institutions across the United States and territories;
- statewide and community agencies, organizations, and businesses;
- New York State's people.

*Who To Contact for Questions and Diagnoses**

In Suffolk County - www.ccesuffolk.org

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**A complete directory of Suffolk County Agriculture Staff starts on page 129.*

In Nassau County - www.ccenassau.org

Cornell Cooperative Extension of Nassau County Horticulture Center

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vad37@cornell.edu • 516-565-5265 x10

Demonstration & Community Gardens at East Meadow Farm
832 Merrick Avenue, East Meadow, NY 11554

Garden Helpline: 516-565-5265 x7

Cover photo: Long Island native annual, partridge pea (*Chamaecrista fasciculata*), blooming in August.

Suffolk County CCE Nursery and Landscape Program Website

Useful information for nursery growers and landscape professionals is available on the CCE Website at <www.ccesuffolk.org/agriculture>. You'll learn about the latest hort news, upcoming conferences, and current projects.

Horticulture Diagnostic Lab

Horticulture Consulting and Recommendations

Plant problems and disease diagnoses
Insect identification
Tick identification
Soil pH testing

EASTERN

Cornell Cooperative Extension of Suffolk County
423 Griffing Avenue, Riverhead, NY 11901
Mon-Fri 9AM-4:30PM
Phone calls: 9AM – Noon
Tel: 631-727-4126 • Fax: 631-727-7130

WESTERN

Bayard Cutting Arboretum
Montauk Highway, Great River, NY 11739
Tel: 631-581-4223
Phone Calls: 8:45AM – 11:45AM • 1PM – 4PM
Sample Drop-off: 10AM – 4:30PM
Thursday & Friday
April through October

For instructions, including costs for submitting samples to the diagnostic labs, visit our website at www.ccesuffolk.org

Pesticide Emergency Numbers

Pesticide Spills and Accidents:
CHEMTREC, 800-424-9300

Pesticide & Information Emergencies
National Pesticide Information Center, 800-858-7378
Hours for the Information Center, M-F, 11 AM - 3 PM
http://npic.orst.edu
npic@ace.orst.edu

Report Oil & Hazardous Material Spills
NYS-DEC, 800-457-7362 (in NYS)
518-457-7362 (outside NYS)

Information on Symptoms & Treatment:
Long Island Regional Poison & Drug Info Center
Winthrop University Hospital
259 1st St.
Mineola, NY 11501

Emergency - 800-222-1222
Information - 516-663-2650

Agricultural Nurse Program
New York Center for Agricultural Medicine & Health
800-343-7527

Planting Tips

Balled & Burlapped Plants

Excavate soil on top of the root ball to expose trunk flare. Then dig the planting hole only deep enough so the trunk flare will be at ground level. It is better to plant shallower then deeper as long as the top of the ball and roots are protected with a mulch.

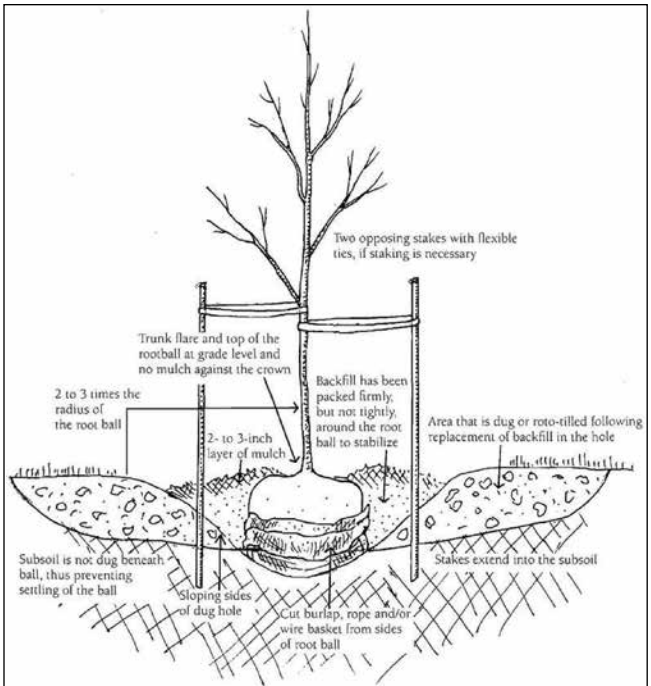
Dig the planting hole 2 – 3 times as wide as the ball.

Do not disturb the bottom of the hole. The plant should be placed on a solid base so it won't settle from its own weight resulting in deep planting. Digging deeper will not improve drainage.

Untie the rope from around the trunk and remove.

Remove the burlap especially if it is plastic or treated to delay rotting. Untreated degradable burlap could be left on but it is better to remove partially or completely to expose the trunk flare and correct any girdling root issues before planting. If left on, be sure to loosen the top and fold over or cut off so it will not be exposed to the air.

Wire baskets should be removed when possible. At a minimum, the top of the basket should be bent back away from the trunk or cut away with bolt cutters.



Drawing by Marcia Eames-Sheavly, The Cornell Guide for Planting & Maintaining Trees & Shrubs. 2005. Glood, G.L. & Weir, R. III. Cornell Cooperative Extension. Inf. BHN 24.

Fill the hole halfway with soil and water thoroughly to settle the soil around the roots. After the water drains, completely fill in with soil and water again. Modifying the backfill with amendments is not recommended as establishment problems can occur if the soil textural differences are great. If the soil is poor, modify a larger planting area rather than just the planting hole.

Mulch the top of the planting hole with 2-3 inches of material. Do not mulch too thickly and pull the mulch away from the base of the plant.

Containerized Plants

Remove the plant from the container.

Do not plant root bound plants.

Don't plant too deeply! The root flare should be at ground level.

Slice the sides of the root mass in several areas from top to bottom to reduce circling roots. Tease the roots away from the media. Any media that falls can be mixed with the backfill to aid in the transition from the organic container media and soil.

Fill the hole halfway with soil and water thoroughly to settle the soil around the roots. After the water drains, completely fill in with soil and water again.

Mulch with 2-3 inches of material. Do not mulch too thickly and pull the mulch away from the base of the plant.

Post Planting Care

Mulch around plants to protect the root system and conserve soil moisture. Do not plant grass around the root system. Mulched plants develop more roots and establish quicker than those with grass planted up to the trunk.

Pruning at the time of planting should be limited to removing such things as broken branches and diseased wood. Removing too many live branches can delay establishment and growth.

Trunk wrapping, which is often done to newly transplanted trees to protect from sun scald, has been found to increase the incidence of certain borers such as dogwood borer and ash borer. Eggs are inserted under the wrapping, which protects the eggs and larva, thereby increasing survival. Also, canker diseases might develop if moisture builds up between the trunk and the wrapping. If used, trunk wraps should only be used during the season you are trying to protect the trunk and then removed. Always wrap from the bottom up and loosen accordingly as the trunk grows in girth.

Water new transplants carefully so the soil around the roots does

not dry out. Recommendations on the frequency and amount of water cannot be made as such things as environmental conditions, soil texture, plant size, etc. determine it. Water will initially be removed from the soil or container ball since this is the area where intact roots exist. As new roots develop and grow outside the ball, increase the area watered. Use a soil probe to remove a core of soil from the backfill and soil ball to determine soil moisture in the root zone. Do not water based solely on the moisture of the soil surface.

Wound dressings and tree paints have not been shown to reduce or prevent decay.

Tree Support Systems

Recently transplanted trees may require supplemental support in the form of staking, guying, or root ball anchoring. These tree support systems are intended to hold the tree in an upright position and limit movement of the root ball until new roots adequately anchor the tree in the soil.

However, tree support systems should only be used when necessary. A staked or guyed tree is more prone to trunk girdling and abrasion and trunk breakage than a tree that is not staked or guyed. In addition, stakes or guys that are too rigid or are left on more than one growing season can limit a tree's ability to support its own weight. Tree support systems also increase installation and maintenance costs.

Conditions that may necessitate the installation of a tree support system are: very windy planting locations, heavy foot or vehicular traffic near planting locations, very large planting material, or late fall planting of evergreens.

If a tree support system is installed on a new transplant, there are a few basic guidelines to follow:

- Stakes or guys should always be installed low on the trunk to allow upper movement of the branches. Support systems that are too rigid will not allow the tree to develop proper taper.
- The tie material should be flat, wide, smooth, and somewhat flexible. Hose-covered wire is NOT a good tie material because it causes trunk girdling. One good alternative is polypropylene fabric ties which can be found in garden supply stores.
- The tree support system should be routinely inspected to make sure that it is fully intact and not causing any girdling or abrasion.
- In most cases, the stakes or guys can be removed after one growing season. Because they are buried and do not go around the trunk, root ball anchoring systems can be left on indefinitely.

Selecting Quality Plant Material

- Always do business with reliable and knowledgeable nurseries. Select those using the *American Standard for Nursery Stock* developed by the American Nursery/Landscape Association. Certification programs are available which acknowledge those individuals that have shown an understanding of horticultural principles.
- Plants grown nearby should be cold hardy. Plants can be purchased from areas of warmer hardiness zones provided the plants were started from genetically hardy plants. Plants purchased from warmer areas should have adequate time to acclimate to local conditions before the onset of colder weather.
- Purchase plants from several sources and follow their performance. Establishment and growth should be recorded to determine any differences that may be caused from production and/or post harvest handling.
- Plants should be free of disease problems, insect and weed infestations, mechanical damage, and cankers.
- Plants should be pruned properly so they have acceptable form and branch structure for species.
- Well developed callus at pruning wounds is a good indicator of plant health.
- Root systems should be kept moist following harvesting.
- The base of the trunk should be free of girdling roots.
- Plants should have adequate twig growth for several years prior to harvesting.

Bare-root plants

- Bare-root material should remain dormant and root systems kept moist and protected from desiccation.
- Plant bare-root material as soon as possible.
- Root system should be adequately developed for species and age.
- Avoid or discard inferior plants.

Balled & Burlapped plants

- Trunk of plant should be within 10% of the center of the ball.
- Ball size should be appropriate for species and plant size.
- Trunk flare should be at the surface of the ball.
- Soil ball should be well shaped and intact.

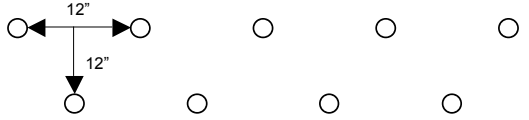
- Most tree species should have a well developed central leader at nursery sizes.

Containerized plants

- Root system should be well developed and hold the root ball together when removed from the container.
- Plants that are pot-bound or have girdling roots should be avoided.
- Plants should be the appropriate size for the container.

Planting Hedges

Mature plant size and spacing:
Small formal: 6”- 12”
Small informal: 1-3 feet
Medium: 3-4 feet
Large: 6-8 feet



Staggering plants in a double row is desirable for a thick hedge.

Area Covered by 100 Ground Cover Plants

Planting Distance (inches)	Area Covered (sq. feet)
6	25
12	100
18	225
24	400
30	625
36	900
48	1600
60	2500

Example: 100 plants will cover 25 sq. ft. if spaced 6 inches apart

Common ANLA Standards

To purchase a copy of *American Standard for Nursery Stock*, ANSI Z60.1-2004, contact: AmericanHort.org, email: hello@americanhort.org, phone: 202-789-2900

Recommended Balling and Burlapping Specifications for Four General Types of Plants

Spreading Conifer and Broadleaved Evergreens

Spread (ft)	Diam. (in)
1.5	14
2	16
2.5	18
3.5	26
4	28
5	36
6	40
7	46
8	52

Pyramidal and Broad Upright Conifers and Broad-leaved Evergreens

Height (ft)	Diam. (in)
1.5	12
2	14
3	18
4	20
5	22
6	24
7	26
8	28
9	32

Columnar Conifers and Broad-leaved Evergreens

Height (ft)	Diam. (in)
1.5	9
2	11
3	14
4	16
5	18
6	20
7	22
8	24
9	26

Standard Shade Trees

Caliper (in)	Diam. (in)
1.5	20
2	24
2.5	28
3	32
3.5	38
4	42
4.5	48
5	54
6	60
7	70
8	80

Measuring Tree Caliper

- Take measurement 6" above ground for caliper up to 4" in diameter.
- Take measurement 12" above ground if caliper is over 4" in diameter.

Approximate Weight of B&B Plants

Ball Size (in)	Weight (lbs)	Avg. Number per 45-ft trailer
24	200	130
28	350	115
32	500	80
36	800	45-50
40	1100	25-30
44	1600	20-25
50	2000	15-20

These figures are intended as a guide only and will vary between varieties, weather conditions, and time of year.

Ball Diameter/Depth Ratios for B&B Plants

Diameter of Ball (in)	Depth of Ball
< 20	Not less than 65% of diameter
≥ 20	Not less than 60% of diameter

Pruning Times and Techniques

General Pruning Tips

- Never remove > 25% of the live crown of a tree in a single year
- Prune to accentuate the natural form of the plant
- Removing flower buds enhances vegetative growth
- Plants that bloom on previous season's wood should be pruned directly after bloom to maximize flowering
- Young, vigorous plants need more frequent pruning than older, slow-growing plants
- Plants should be pruned only when a clear objective is established
- Hedge trimmers should only be used for annual pruning of thin-stemmed hedges. Even when done well, this will cause a thick profusion of twigs around the perimeter of the plant. Hedges will be healthier and more natural-looking when maintained with hand pruners
- Topping trees is strongly discouraged due to its severe impact on the health of the tree and undesirable aesthetic result
- Always remove the least amount of live branches necessary to accomplish the pruning objective.

Late Winter (before bud break)

- Train young shade trees planted the year before by selecting scaffold branches
- Rejuvenate evergreen and deciduous shrubs and hedges
- Best time to annually prune most vines
- Thin mature trees if necessary

Spring (bud break & shoot elongation)

- Best not to prune any live material on woody plants at this time due to translocation of carbohydrates and growth hormones to growing points
- Limit pruning to damaged or dead wood.

Summer (new shoots reach full growth and become woody)

- Shape and thin mature trees if necessary after spring growth flush
- Address the tree crown interior to remove overly-shaded, crisscrossed, or weak branches
- Alternate time to rejuvenate hedges
- For more compact growth, pinch out one half of the new growth of pines, spruces, and firs

Late Fall (after several hard frosts)

- Clip away excess ivy growth on building walls and around windows
- Alternate time to perform major pruning

Winter (after hard freezes; plants truly dormant)

- Thin crowns of mature trees if necessary
- Clip hedges to retain clean lines

Hardiness and Heat Zones

Long Island ranges in its cold hardiness from zone 6b (Pine Barrens region) to 7a (majority of Long Island), and is in heat zone 4, except the North and South Forks are heat zone 3.

USDA Cold Hardiness Zones

Zone	Average Annual Minimum Temperature (F)
1.	Below -50
2a.	-45 to -50
2b.	-40 to -45
3a.	-35 to -40
3b.	-30 to -35
4a.	-25 to -30
4b.	-20 to -25
5a.	-15 to -20
5b.	-10 to -15
6a.	-5 to -10
6b.	0 to -5
7a.	.5 to 0
7b.	10 to 5
8a.	15 to 10
8b.	20 to 15
9a.	25 to 20
9b.	30 to 25
10a.	35 to 30
10b.	40 to 35
11.	40 and above

AHS Heat Zones

Zone	Average Annual Number of Days above 86°F
1.	Below 1
2.	1-7
3.	8-14
4.	15-30
5.	31-45
6.	46-60
7.	61-90
8.	91-120
9.	121-150
10.	151-180
11.	180-210
12.	Above 210

Shrub Pruning Calendar

Table from Virginia Cooperative Extension, 2001

Key:

- • = Best time to prune
- × = Do not prune except to remove damage, hazards, or structural defects
- Blank = Timing is not critical
- D = Deciduous
- E = Evergreen

Comments:

1. Flowers produced on new (current season) wood
2. Flowers produced on wood from past season, dormant pruning will reduce flowers
3. Make pruning cuts well below diseased wood (fire blight)
4. Remove old stems to ground yearly to renew
5. Midseason shear if a formal hedge is desired
6. Do not cut into old wood that has no leaves or needles
7. Spring/summer prune to remove azalea caterpillars and galls
8. Fall/early winter pruning can reduce winter hardiness
9. Trim candles (new growth) in half when needles are 1/2 to 2/3 their normal length

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Comments
Abelia	•	•	×	×	×	×	×	×	×	×	•	•	1,4
Arborvitae	•	•	•			•	•	×	×	×	×	×	6
Aucuba	×	×	×	×	×	•	•	×	×	×	×	×	2
Azalea, D	×	×	×	×	•	•	•	×	×	×	×	×	2
Azalea, E	×	×	×	×	•	•	•	×	×	×	×	×	2,7
Bayberry	×	×	×	×	•	•	•	×	×	×	×	×	
Beautyberry	•	•	•	×	×	×	×	×	×	×	•	•	1
Beautybush (Kolkwitzia)	×	×	×	×	×	•	•	×	×	×	×	×	2,4
Boxwood	•	•	•	•	•	•	•	×	×	×	•	•	5
Broom (Cytisus)	×	×	×	×	×	•	•	×	×	×	×	×	2
Camellia, Japanese	×	×	×	•	•	•	×	×	×	×	×	×	2
Camellia, Sasanqua	×	×	•	•	•	×	×	×	×	×	×	×	1
Cherrylaurel	•	•	•	•	•	•	•	×	×	×	•	•	5
Clethra	•	•	•	×	×	×	×	×	×	×	•	•	1
Cotoneaster	•	•	×	×	×	×	×	×	×	×	•	•	3
Crape Myrtle	•	•	•	×	×	×				×	×	×	1,8
Daphne	×	×	×	•	•	•	•	×	×	×	×	×	2
Dogwood	•	•	•	×	×	×	×	×	×	×	•	•	1,4
Forsythia	×	×	×	•	•	•	•	×	×	×	×	×	2,4
Fothergilla	×	×	×	×	•	•	•	×	×	×	×	×	2
Gardenia	•	•	×	×	×	×	×	×	×	×	•	•	1
Hibiscus, Rose of Sharon	•	•	•	×	×	×	×	×	×	×	•	•	1
Holly, D	•	•	×	×	×	×	×	×	×	×	×	•	1

Table from Virginia Cooperative Extension, 2001 (cont'd.)

Key:

• = Best time to prune
× = Do not prune except to remove damage, hazards, or structural defects
Blank = Timing is not critical
D = Deciduous
E = Evergreen

Comments:

1. Flowers produced on new (current season) wood
2. Flowers produced on wood from past season, dormant pruning will reduce flowers
3. Make pruning cuts well below diseased wood (fire blight)
4. Remove old stems to ground yearly to renew
5. Midseason shear if a formal hedge is desired
6. Do not cut into old wood that has no leaves or needles
7. Spring/summer prune to remove azalea caterpillars and galls
8. Fall/early winter pruning can reduce winter hardiness
9. Trim candles (new growth) in half when needles are 1/2 to 2/3 their normal length

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Comments
Holly, E	×	×	×	×	×	•	•	×	×	×	×	×	2,5
Hydrangea, spring bloom	×	×	×	×	×	•	•	×	×	×	×	×	2
Hydrangea, summer bloom	•	•	•	×	×	×	×	×	×	×	×	×	1
Hypericum	•	•	•	×	×	×	×	×	×	×	×	×	1
Indian Hawthorn	×	×	×	×	•	•	•	×	×	×	×	×	2
Juniper	•	•	•					×	×	×	•	•	6
Leucothoe	×	×	×	×	×	•	•	×	×	×	×	×	4
Lilac	×	×	×	×	×	•	•	×	×	×	×	×	2,4
Mountain laurel	×	×	×	×	×	•	•	×	×	×	×	×	2
Nandina	•	•	•	×	×	×	×	×	×	×	×	×	1,4
Osmanthus	•	•				•	×	×	×	×	•	•	1,5
Pearlbush	×	×	×	×	×	•	•	×	×	×	×	×	2
Photinia	•	•			•	•	•	×	×	×	•	•	5
Pieris	×	×	×	×	•	•	•	×	×	×	×	×	2
Pine, Mugo	•	×	×	•	•	•	×	×	×	×	×	•	
Pittosporum	×	•	•	•	•	×	×	×	×	×	×	×	9
Potentilla	•	•	•	×	×	×	×	×	×	•	•	•	1,4
Pyracantha	×	×	×	×	×	•	•	×	×	×	×	×	2,3
Quince	×	×	×	•	•	•	•	×	×	×	×	×	2,4
Rhododendron	×	×	×	×	×	•	•	×	×	×	×	×	2
Rose	×	•	•	×	×	×	•	•	×	×	×	×	1,3,4
Serviceberry	×	×	×	•	•	•	×	×	×	×	×	×	
Smoke Tree	•	•	×	×	×	×	×	×	×	×	•	•	1
Sumac	•	•	•	×	×	×	×	•	•	•	•	•	1,4
Sweetshrub	×	×	×	×	×	×	•	•	×	×	×	×	1
Viburnum, D	×	×	×	×	•	•	•	×	×	×	×	×	2,4
Viburnum, E	×	×	×	×	•	•	×	×	×	×	×	×	2
Weigela	×	×	×	×	•	•	•	×	×	×	×	×	2,4
Willow, Pussy	×	×	×	•	•	•	•	×	×	×	×	×	2
Witchhazel	×	×	×	•	•	•	•	×	×	×	×	×	2
Yew	•	•	•		•	•	•	×	×	×	•	•	5

Deciduous Tree Pruning Calendar

Table from Virginia Cooperative Extension, 2009

Legend:

* = Best time to prune
x = Do not prune except to correct damage, hazards, or structural defects
- = Timing is not critical

Comments

1. Avoid pruning in late winter/early spring due to sap flow (more cosmetic than detrimental)
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4. Avoid pruning after July because flower buds have set

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Comments
Ailanthus	-	-	-	-	-	-	-	-	-	-	-	-	
Alder	*	*	-	-	-	-	-	-	-	-	*	*	
Ash	-	-	-	-	-	-	-	-	-	-	-	-	
Bald Cypress	-	-	-	-	-	-	-	-	-	-	-	-	
Beech	-	-	-	-	-	-	*	*	*	-	-	-	
Birch	*	x	x	x	x	x	x	-	-	-	*	*	1,2
Buckeye	x	x	x	x	*	*	*	x	x	x	x	x	4
Catalpa	-	-	-	-	-	-	-	-	-	-	-	-	
Cherry, Flowering	x	x	x	x	x	*	*	x	x	x	x	x	4
Chestnut, Chinese	-	-	-	-	-	-	-	-	-	-	-	-	
Crabapple	x	x	x	x	*	*	*	x	x	x	x	x	4
Crape Myrtle	*	*	*	x	x	x	-	-	-	x	x	x	3
Dogwood	x	x	x	x	x	*	*	x	x	x	x	x	4
Elm	x	x	x	x	x	x	-	-	-	*	*	*	1,2
Fringe Tree	x	x	x	x	x	*	*	x	x	x	x	x	4
Ginko	-	-	-	-	-	-	-	-	-	-	-	-	
Goldenraintree	-	-	-	x	x	x	x	x	-	*	*	*	
Hackberry	-	-	-	-	-	-	-	x	x	-	-	-	2
Hawthorn	x	x	x	x	x	*	*	x	x	x	x	x	4
Hickory	-	-	-	-	-	-	-	-	-	-	-	-	
Honeylocust	-	-	-	-	-	-	-	-	*	*	-	-	
Horsechestnut	x	x	x	x	*	*	*	x	x	x	x	x	4
Katsura	-	-	-	-	-	-	-	-	-	-	-	-	
Linden	-	-	-	x	x	x	x	*	*	*	-	-	
Magnolia	x	x	x	x	*	*	*	x	x	x	x	x	4
Maple	x	x	x	x	*	*	*	x	x	-	*	*	1,2
Mimosa	-	-	-	-	-	-	-	-	-	-	-	-	
Mountain Ash	-	-	-	-	-	-	-	-	-	-	-	-	
Mulberry	-	-	-	-	-	-	-	-	-	-	-	-	
Nyssa, Black Gum	-	-	-	-	-	-	-	-	-	-	-	-	
Oak	-	-	x	x	x	x	x	x	-	-	*	*	2
Peach, Flowering	x	x	x	x	x	*	*	x	x	x	x	x	4
Pear, Flowering	x	x	x	x	x	*	*	x	x	x	x	x	4

Deciduous Tree Pruning Calendar (cont'd.)
Table from Virginia Cooperative Extension, 2009

Legend:

* = Best time to prune
x = Do not prune except to correct damage, hazards, or structural defects
- = Timing is not critical

Comments

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	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Comments
Plum, Flowering and Purple	x	x	x	x	x	*	*	x	x	x	x	x	4
Poplar	-	x	x	x	-	-	-	-	-	*	*	*	1
Redbud	x	x	x	x	*	*	*	x	x	x	x	x	2,4
Serviceberry	x	x	x	x	*	*	*	x	x	x	x	x	4
Sophora	-	-	-	x	x	x	x	-	-	*	*	*	
Sourwood	-	-	x	x	x	x	x	-	-	*	*	*	
Stewartia	*	-	-	-	-	x	x	x	-	-	-	*	
Sweetgum	-	-	-	-	-	-	-	-	-	-	-	-	
Sycamore, Plane	-	-	-	-	-	-	-	-	-	-	-	-	
Tuliptree	-	-	-	-	-	-	-	-	-	-	-	-	
Willow	-	x	x	x	-	-	-	-	-	-	-	-	1
Zelkova	-	-	-	-	-	-	-	-	-	-	-	-	

Plant Award Winners

The Gold Medal Plant Program - *Growing a greener Long Island since 1999*

The Long Island Gold Medal Plant Program began in 1999 and is administered by Cornell Cooperative Extension of Suffolk County. The mission of the Gold Medal Plant Program is to identify and promote exceptional ornamental plants that will thrive in the Long Island home landscape.Increased public education and awareness of sustainable plant selections are the main goals of the Program.

Four award-winning plants are selected each year, which may be trees, shrubs, perennials, vines, ground covers, grasses, or annuals. Visit www.ccesuffolk.org to see descriptions of all the award-winning plants. Gold Medal Plant Winners are identified by the Plant Selection Committee, which is a volunteer group of horticulture professionals. If you would like more information, please contact Vincent Simeone at VASimeone@aol.com.

The Gold Medal Plant Awards:

2020 *Acer triflorum*
Ilex x 'Rutzan' Red Beauty
Itea virginica
Helleborus x *ballardiae* 'HGC Pink Frost'

2019 *Deutzia gracilis*
Chamaecyparis thyoides 'Red Star'
Alchemilla mollis
Heptacodium miconioides

2018 *Betula nigra* 'Little King'
Taxodium distichum
Polygonatum odoratum 'Variegatum'
Viburnum nudum 'Winterthur' & 'Brandywine

2017 *Nyssa sylvatica*
Osmanthus heterophyllus 'Goshiki'
Catharanthus roseus
Wisteria frutescens 'Amethyst Falls'

2016 *Begonia* x *benariensis* (Whopper® and Big® Begonias)
Pinus flexilis blue cultivars
Paeonia Itoh series
Cleome x Senorita Rosalita®

2015 *Coreopsis* x 'Full Moon'
Hydrangea paniculata 'Limelight'
Aucuba japonica 'Serratifolia'
Lagerstroemia indica x *faurieri* 'Natchez'

2014 *Camellia japonica* April series & *C.* x Winter series
Cornus florida
Ilex crenata 'Soft Touch'
Nepeta racemosa 'Blue Wonder'

2013 *Lonicera nitida*
Thujopsis dolabrata 'Nana'
Quercus palustris 'Green Pillar'
Cercis Canadensis

2012 *Acer griseum*
Amsonia hubrichtii
Polystichum acrostichoides 'Christmas Fern'
Chionanthus retusus

2011 *Baptisia australis*
Carpinus betulus 'Frans Fontaine'
Cornus mas 'Golden Glory'
Sedum spurium 'John Creech'

2010 *Magnolia* 'Galaxy'
Lonicera sempervirens
Styrax japonicus 'Emerald Pagoda'
Salvia nemorosa 'Caradonna'

2009 *Parrotia persica*
Phlox stolonifera
Aesculus parviflora
Carex 'Ice Dance'

2008 *Clematis montana* var. *rubens*
Syringa reticulata 'Ivory Silk'
Viburnum x *burkwoodii* 'Conoy'
Geranium x *cantabrigiense* 'Biokovo'

2007 *Sciadopitys verticillata*
Skimmia japonica
Abelia grandiflora 'Rose Creek'
Panicum virgatum 'Heavy Metal'

2006 *Hibiscus syriacus* 'Diana'
Ilex pedunculosa
Rosa 'Radyod'
Stachys byzantina 'Helene Von Stein'

2005 *Hydrangea quercifolia*
Picea orientalis
Prunus 'Hally Jolivette'
Waldsteinia ternata

2004 *Hypericum frondosum* 'Sunburst'
Sorbus alnifolia
Sarcococca hookeriana var. *humilis*
Leucanthemum x *superbum* 'Becky'

2003 *Clethra alnifolia* 'Compacta'
Daphne x *transatlantica* 'Jim's Pride' (*Daphne caucasica*)
Heuchera villosa 'Autumn Bride'
Thuja plicata

2002 *Ceratostigma plumbaginoides*
Hydrangea anomala subsp. *petiolaris*
Malus 'Sugar Tyme'
Viburnum dilatatum 'Erie'

2001 *Cephalotaxus harringtonia* 'Duke Gardens'
Epimedium x *perralchicum* 'Frohnleiten'
Rudbeckia nitida 'Autumn Sun'
Stephanandra incisa 'Crispa'

2000 *Fothergilla gardenii*
Microbiota decussata
Stewartia pseudocamellia
Corylopsis pauciflora

Perennial Plant of the Year

The Plant of the Year program, sponsored by the Perennial Plant Association, promotes the use of perennials. Each year members cast their vote for an outstanding perennial with the following criteria:

- Suitable for a wide range of climate types
- Low maintenance needs
- Easily propagated – true from seed or vegetatively propagated
- Exhibits multiple seasonal interest

Perennial Plant of the Year Index

2020 *Aralia cordata* 'Sun King'
2019 *Stachys monieri* 'Hummelo'
2018 *Allium* 'Millenium'
2017 *Asclepias tuberosa*
2016 *Anemone* × *hybrida* 'Honorine Jobert'
2015 *Geranium x cantabrigiense* 'Biokovo'
2014 *Panicum virgatum* 'Northwind'
2013 *Polygonatum odoratum* 'Variegatum'
2012 *Brunnera macrophylla* 'Jack Frost'
2011 *Amsonia hubrichtii*
2010 *Baptisia australis*
2009 *Hakonechloa macra* 'Aureola'
2008 *Geranium roseum*
2007 *Nepeta* 'Walker's Low'
2006 *Dianthus gratianopolitanus* 'Feuerhexe' (Firewitch)
2005 *Helleborus* x *hybridus*
2004 *Athyrium niponicum* 'Pictum'
2003 *Leucanthemum* 'Becky'
2002 *Phlox paniculata* 'David'
2001 *Calamagrostis* x *acutiflora* 'Karl Foerster'
2000 *Scabiosa columbaris* 'Butterfly Blue'
1999 *Rudbeckia fulgida* var. *sullivantii* 'Goldsturm'
1998 *Echinacea purpurea* 'Magnus'
1997 *Salvia* 'May Night'
1996 *Penstemon digitalis* 'Husker Red'
1995 *Perovskia atriplicifolia*
1994 *Astilbe* 'Sprite'
1993 *Veronica* 'Sunny Border Blue'
1992 *Coreopsis verticillata* 'Moonbeam'
1991 *Heuchera micrantha* 'Palace Purple'
1990 *Phlox stolonifera*

Cross Reference for Common Names of Herbaceous Perennials

A

Aaron's Beard	*Hypericum*
Adam's Needle	*Yucca*
Alpine Geranium	*Erodium*
Alpine Strawberry	*Fragaria*
Anemone	*Pulsatilla*
August Lily	*Hosta*
Avens	*Geum*

B

Baby's Breath	*Gypsophilia*
Balloonflower	*Platycodon*
Basket of Gold	*Alyssum*
Beard Tongue	*Penstemon*
Bearded Iris	*Iris germanica*
Bedstraw	*Galium*
Bee Balm	*Monarda*
Bellflower	*Campanula*
Bishop's Hat	*Epimedium*
Black Sedge	*Carex nigra*
Black-eyed Susan	*Rudbeckia*
Blanket Flower	*Gaillardia*
Bleeding Heart	*Dicentra*
Blood root	*Sanguinaria*
Blue Oat Grass	*Helictotrichon*
Border Pinks	*Dianthus*
Bowman's Root	*Veronicastrum*
Bugbane	*Cimicifuga*
Bugleweed	*Ajuga*
Butter Daisey	*Coreopsis*
Butterfly Weed	*Asclepias*

C

Candytuft	*Iberis*
Cardinal Flower	*Lobelia*
Catmint	*Nepeta*
Chinese Lantern	*Physalis*
Christmas Rose	*Helleborous niger*
Cinquefoil	*Potentilla*
Columbine	*Aquilegia*
Coneflower	*Echinacea*
Coral Bells	*Heuchera*
Cornflower	*Cantaurea*
Cranesbill	*Geranium*
Creeping Phlox	*Phlox subulata*
Culver's Root	*Veronicastrum*

D

Daisy	*Chrysanthemum*
Daylily	*Hemerocallis*
Dead Nettle	*Lamiastrum/Lamium*
Dropwort	*Filipendula*

E

Elephant Ears	*Bergenia*
English Daisy	*Bellis*
Evening Primrose	*Oenothera*

F

Fairy Candles	*Cimicifuga*
False Dragonhead	*Physostegia*
False Indigo	*Baptisia*
False Mallow	*Sidalcea*
False Spirea	*Astilbe*
False Starwort	*Boltonia*
False Sunflower	*Heliopsis*
Feather Reed Grass	*Calamogrostis*
Fescue	*Festuca*
Flax	*Linum*
Fleabane	*Erigeron*
Foamflower	*Tiarella*
Fountain Grass	*Pennisetum*
Fox's Brush	*Centranthus*
Foxglove	*Digitalis*
Fume Root	*Corydalis*

G

Gay Feather	*Liatris*
Germander	*Teucrium*
Giant Reed	*Arundo*
Ginger	*Asarum*
Globe Thistle	*Echinops*
Globeflower	*Trollius*
Goatsbeard	*Aruncus*
Goldenrod	*Solidago*

H

Hens & Chicks	*Sempervivum*
Heronsbill	*Erodium*
Hollyhock	*Alcea*

I

Ice Plant	*Delosperma*
Indian Feather	*Gaura*
Indian Pink	*Spigelia*

J

Jack in the Pulpit	*Arisaema*
Jacob's Ladder	*Polemonium*
Japanese Iris	*Iris ensata*
Joe-Pye-Weed	*Eupatorium*
Jupiter's Beard	*Centranthus*

L

Lady's Mantle	*Alchemilla*
Lamb's Ears	*Stachys*
Larkspur	*Delphinium*
Lavander	*Lavandula*
Leadwort	*Ceratostigma*

Lenten Rose	*Helleborus orientalis*
Leopard's Bane	*Doronicum*
Lily of the Valley	*Convallaria*
Lilyturf	*Liriope*
Little Blue Stem	*Schizachryium*
Liverleaf	*Hepatica*
Lungspur	*Delphinium*
Lungwort	*Pulmonaria*
Lyme Grass	*Elymus*

M

Mallow	*Malva*
Marguerite Daisy	*Anthemis*
Maryland Pinkroot	*Spigelia marilandio*
Masterwort	*Astrantia*
Meadow Rue	*Thalictrum*
Meadow Sage	*Salvia*
Meadowsweet	*Filipendula*
Michaelmas Daisy	*Aster*
Mondo Grass	*Ophiopogon*
Monkshood	*Acontium*
Moss Pinks	*Phlox subulata*
Mullein	*Verbascum*

N

New York Aster	*Symphyotrichum novi-belgii*
Northern Sea Oats	*Chasmonthium*

O

Oat Grass	*Arrenatherum*
Obedient Plant	*Physostegia*

P

Pampas Grass	*Cortaderia*
Pasque Flower	*Pulsatilla*
Pearlwort	*Minuartia*
Peony	*Paeonia*
Pincushion Flower	*Scabiosa*
Pinks	*Dianthus*
Plantain Lily	*Hosta*
Plumbago	*Ceratostigma*
Plume Grass	*Erianthus*
Poker Plant	*Kniphofia*
Purple Rock Cress	*Aubrieta*

R

Rock Cress	*Arabis*
Rock Rose	*Helianthemum*
Roger's Flower	*Rodgersia*
Rush	*Juncus*
Russian Sage	*Perovskia*

S

Sage	*Salvia*
Sea Thrift	*Armeria*
Seaside Daisy	*Erigeron*
Siberian Iris	*Iris siberica*

Snakeroot	*Actaea* (syn. *Cimicifuga)*
Sneezeweed	*Helenium*
Snow in Summer	*Cerastium*
Soapwort	*Saponaria*
Solomon's Seal	*Polygonatum*
Spiderwort	*Tradescantia*
St. John's Wort	*Hypericum*
Stonecrop	*Sedum*
Swamp Milkweed	*Asclepias*
Sweet Pea	*Lathyrus*
Sweet Woodruff	*Galium*
Switch Grass	*Panicum*

T

Thyme	*Thymus*
Tickseed	*Coreopsis*
Toadlily	*Tricyrtis*
Tree Mallow	*Lavatera*
Tritoma	*Kniphofia*
Turtlehead	*Chelone*
Trout Lily	*Erythronium*

W

Windflower	*Anemone*
Worm Grass	*Spigelia*

Y

Yarrow	*Achillea*

Cross Reference for Common Names of Woody Ornamentals

A

Abelia	*Abelia*
Alder	*Alnus*
Andromeda, Japanese	*Pieris*
Apple, Fruiting	*Malus*
Arborvitae	*Thuja*
Arrowwood	*Viburnum dentatum*
Ash	*Fraxinus*
Aspen	*Populus*
Azalea	*Rhododendron*

B

Bald cypress	*Taxodium*
Basswood	*Tilia*
Bayberry	*Morella*
Bearberry	*Arctostaphylos*
Beautyberry	*Callicarpa*
Beautybush	*Kolkwitzia*
Beech	*Fagus*
Birch	*Betula*

Bittersweet	*Celastrus scandens*
Black Gum	*Nyssa*
Blackhaw	*Viburnum prunifolium*
Blueberry	*Vaccinium*
Boxwood	*Buxus*
Broom	*Cytisus*
Buckeye	*Aesculus*

C

Catalpa	*Catalpa*
Cedar	*Cedrus*
Cherry	*Prunus*
Cherry Laurel	*Prunus laurocerasus*
Cherry, Kwanzan	*Prunus serrulata* 'Kwanzan'
Chokeberry	*Aronia*
Cinquefoil	*Potentilla*
Coffeetree	*Gymnocladus*
Coralberry	*Symphoricarpos*
Corneliancherry	*Cornus mas*
Cotoneaster	*Cotoneaster*
Crabapple, flowering	*Malus*
Cryptomeria	*Cryptomeria*
Cucumber tree	*Magnolia acuminata*
Cypress (false)	*Chamaecyparis*
Cypress, bald	*Taxodium*
Cypress, Hinoki False	*Chamaecyparis obtusa*

D

Dawn Redwood	*Metasequoia glyptostroboides*
Deutzia	*Deutzia*
Dogwood	*Cornus, Benthamidia*
Douglas-Fir	*Pseudotsuga*
Dove-tree	*Davidia*

E

Elm	*Ulmus*

F

False Cypress	*Chamaecyparis*
Filbert	*Corylus*
Fir	*Abies*
Firethorn	*Pyracantha*
Fothergilla	*Fothergilla*
Franklinia	*Franklinia alatamaha*
Fringetree	*Chionanthus*

G

Ginkgo	*Ginkgo*
Golden Rain Tree	*Koelreuteria*
Goldenchain tree	*Laburnum*

H

Hackberry	*Celtis*
Hawthorn	*Crataegus*
Heath	*Erica*
Heather	*Calluna*
Hemlock	*Tsuga*

Hickory	*Carya*
Holly	*Ilex*
Holly, False	*Osmanthus*
Holly, Japanese	*Ilex crenata*
Honeylocust	*Gleditsia*
Hophornbeam	*Ostrya*
Hornbeam	*Carpinus*
Horsechestnut	*Aesculus*
Hydrangea	*Hydrangea*

I

Inkberry	*Ilex glabra*
Ironwood	*Carpinus*

J

Japanese Pagodatree	*Styphnolobium japonicum*
Juniper	*Juniperus*

K

Kerria (Japanese)	*Kerria japonica*

L

Larch	*Larix*
Lawson cypress	*Chamaecyparis lawsoniana*
Lilac	*Syringa*
Linden	*Tilia*
London Plane Tree	*Platanus x acerifolia*
Longstalk Holly	*Ilex pedunculosa*

M

Maackia	*Maackia*
Magnolia	*Magnolia*
Maidenhair-tree	*Ginkgo*
Maple	*Acer*
Maple, Japanese	*Acer palmatum*
Mimosa	*Albizia*
Mock Orange	*Philadelphus*
Mountain Ash	*Sorbus*
Mountain Laurel	*Kalmia*

N

Nannyberry	*Viburnum lentago*

O

Oak	*Quercus*
Osage Orange	*Maclura*

P

Pagoda Tree	*Styphnolobium*
Pawpaw	*Asminia*
Pear	*Pyrus*
Persian Parrotia	*Parrotia persica*
Persimmon	*Diospyros*
Pine	*Pinus*
Planetree	*Platanus*
Plum	*Prunus*
Plum, Beach	*Prunus maritima*

Pondcypress	*Taxodium*
Poplar	*Populus*
Possumhaw	*Ilex decidua*

Q

Quince	*Chaenomeles*

R

Redbud	*Cercis*
Rhododendron	*Rhododendron*
Rose	*Rosa*
Rose-of-Sharon	*Hibiscus*
Rubber tree (hardy)	*Eucommia*

S

Sassafras	*Sassafras*
Scholar-tree	*Styphnolobium japonicum*
Serviceberry	*Amelanchier*
Silverbell	*Halesia*
Smoke Tree	*Cotinus*
Sourgum	*Nyssa*
Sourwood	*Oxydendrum*
Spruce	*Picea*
St. Johnswort	*Hypericum*
Stewartia	*Stewartia*
Sumac	*Rhus*
Summersweet	*Clethra alnifolia*
Sweetgum	*Liquidambar*
Sweetshrub	*Calycanthus floridus*
Sweetspire	*Itea*
Sycamore	*Platanus*

T

Tuliptree	*Liriodendron*
Tupelo	*Nyssa*

V

Viburnum	*Viburnum*
Virginia creeper	*Parthenocissus quinquefolia*

W

Walnut	*Juglans*
Weigela	*Weigela*
Willow	*Salix*
Winterberry	*Ilex verticillata*
Witchhazel	*Hamamelis*

Y

Yellowwood	*Cladrastis*
Yew	*Taxus*

Z

Zelkova	*Zelkova*

Dioecious Plants

Dioecious means "two houses" and is a term used to describe species where male and female flowers exist on separate plants. Dioecious plants require the presence of both male and female plants if fruit production is desired. Fruit production may be wanted for ornamental characteristics or breeding programs in which case, both sexes need to be present to ensure fruit production. In other situations, where fruit is offensive due to unpleasant odors or litter problems, planting male cultivars is the only way to guarantee that fruit will not develop.

Following is a partial list of genera with one or more dioecious species:

Acer
Aucuba
Cephalotaxus
Chionanthus
Cotinus
Fraxinus
Ginkgo
Gymnocladus
Ilex
Juniperus
Lindera
Morella
Salix
Skimmia
Taxus

Assuring Holly Berries

One male plant can pollinate many closely related female species in the vicinity as long as flowering occurs at the same time. Fruit production does not guarantee viable seed.

The following male hollies

Ilex 'China Boy'
Ilex x *meserveae* 'Blue Prince'
'Blue Stallion'

can pollinate the following female hollies.

Ilex aquifolium (English)
Ilex aquipernyi 'Dragon Lady'
Ilex 'China Girl'
Ilex x *meserveae* 'Blue Angel'
'Blue Maid'
'Blue Princess'
'Golden Girl'

The following male holly

Ilex verticillata 'Early Male'

can pollinate the following female hollies.

Ilex verticillata 'Bright Horizon'
Ilex verticillata 'Early Bright'
Ilex verticillata 'Sparkleberry'
Ilex verticillata 'Winter Red'

The following male holly

Ilex verticillata 'Raritan Chief'

can pollinate the following females:

Ilex verticillata 'Autumn Glow'
Ilex verticillata 'Bonfire'
Ilex verticillata 'Harvest Red'
Ilex verticillata 'Red Sprite'
Ilex verticillata 'Scarlet O'Hara'
Ilex verticillata 'Sparkleberry'
Ilex verticillata 'Winter Red'

Invasive Plants

What is an invasive species?

An invasive species is legally defined as an organism that is not native to the ecosystem under consideration AND whose introduction causes or is likely to cause harm to the environment, economy, and/or human health.

What makes a plant invasive?

The following characteristics allow a plant to adapt quickly to a new environment, thrive, and spread. Most invasive plants possess one or more of these characteristics:

- Abundant reproduction
- Rapid growth rate
- Short generation time
- Ability to occupy many different habitats
- Ability to adapt to changing environments
- Effective seed dispersal
- Long-lived seeds
- Poisonous or allergenic to other organisms

It should be noted that only a very small percentage of all the non-native species in the United States are actually invasive. However, this small percentage is able to cause an incredible amount of damage to native ecosystems.

What is being done about invasive plants on Long Island?

Representatives from federal, state, and county agencies and private organizations across Long Island have come together and recognized the problem of invasive species. In 2007, both Nassau and Suffolk Counties passed legislation that prohibited the sale, transport, distribution, and propagation of dozens of invasive plants. This list of invasive plants has been termed the "Do Not Sell List." Banned plants currently on the Do Not Sell List are listed in Table 1. Invasive plants to be added to the Do Not Sell List are listed in Table 2 along with their ban date.

The Nassau and Suffolk Counties' invasive plant legislation is similar to legislation passed in other localities such as the State of Connecticut and the Commonwealth of Massachusetts. Connecticut began banning the sale, transport, distribution, and propagation of select invasive plants May 2004. Massachusetts began banning the importation of select invasive plants January 1st, 2006.

What can I do about invasive plants?

Educate yourself and your clients on how to identify invasive plants. Start with your own nursery or landscape and make sure to not sell or plant species that are on the Do Not Sell and Management Lists. Consider growing or planting species native to Long Island or the Northeast. Native plants seem to be gaining in popularity and this may be a growing niche market that you can capitalize on. However, be sure to remember that there are also many non-native, NON-invasive ornamental plants that also make great selections. If you are planting in a tough location, you will have more choices in your plant palette if you use both natives and non-invasive, non-natives.

For more information:

- Cornell Cooperative Extension of Suffolk County www.ccesuffolk.org
- Long Island Invasive Species Management www.nyis.info/?action=liisma_pages
- New York Invasive Species Clearinghouse www.nyis.info
- New York Flora Atlas www.newyork.plantatlas.usf.edu
- Invasive Plants of the Eastern United States www.invasive.org/eastern/
- The Global Invasive Species Database www.issg.org/database/welcome/
- Brooklyn Botanic Garden, 1000 Washington Avenue Brooklyn, NY 11225, 718-623-7200 • www.bbg.org
- Nassau County Local Law 24-2007 (Amended LL 22-2010): www.nassaucountyny.gov/agencies/Legis/local.html
- Suffolk County Local Law 22-2007 (Amended LL 51-2010 & LL 30-2015): Chapter 278A Article 2 http://legis.suffolkcountyny.gov/main.html
- Alvey, A.A. 2013. *Finding Alternatives to Invasive Ornamental Plants in New York.* Cornell Cooperative Extension. 126 pp
- Burrell, C. 2007. *Native Alternatives to Invasive Plants.* Brooklyn Botanic Garden, Inc: Brooklyn, NY. 240 pp.
- Randall, J. and J. Marinelli, 1996. *Invasive Plants: Weeds of the Global Garden.* Brooklyn Botanic Garden Publications, Handbook #149 in the 21st Century Gardening Series, Science Press, a division of the Mack Printing Group.

Table 1: The Do Not Sell List

Plants (including cultivars) currently banned in Nassau and Suffolk Counties as of 2016

Acer platanoides (including all red & green cultivars)	Norway maple
Acer pseudoplatanus	Sycamore maple
Alliaria petiolata	Garlic mustard
Ampelopsis brevipedunculata	Porcelain-berry
Anthriscus sylvestris	Wild chervil
Aralia elata	Japanese angelica tree
Artemisia vulgaris	Mugwort, Common wormwood
Berberis thunbergii (includes all hybrids with other Berberis species)	Japanese barberry
Brachypodium sylvaticum	Slender false broom
Cabomba caroliniana	Carolina fanwort
Cardamine impatiens	Narrowleaf bittercress
Celastrus orbiculatus	Oriental bittersweet
Centaurea stoebe ssp. *micranthos*	Spotted knapweed, Spotted star-thistle
Cirsium arvense	Canada thistle
Clematis terniflora	Japanese virgin's bower, Sweetautumn clematis
Cynanchum louiseae	Black swallow-wort
Cynanchum rossicum	European or Pale swallow-wort
Dioscorea polystachya	Chinese yam, cinnamon vine
Egeria densa	Brazilian water weed
Elaeagnus umbellata	Autumn-olive
Euonymus alatus	Winged euonymus, Burning bush
Euonymus fortunei	Wintercreeper euonymus
Euphorbia cyparissias	Cypress spurge
Fallopia japonica	Japanese knotweed
Fallopia sachalinensis	Giant knotweed
Frangula alnus	Smooth buckthorn
Glyceria maxima	English Watergrass
Humulus japonicus	Japanese hops
Hydrilla verticillata	Hydrilla, Water tyme
Hydrocharis morsus-ranae	Frogbit
Imperata cylindrica (except 'Red Baron')	Cogon grass
Iris pseudacorus	Yellow flag iris
Lepidium latifolium	Broadleaf pepperweed
Lespedeza cuneata	Chinese lespedeza
Ligustrum obtusifolium	Border privet
Lonicera x *bella*	Bell's honeysuckle
Lonicera japonica	Japanese honeysuckle
Lonicera maackii	Amur honeysuckle
Lonicera morrowii	Morrow's honeysuckle
Lonicera tatarica	Tatarian honeysuckle
Ludwigia grandiflora	Uruguayan primrose-willow
Ludwigia peploides	Floating primrose-willow
Lythrum salicaria	Purple loosestrife
Miscanthus sinesis	Japanese silver grass, Maiden grass
Microstegium vimineum	Japanese stilt grass
Murdannia keisak	Marsh dewflower
Myriophyllum aquaticum	Parrot feather, Brazilian water-milfoil

Do Not Sell List, cont.

Myriophyllum heterophyllum	Broadleaf water-milfoil
Myriophyllum spicatum	Eurasian water-milfoil
Nymphoides peltata	Yellow floating heart
Oplismenus hirtellus	Wavy leaf basketgrass
Persicaria perfoliata	Mile-a-minute weed
Phalaris arundinacea	Reed canary-grass
Phellodendron amurense	Amur corktree
Phragmites australis ssp. *australis*	European common reed grass
Potamogeton crispus	Curly pondweed
Pueraria montana var. *lobata*	Kudzu
Ranunculus ficaria	Lesser celandine
Rhamnus cathartica	Common buckthorn
Robinia pseudoacacia	Black locust
Rosa multiflora	Multiflora rose

Do Not Sell List, cont.

Rubus phoenicolasius	Wineberry
Salix atrocinerea/ cinerea	Gray florist's willow
Silphium perfoliatum var. *perfoliatum*	Cup-plant
Trapa natans	Water chestnut
Vitex rotundifolia	Beach vitex, Roundleaf chastetree

Table 3: The Management List

(Moderately invasive plants NOT banned in Nassau and Suffolk Counties)

Acer ginnala	Amur maple
Acer palmatum	Japanese maple
Aegopodium podagraria	Goutweed
Agrostis gigantea	Redtop, Black bentgrass
Agrostis stolonifera	Creeping bentgrass
Ailanthus altissima	Tree-of-heaven
Aira caryophyllea	Silver hairgrass
Akebia quinata	Fiveleaf Akebia, Chocolate vine
Allium vineale	Field garlic
Alnus glutinosa	Euorpean or Black alder
Amorpha fruticosa	False indigo
Arthraxon hispidus	Arthraxon
Arundinaria gigantea	Canebreak, Giant cane
Berberis vulgaris	Common or European barberry
Bromus tectorum	Cheat grass, Drooping brome
Butomus umbellatus	Flowering rush
Carex kobomugi	Japanese sedge, Asiatic sand sedge
Centaurea jacea	Black knapweed
Cercidiphyllum japonicum	Katsuratree
Coronilla varia	Crown vetch
Cyperus difformis	Variable flat sedge
Datura stramonium	Jimsonweed
Digitalis purpurea	Purple foxglove
Elaeagnus angustifolia	Russian-olive
Elsholtzia ciliata	Crested elsholtzia
Epilobium hirsutum	Hairy willow herb, Codlins and cream
Eragrostis curvula	Weeping love grass
Euonymus europaeus	European spindletree
Euphorbia esula	Leafy spurge
Euphorbia lathyris	Caper spurge
Fallopia baldschuanica	Silver lace or fleece vine
Festuca filiformis	Hair fescue, Fineleaf sheep fescue
Froelichia gracilis	Cottonweed
Galega officinalis	Professor weed, Goat's rue
Geranium nepalense	Nepalese crane's-bill
Glaucium flavum	Sea poppy, Yellow horned poppy
Glechoma hederacea	Ground-ivy
Hedera helix	English ivy
Heracleum mantegazzianum	Giant hogweed
Hesperis matronalis	Dame's rocket
Ipomoea hederacea	Morning glory
Kochia scoparia	Mexican summer-cypress
Lespedeza bicolor/ thunbergii	Shrubby bush clover
Ligustrum vulgare	European privet

Management List, cont.

Lotus corniculatus	Bird's foot trefoil
Lychnis flos-cuculi	Ragged robin
Lysimachia nummularia	Creeping Jenny, Moneywort
Lysimachia punctata	Spotted loosestrife
Lysimachia vulgaris	Garden loosestrife
Morus alba	White mulberry
Nasturtium officinale	Watercress
Nelumbo nucifera	Sacred lotus
Onopordum acanthium	Scotch cotton-thistle
Ornithogalum umbellatum	Star-of-Bethlehem
Paulownia tomentosa	Princess tree
Persicaria longiseta	Creeping smartweed
Phleum pratense	Timothy
Phyllostachys spp.	Bamboo
Pinus thunbergii	Japanese black pine
Poa compressa	Canada bluegrass
Poa pratensis	Kentucky bluegrass
Populus alba	White poplar
Prunus avium	Sweet cherry
Prunus cerasus	Sour red cherry
Prunus padus	European bird cherry
Pseudosasa japonica	Arrow bamboo
Pyrus calleryana	Callery pear
Ranunculus repens	Creeping buttercup
Rhodotypos scandens	Jetbead
Rhamnus frangula	Smooth buckthorn
Rosa rugosa	Japanese or Rugosa rose
Rubus bifrons	Himalayan blackberry
Rubus laciniatus	Evergreen blackberry
Rumex acetosella	Sheep sorrel
Saponaria officinalis	Bouncing bet
Schedonorus arundinaceus	Tall fescue
Senecio jacobaea	Tansy ragwort
Solanum dulcamara	Trailing nightshade
Spiraea japonica	Japanese spirea
Styrax japonicus	Japanese snowbell
Tribulus terrestris	Puncture vine
Tussilago farfara	Coltsfoot
Ulmus pumila	Siberian elm
Valeriana officinalis	Common valerian
Veronica officinalis	Speedwell
Viburnum dilatatum	Linden arrowwood
Viburnum opulus var. *opulus*	European cranberry bush
Viburnum sieboldii	Siebold Viburnum
Vicia cracca	Cow vetch
Vinca minor	Periwinkle
Wisteria sinensis/ floribunda	Chinese and Japanese wisteria

Alternatives to Ornamental Invasive Plants

Invasive Plants Banned on Long Island & Their Alternatives with Respective Ban Dates (Plants on the Do Not Sell List)

Long Island Invasive Species Management Area http://www.nyis.info/?action=liisma_pages

Norway Maple *Acer platanoides* [z] **1/1/2013**
- **Freeman Maple**** *Acer* x *freemanii*
- **Red Maple**** *Acer rubrum*
- **Sugar Maple**** *Acer saccharum*
- **Lacebark Elm** *Ulmus parvifolia*

For red cultivars of *A. platanoides* including 'Crimson King' and 'Royal Red' **1/1/2016**
- **Eastern Redbud*** *Cercis canadensis* (Purple cultivars)
- **European Beech** *Fagus sylvatica* (Purple cultivars)
- **Chokecherry**** *Prunus virginiana* (Purple cultivars)

Porcelain-berry *Ampelopsis brevipedunculata* [x] **1/1/2009**
- **Bodinier** or **Purple Beautyberry** *Callicarpa bodinieri; C. dichotoma*
- **Trumpet Honeysuckle**** *Lonicera sempervirens*
- **Coralberry*** *Symphoricarpos orbiculatus* & hybrids

Japanese Angelica Tree *Aralia elata* [x] **1/1/2009**
For variegated cultivars of *A. elata*:
- **Pagoda Dogwood** **Cornus alternifolia* (Variegated cultivars)
- **Kousa Dogwood** *Cornus kousa* (Variegated cultivars)
- **Staghorn Sumac**** *Rhus typhina* (Cutleaf cultivars)

Japanese Barberry *Berberis thunbergii* [x] **1/1/2014**
For dwarf purple cultivars of *B. thunbergii*:
- **Old Fashioned Weigela** *Weigela florida* (Dwarf purple cultivars)

[z] Regulated under Regulation 6 NYCRR Part 575 Prohibited & Regulated Invasive Species.
[x] Prohibited under Regulation 6 NYCRR Part 575 Prohibited & Regulated Invasive Species. (*Berberis thunbergiri* prohibited on the Suffolk County Do Not Sell List & prohibited under State law after March 2016.
* Native to the United States
** Native to New York State (hybrids and cultivars of native species included)

For standard purple cultivars of *B. thunbergii*:
- **Smokebush** *Cotinus coggygria* (Purple cultivars)
- **Eastern Ninebark**** *Physocarpus opulifolius* (Purple cultivars)
- **Old Fashioned Weigela** *Weigela florida* (Large, purple cultivars)

For yellow or gold cultivars of *B. thunbergii*:
- **Glossy Abelia** *Abelia* x *grandiflora* (Yellow cultivars)
- **Border** or **Greenstem Forsythia** *Forsythia* x *intermedia*; *F. viridissima* (Yellow cultivars)
- **Boxleaf Honeysuckle** *Lonicera nitida* (Yellow cultivars)
- **Old Fashioned Weigela** *Weigela florida* (Yellow cultivars)

For green cultivars of *B. thunbergii*:
- **Cranberry Cotoneaster** *Cotoneaster apiculatus*
- **Bush Cinquefoil**** *Potentilla fruticosa*
- **Fragrant Sumac**** *Rhus aromatica* (Dwarf cultivars)
- **Old Fashioned Weigela** *Weigela florida*

Sweetautumn Clematis or **Japanese Virgin's Bower** *Clematis terniflora* [z] **1/1/2011**
- **Anemone Clematis** *Clematis montana*
- **Virgin's Bower**** *Clematis virginiana*
- **Climbing Hydrangea** *Hydrangea anomala* subsp. *petiolaris*

Autumn-olive *Elaeagnus umbellata* [x] **1/1/2009**
- **Eastern Baccharis**** *Baccharis halimifolia*
- **Sweetfern**** *Comptonia peregrina*
- **Northern Bayberry**** *Morella caroliniensis*

Winged Euonymus or **Burning Bush** *Euonymus alatus* [z] **1/1/2016**
- **Red**** or **Black**** **Chokeberry** *Aronia arbutifolia; A. melanocarpa*
- **Dwarf*, Hybrid*, or Large* Fothergilla** *Fothergilla gardenii; F.* x *intermedia; F. major*
- **Virginia Sweetspire*** *Itea virginica*
- **Doublefile Viburnum** *Viburnum plicatum* var. *tomentosum*

Wintercreeper Euonymus *Euonymus fortunei* [z] **1/1/2013**
For the groundcover habit of *E. fortunei*:
- **Bearberry**** *Arctostaphylos uva-ursi*
- **Bearberry Cotoneaster** *Cotoneaster dammeri*
- **Willowleaf Cotoneaster** *Cotoneaster salicifolius* (Low-growing cultivars)
- **Creeping Raspberry** *Rubus calycinoides (Rubus pentalobus)*

For the shrub habit of *E. fortunei*:
- **Dwarf Japanese Aucuba** *Aucuba japonica* (Dwarf cultivars)
- **Japanese Skimmia** *Skimmia japonica*

Yellow Flag Iris *Iris pseudacorus* [x] **1/1/2012**
- **Louisiana Irises*** *Iris* spp. (Yellow flowering cultivars)
- **Japanese Iris** *Iris ensata*
- **Blueflag Iris**** *Iris versicolor*

Bell, Amur, Morrow, and **Tatarian Shrub Honeysuckle** [x] **1/1/2011**
Lonicera x bella; L. maackii; L. morrowii; L. tatarica
- **Deutzia** *Deutzia* spp.
- **Beautybush** *Kolkwitzia amabilis*
- **Mockorange*** (some species native to U.S.) *Philadelphus* spp.
- **Nippon** or **Vanhoutte Spirea** *Spiraea nipponica; S. x vanhouttei*

Japanese Honeysuckle *Lonicera japonica* [x] **1/1/2011**
- **Crossvine*** *Bignonia capreolata*
- **Carolina Yellow Jessamine*** *Gelsemium sempervirens* (Cold hardy cultivars)
- **Goldflame Honeysuckle** *Lonicera* x *heckrottii*
- **Trumpet Honeysuckle**** *Lonicera sempervirens*

Purple Loosestrife *Lythrum salicaria* [x] **1/1/2009**
- **Meadowsweet** *Filipendula purpurea*; *F. rubra**
- **Dense Blazing Star*** *Liatris spicata*
- **Obedient Plant**** *Physostegia virginiana*
- **Perennial Sage** *Salvia nemorosa (S.* x *superba; S.* x *sylvestris)*

Japanese Silver Grass or **Maiden Grass** [z] *Miscanthus sinensis* **1/1/2016**
- **Feather Reed Grass** *Calamagrostis* x *acutiflora*
- **Korean Feather Reed Grass** *Calamagrostis brachytricha*
- **Pink Muhly Grass**** *Muhlenbergia capillaris*
- **Switchgrass**** *Panicum virgatum*

Amur Corktree *Phellodendron amurense* [x] **1/1/2013**
- **Honeylocust*** *Gleditsia triacanthos* var. *inermis*
- **Kentucky Coffeetree**** *Gymnocladus dioicus*
- **Lacebark Elm** *Ulmus parvifolia*

Black Locust *Robinia pseudoacacia* [z] **1/1/2013**
For gold cultivars of *R. pseudoacacia*:
- **Honeylocust*** *Gleditsia triacanthos* var. *inermis* (Gold cultivars)

Moderately Invasive Plants NOT Banned on Long Island & Their Alternatives (Plants on the Management List)

Amur Maple *Acer ginnala*
- Trident Maple *Acer buergerianum*
- Eastern Redbud* *Cercis canadensis*
- Red Buckeye Aesculus

Russian-olive *Elaeagnus angustifolia*
- **Chinese** or **White*Fringetree** *Chionanthus retusus; C. virginicus**
- **Corkscrew Willow** *Salix matsudana*
- **Chastetree** *Vitex agnus-castus*

English Ivy *Hedera helix*
- **Crossvine*** *Bignonia capreolata*
- **Carolina Yellow Jessamine*** *Gelsemium sempervirens* (Cold hardy cultivars)
- **Climbing Hydrangea** *Hydrangea anomala* subsp. *petiolaris*
- **Japanese Hydrangea-vine** *Schizophragma* hydrangeoides

Creeping Jenny or **Moneywort** *Lysimachia nummularia*
- **Green and Gold*** *Chrysogonum virginianum*
- **Spotted Dead Nettle** *Lamium maculatum*
- **Creeping Mazus** *Mazus reptans*
- **Siberian Barren-strawberry** *Waldsteinia ternata*

For gold cultivars of *L. nummularia*:

Coral* or **Foamy Bells** *Heuchera;* X *Heucherella* (Gold cultivars)

Goldmoss Stonecrop *Sedum acre*

Japanese Stonecrop *Sedum makinoi* (Gold cultivars)

Creeping Speedwell *Veronica prostrata; V. repens* (Gold cultivars)

Japanese Black Pine *Pinus thunbergii*

Limber Pine* *Pinus flexilis*

Japanese White Pine *Pinus parviflora*

Pitch Pine** *Pinus rigida*

Callery Pear *Pyrus calleryana*

Downy, Apple****, or **Allegheny** Serviceberry** *Amelanchier arborea; A.* x *grandiflora; A. laevis*

Hybrid Dogwood *Cornus* spp.

Green Hawthorn* *Crataegus viridis*

Loebner or **Star Magnolia** *Magnolia* x *loebneri; M. stellata*

Rugosa Rose *Rosa rugosa*

Bush Cinquefoil** *Potentilla fruticosa*

Beach Plum** *Prunus maritima*

Shrub Roses *Rosa* spp.

Virginia Rose** *Rosa virginiana*

Common Periwinkle *Vinca minor*

Barrenwort *Epimedium* x *perralchicum; E.* x *versicolor*

Creeping Mazus *Mazus reptans*

Creeping Phlox* *Phlox stolonifera*

Dwarf Sweetbox *Sarcococca hookeriana* var. *humilis*

Japanese and **Chinese Wisteria** *Wisteria floribunda; W. sinensis*

Climbing Hydrangea *Hydrangea anomala* subsp. *petiolaris*

Japanese Hydrangea-vine *Schizophragma hydrangeoides*

American Wisteria* *Wisteria frutescens*

NYS Prohibited and Regulated Invasive Species

The following plant species are 'Prohibited' under the NYS regulations.

Prohibited plants must not be sold, imported, purchased, transported, introduced or propagated, or possessed with the intent to sell, import, purchase, transport, or introduce.

Acer pseudoplatanus, Sycamore Maple
Achyranthes japonica, Japanese Chaff Flower
Alliaria petiolata, Garlic Mustard
Ampelopsis brevipedunculata, Porcelain Berry
Anthriscus sylvestris, Wild Chervil
Aralia elata, Japanese Angelica Tree
Artemisia vulgaris, Mugwort
Arthraxon hispidus, Small Carpet Grass
Berberis thunbergii, Japanese Barberry
Brachypodium sylvaticum, Slender False Brome
Cabomba caroliniana, Fanwort
Cardamine impatiens, Narrowleaf Bittercress
Celastrus orbiculatus, Oriental Bittersweet
Centaurea stoebe (*C. biebersteinii, C. diffusa, C. maculosa misapplied, C.* x *psammogena*), Spotted Knapweed
Cirsium arvense (*C. setosum, C. incanum, Serratula arvensis*), Canada Thistle
Cynanchum louiseae (C. nigrum, Vincetoxicum nigrum), Black Swallow-wort
Cynanchum rossicum (*C. medium, Vincetoxicum medium, V. rossicum*), Pale Swallow-wort
Dioscorea polystachya (*D. batatas*), Chinese Yam
Dipsacus laciniatus, Cut-leaf Teasel
Egeria densa, Brazilian Waterweed
Elaeagnus umbellata, Autumn Olive
Euphorbia cyparissias, Cypress Spurge
Euphorbia esula, Leafy Spurge
Ficaria verna (*Ranunculus ficaria*), Lesser Celandine
Frangula alnus (*Rhamnus frangula*), Smooth Buckthorn
Glyceria maxima, Reed Manna Grass
Heracleum mantegazzianum, Giant Hogweed
Humulus japonicus, Japanese Hops
Hydrilla verticillata, Hydrilla, Water Thyme
Hydrocharis morus-ranae, European Frogbit
Imperata cylindrica (*I. arundinacea, Lagurus cylindricus*), Cogon Grass
Iris pseudacorus, Yellow Iris
Lepidium latifolium, Broad-leaved Pepper-grass
Lespedeza cuneata, Chinese Lespedeza

NYS Prohibited Invasive Species, cont.

Ligustrum obtusifolium, Border Privet
Lonicera japonica, Japanese Honeysuckle
Lonicera maackii, Amur Honeysuckle
Lonicera morrowii, Morrow's Honeysuckle
Lonicera tatarica, Tartarian Honeysuckle
Lonicera x *bella*, Fly Honeysuckle
Ludwigia hexapetala (*L. grandiflora*), Uruguayan Primrose Willow
Ludwigia peploides, Floating Primrose Willow
Lysimachia vulgaris, Garden Loosestrife
Lythrum salicaria, Purple Loosestrife
Microstegium vimineum, Japanese Stilt Grass
Murdannia keisak, Marsh Dewflower
Myriophyllum aquaticum, Parrot-feather
Myriophyllum heterophyllum, Broadleaf Water-milfoil
Myriophyllum heterophyllum x *M. laxum*, Broadleaf Water-milfoil Hybrid
Myriophyllum spicatum, Eurasian Water-milfoil
Nymphoides peltata, Yellow Floating Heart
Oplismenus hirtellus, Wavyleaf Basketgrass
Persicaria perfoliata (*Polygonum perfoliatum*), Mile-a-minute Weed
Phellodendron amurense, Amur Cork Tree
Phragmites australis, Common Reed Grass
Phyllostachys aurea, Golden Bamboo
Phyllostachys aureosulcata, Yellow Groove Bamboo
Potamogeton crispus, Curly Pondweed
Pueraria montana, Kudzu
Reynoutria japonica (*Fallopia japonica, Polygonum cuspidatum*), Japanese Knotweed
Reynoutria sachalinensis (*Fallopia sachalinensis, Polygonum sachalinensis*), Giant Knotweed
Reynoutria x *bohemica* (*Fallopia* x *bohemica*, *Polygonum* x *bohemica*), Bohemian Knotweed
Rhamnus cathartica, Common Buckthorn
Rosa multiflora, Multiflora Rose
Rubus phoenicolasius, Wineberry
Salix atrocinerea, Gray Florist's Willow
Silphium perfoliatum, Cup-plant
Trapa natans, Water Chestnut
Vitex rotundifolia, Beach Vitex

There is one plant species that is currently on the Do-Not-Sell List in Suffolk County, but is not prohibited by the NYS regulation, *Phalaris arundinacea*, reed canary-grass. This species will continue to be prohibited in Suffolk County.

A few plant species will be 'Regulated', according to the NYS regulation. 'Regulated' indicates that the plant will be legal to possess, sell, buy, propagate and transport be sold, but must not be knowingly introduced into a free-living state (unconfined and outside the control of a person in areas such as public lands, natural areas, lands continually or intermittently connected to public or natural lands). In addition, there are specifications for labeling regulated species for sale as well as written communication to the purchasing customer detailing the species invasive risk and instructions for preventing the spread of the plant species. Note that currently all the below plants are currently on or are scheduled to soon be added the Do-Not-Sell List for Suffolk County.

The following plant species are 'Regulated' under the NYS regulation. Note that all the below plants are currently on the Do-Not-Sell list for Suffolk County.

Acer platanoides, Norway Maple
Clematis terniflora, Japanese Virgin's Bower
Euonymus alatus, Burning Bush
Euonymus fortunei, Winter Creeper
Miscanthus sinensis, Chinese Silver Grass
Robinia pseudoacacia, Black Locust

Cultivar Exemptions of Invasive Species for NYS

These exemptions apply to the Suffolk County invasive plant species law, and the NYS invasive species regulation.

Exempt Cultivars of Prohibited Species

Common Name	Scientific Name	Cultivar Name	Trademark Name	Status
Japanese Barberry	*Berberis thunbergii*	'Aurea'		Conditionally Exempt [a]
Japanese Barberry	*Berberis thunbergii*	'UCONN-BTCP4N'	Crimson Cutie	Conditionally Exempt
Japanese Barberry	*Berberis thunbergii*	'UCONN-BTB113'	Lemon Cutie	Conditionally Exempt
Japanese Barberry	*Berberis thunbergii*	'UCONN-BTB048'	Lemon Glow	Conditionally Exempt

Exempt Cultivars of Regulated Species

Common Name	Scientific Name	Cultivar Name	Trademark Name	Status
Chinese Silvergrass	*Miscanthus sinensis*	'NCMS1'	My Fair Maiden	Conditionally Exempt
Chinese Silvergrass	Miscanthus sinensis	'Tift M77'	Scout	Conditionally Exempt
Wintercreeper	*Euonymus fortunei*	'Kewensis'		Conditionally Exempt
Wintercreeper	*Euonymus fortunei*	'Vanilla Frosting'		Conditionally Exempt

[a] Conditionally Exempt – Cultivars exempt from Part 575 Prohibited and Regulated requirements, subject to periodic re-evaluation.
You can request a cultivar to be reviewed to determine if it meets the requirements of exemption by submitting a Cultivar Assessment Request Form. If you would like a copy of the Cultivar Assessment Request Form, contact <isinfo@dec.ny.gov> or Nora Catlin (<nora.catlin@cornell.edu>, 631-727-785 x214).

Plants that Attract Birds and Butterflies

Birds

Trees

Aesculus pavia
Amelanchier
Celtis laevigata
Celtis occidentalis
Cornus florida
Crataegus
Fagus grandifolia
Juniperus virginiana
Liquidambar styraciflua
Malus
Nyssa sylvatica
Sorbus

Shrubs/Vines

Aronia arbutifolia
Aronia melanocarpa
Bignonia capreolata
Cotoneaster
Ilex decidua
Ilex verticillata
Lindera benzoin
Photinia villosa
Pyracantha
Rubus
Sambucus canadensis
Symphoricarpos orbiculatus
Vaccinium corymbosum
Viburnum prunifolium
Viburnum trilobum
Vitis
Weigela florida

Perennials

Agastache
Ajuga
Alcea
Aquilegia
Asclepias
Aster x *frikartii*
Campanula
Chelone
Coreopsis
Crocosmia
Echinacea purpurea
Echinops
Helianthus
Heuchera
Hibiscus
Hosta (Fragrant)
Iris
Lavandula
Lavatera
Lobelia cardinalis
Lupinus
Lychnis
Monarda didyma
Penstemon
Phlox maculata
Phlox paniculata
Rudbeckia fulgida var. *sullivantii*
Rudbeckia laciniata

Butterflies

Perennials

Achillea millefolium
Agastache hybrid
Anapalis margaritacea
Arabis
Aruncus dioicus
Asclepias tuberosa
Aster x *frikartii*
Aubrieta
Baptisia
Caryopteris
Centranthus
Chrysantheumum
Heliopsis helianthoides
Hemerocallis
Iberis
Lavandula
Liatris spicata
Ligularia
Lilium
Lobelia cardinalis
Monarda didyma
Oenothera
Penstemon
Phlox paniculata

Cimicifuga, Actaea
Clematis
Coreopsis lanceolata
Coreopsis verticillata
Eupatorium maculatum
Gaillardia x *grandiflora*
Primula
Rudbeckia fulgida var. *sullivantii*
Salvia x *superba*
Scabiosa
Verbascum chaixii
Veronica longifolia

Plants that Support Native Bees

Source: The Xerces Society for Invertebrate Conservation

Perennials

Agastache	Hyssop
Asclepias	Milkweed
Baptisia	Wild indigo
Borago	Borage
Chelone	Turtlehead
Echinacea	Purple coneflower
Eupatorium	Boneset
Helenium	Sneezeweed
Helianthus	Sunflower
Geranium	Wild geranium
Lavandula	Lavender
Liatris	Blazing star
Lobelia	Lobelia
Lupinus	Lupine
Mentha	Wild mint
Monarda	Beebalm
Nepeta	Catmint
Ocimum	Basil
Perovskia	Russian sage
Pycnanthemum	Mountain mint
Scilla	Squill
Solidago	Goldenrod
Symphyotrichum	Aster
Tradescantia	Spiderwort
Veronia	Ironweed
Veronicastrum	Culver's root

Trees and Shrubs

Amelanchier	Serviceberry
Ceanothus	New Jersey tea
Crataegus	Hawthorn
Rhododendron	Azalea
Rosa	Wild rose
Salix	Willow
Spirea	Meadowsweet
Tilia	Basswood
Vaccinium	Blueberry

Native plant species best support native bee populations.

Plants That Are Deer Tolerant/Resistant

Very few plants are entirely deer resistant. *If hungry or thirsty enough, deer will eat or nibble just about anything.* The younger, more tender and succulent the plant is the more apt the deer are to try it. Most plants need to be established before they can be considered Deer Resistant.

Source: Dr. Mark Bridgen, Dept. of Horticulture, Cornell University (2-2010)

Annuals

Antirrhinum majus
Asparagus springerii
Begonia sempervirens
Cleome hasslerana
Colocasia esculenta
Datura, Brugmansia spp.
Lobularia maritima
Nicotiana sylvestris
Pennisetum setaceum 'Rubrum'
Senecio cineraria

Woody Trees and Shrubs

Buxus microphylla
Juniperus communis
Juniperus horizontalis
Juniperus procumbens
Juniperus scopulorum
Leucothoe fontanesiana
X *Mahoberberis*
Mahonia bealei
Morella caroliniensis
Osmanthus heterophyllus variegatus
Paeonia suffruticosa
Picea abies
Picea glauca
Picea pungens
Pieris japonica
Platanus occidentalis
Potentilla fruticosa
Skimmia japonica
Vitex agnus-castus

Grasses

Carex spp.
Hakonechloa macra
Panicum virgatum
Pennisetum alopecuroides

Herbaceous Perennials and Ground Covers

Aconitum napellus
Agastache foeniculum
Allium schoenoprasum
Allium tuberosum
Amsonia tabernaemontana
Artemesia ludoviciana
Artemesia schmidtiana
Asclepias tuberosa
Calamintha grandiflora
Cerastium tomentosum
Dicentra eximia
Dicentra spectabilis
Digitalis purpurea
Epimedium spp.
Fritillaria imperialis
Galanthus nivalis
Helleborus foetidus
Helleborus orientalis
Lamiastrum galeobdolon
Lamium maculatum
Lavandula angustifolia
Leucojum vernum
Ligularia dentata
Marrubium vulgare
Mazus reptans
Melissa officinalis
Mentha spp.
Narcissus
Nepeta mussinii
Nepeta x faassenii
Opuntia humifusa
Origanum vulgare
Pachysandra procumbens
Pachysandra terminalis
Paeonia hybrids
Perovskia atriplicifolia
Petasites japonicus
Podophyllum peltatum
Rheum rhabarbarum
Ruta graviolens
Salvia officinalis
Santolina chamaecyparissus
Santolina virens
Stachys byzantina
Tanacetum parthenium
Teucrium chamaedrys
Thymus spp.
Verbascum olympicum

Plants Suitable for a Dry Location

Trees - Evergreen

Cedrus deodara
Cedrus libani
Cunninghamia lanceolata
Juniperus chinensis
Juniperus virginiana
Picea glauca
Picea omorika
Picea pungens var. *glauca*
Pinus cembroides
Pinus rigida
Thuja occidentalis
Thuja orientalis
Ilex cornuta
Ilex latifolia
Ilex 'Nellie R. Stevens'
Magnolia grandiflora

Trees - Deciduous

Acer buergerianum
Celtis occidentalis
Chionanthus retusus
Cotinus obovatus
Fraxinus pennsylvanica
Gleditsia triacanthos var. *inermis*
Gymnocladus dioicus
Koelreuteria paniculata
Maackia amurensis
Ostrya virginiana
Oxydendrum arboreum
Parrotia persica
Quercus phellos
Sassafras albidum
Styphnolobium japanicum
Taxodium distichum
Tilia americana
Ulmus parvifolia
Viburnum prunifolium
Zelkova serrata

Shrubs - Evergreen

Aucuba japonica
Cephalotaxus harringtonia
Lavandula angustifolia
Nandina domestica
Osmanthus heterophyllus
Photinia x *fraseri*
Yucca filamentosa
Juniperus chinensis cultivars
Juniperus communis
Juniperus squamata
Juniperus virginiana cultivars
Picea glauca cultivars
Picea omorika cultivars
Picea pungens var. *glauca* cultivars
Thuja occindentalis cultivars
Thuja orientalis cultivars

Shrubs - Deciduous

Aronia arbutifolia
Caragana arborescens
Cotinus coggygria
Cytisus scoparius
Genista pilosa
Hydrangea serrata
Hypericum frondosum
Ilex decidua
Jasminum nudiflorum
Photinia villosa
Physocarpus opulifolius
Potentilla fruticosa
Prunus maritima
Rhus aromatica
Rosa nitida
Sambucus canadensis
Symphoricarpos spp.
Vaccinium angustifolium
Viburnum lantana

Ground Covers

Arctostaphylos uva-ursi
Juniperus chinensis
Juniperus communis
Juniperus conferta
Juniperus horizontalis
Juniperus procumbens
Juniperus squamata

Vines

Parthenocissus quinquefolia

Perennials

Acanthus spinosissimus
Achillea
Anaphalis sp.
Anemone pulsatilla
Anthemis tinctoria
Arabis caucasica
Armeria maritima
Artemisia
Asclepias tuberosa
Aubrieta deltoidea
Aurinia saxatilis
Campanula persicifolia
Catananche caerulea
Centaurea montana
Cerastium tomentosum
Ceratostigma
Chasmanthium
Chrysanthemum pacificum
Coreopsis
Delosperma
Dictamnus albus
Echinacea purpurea
Echinops exaltatus
Eryngium sp.
Festuca ovina var. *glauca*
Gaillardia x *grandiflora*
Helenium
Helianthus
Hypericum
Iberis sempervirens
Lavandula angustifolia
Liatris sp.
Linum sp.
Lychnis chalcedonica
Oenothera
Panicum
Pennisetum
Penstemon digitalis
Perovskia atriplicifolia
Phlox carolina
Phlox maculata
Phlox subulata
Potentilla
Rudbeckia
Salvia
Santolina chamaecyparissus
Santolina virens
Scabiosa
Sedum
Solidago
Stachys byzantina

Plants Suitable for a Coastal Location

Trees

Amelanchier canadensis
Gleditsia triacanthos var. *inermis*
Ilex opaca
Juniperus virginiana
Picea glauca
Picea pungens
Pinus parviflora
Pinus rigida
Platanus x *acerifolia*
Prunus serotina
Sassafras albidum

Shrubs

Baccharis halimifolia
Comptonia peregrina
Cytisus scoparius
Hibiscus moscheutos
Hibiscus syriacus
Hydrangea macrophylla
Hypericum calycinum
Hypericum frondosum
Hypericum x *moseranum*
Ilex crenata
Ilex glabra
Juniperus chinensis
Morella caroliniensis
Perovskia atriplicifolia
Potentilla fruticosa
Pinus mugo
Prunus x *cistena*
Prunus maritima
Rosa virginiana
Syringa vulgaris
Viburnum dentatum
Vitex agnus-castus

Grasses

Ammophila breviligulata
Chasmanthium latifolium
Festuca glauca
Panicum virgatum
Pennisetum alopecuroides
Sorghastrum nutans
Scirpus cyperinus
Spartina patens

Ground Covers

Arctostaphylos uva-ursi
Artemisia stelleriana
Calluna vulgaris
Epimedium
Hudsonia tomentosa
Jasminum nudiflorum
Juniperus conferta
Juniperus horizontalis
Liriope
Santolina chamaecyparissus
Yucca filimentosa

Vines

Gelsemium sempervirens
Hydrangea anomala subsp. *petiolaris*
Lonicera x *heckrotti*
Parthenocissus quinquefolia
Schizophragma hydrangeoides

Perennials

Achillea
Aquilegia
Ajuga
Alcea
Alyssum
Anemone pulsatilla
Arabis
Armeria
Aster
Baptisia
Bergenia
Brunnera
Campanula persicifidia
Cerastium
Chasmanthium
Chrysanthemum
Cimicifuga
Clematis
Convallaria
Cortadaria pumilla
Delphinium
Dianthus
Dicentra
Digitalis
Echinops
Erianthus
Erigeron
Eryngium
Gaillardia
Gypsophilia
Helleborus
Hemerocallis hybrids
Heuchera
Hosta
Iberis
Iris germanica
Iris pumila
Kniphofia
Lilium
Limonium
Monarda
Nepeta
Oenothera
Paeonia
Penstemon
Phalaris
Phlox
Physostegia
Platycodon
Polemonium
Potentilla
Primula
Salvia
Sedum
Sempervivum
Solidago
Stachys
Teucrium
Thalictrum
Thymus
Tiarella
Veronica

Plants Suitable for a Shaded Location

Trees - Evergreen

Ilex cornuta
Ilex opaca
Magnolia grandiflora
Taxus baccata
Taxus cuspidata
Taxus x *media*
Tsuga diversifolia
Tsuga heterophylla

Trees - Deciduous

Acer pensylvanicum
Acer saccharum
Amelanchier canadensis
Aesculus pavia
Carpinus caroliniana
Chionanthus virginicus
Cornus alternifolia
Cornus florida
Fagus sylvatica
Fagus grandifolia
Franklinia alatamaha
Magnolia virginiana
Ostrya virginiana
Oxydendrum arboreum
Stewartia

Shrubs - Evergreen

Aucuba japonica
Buxus sempervirens
Cephalotaxus harringtonia
Chamaecyparis thyoides
Daphne x *burkwoodii*
Daphne cneorum
Euonymus japonicus
Euonymus kiautschovicus
Ilex crenata
Ilex glabra
Kalmia angustifolia
Kalmia latifolia
Leucothoe axillaris
Leucothoe fontanesiana
Mahonia aquifolium
Mahonia bealei
Nandina domestica
Osmanthus heterophyllus
Photinia x *fraseri*
Pieris floribunda
Pieris japonica
Prunus laurocerasus
Rhododendron hybrids
Rhododendron maximum
Sarcococca hookeriana
Skimmia japonica
Taxus baccata
Taxus x media

Shrubs - Deciduous

Abelia x *grandiflora*
Aesculus parviflora
Calycanthus floridus
Clethra acuminata
Clethra alnifolia
Cornus
Daphne caucasica
Hamamelis virginiana
Hydrangea arborescens
Hydrangea quercifolia
Kerria japonica
Rhus aromatica
Symphoricarpos albus
Viburnum acerifolium
Viburnum dentatum
Viburnum x *jackii*
Viburnum lentago
Viburnum lantanoides
Viburnum prunifolium

Plants Suitable for a Shaded Location, cont.

Ground Covers

Cornus canadensis
Epimedium
Gaultheria procumbens
Hedera colchica
Mahonia repens
Pachysandra procumbens
Pachysandra terminalis

Vines

Hedera colchica
Hydrangea anomala subsp. *petiolaris*
Parthenocissus quiquefolia
Schizophragma hydrangeoides

Perennials

Aconitum napellus
Ajuga
Anemone nemorosa
Aquilegia, some
Arisaema
Aruncus dioicus
Asarum
Aster divaricatus
Astilbe
Bergenia
Brunnera macrophylla
Campanula latifolia
Cardiocrinum gigatneum
Chelone
Chrysogonum
Cimicifuga
Convallaria majalis
Dicentra
Erythronium
Eupatorium rugosum
Euphorbia robbiae
Ferns
Galax urceolata (aphylla)
Galium
Gentiana asclepiadea
Geranium
Helleborus
Hesperis matronalis
Heuchera
Hosta
Iris cristata
Iris foetidissima
Lamium
Ligularia
Liriope
Lobelia
Mertensia
Ophiopogon
Paeonia emodii
Phlox divaricata
Phlox stolonifera
Polygonatum
Primula sp.
Pulmonaria
Saxifraga fortunei
Smilacina racemosa
Symphytum grandiflorum
Teucrium
Thalictrum
Tiarella
Tradescantia
Tricyrtis
Trollius
Veratrum
Viola odorata

Recommended Street Trees for Long Island

(Source: Bassuk, N., D.F. Curtis, B.Z. Marranca, and B. Neal. 2009. Recommended Urban Trees. Ithaca; Urban Horticulture Institute, Cornell University.) Updated 2016, N. Bassuk.

For more information on urban planting options, explore the Woody Plants Database: http://woodyplants.cals.cornell.edu/home

Small Trees

Suitable within 15 feet of 35-foot high electric wires, or in restricted tree lawn areas (less than 4 feet wide).
Tree Heights approximately 20 ft. – 40 ft.

Acer buergerianum
Acer miyabei
Acer tataricum
Acer truncatum
Amelanchier spp.
(resistant cultivars only i.e. 'Cumulus', 'Autumn Brilliance', 'Robin Hill')
Carpinus caroliniana
Cercis canadensis
Cornus kousa
Cornus mas
Cotinus obovatus
Crataegus crus-galli var. *inermis*
Crataegus phaenopyrum
Crataegus viridis 'Winter King'
Gleditsia triacanthos var. *inermis* 'Imperial'
Koelreuteria paniculata
Maackia amurensis
Malus spp. (resistant cultivars only)
Parrotia persica
Prunus spp. (less than 35' tall i.e. 'Snow Goose') (P. virginiana is not recommended due to Black Knot susceptibility)
Sorbus hybrida
Syringa reticulata
Tilia cordata 'Summer Sprite'
Zelkova serrata 'Wireless', 'City Sprite'

Large Trees > 35 feet

Should be set back at least 25 ft. from overhead wires and in tree lawns at least 8 ft wide.

Acer x *freemanii* i.e. 'Armstrong', 'Autumn Blaze'
Acer rubrum
Acer saccharum
Aesculus x *carnea*
Betula nigra 'Heritage', 'Dura-Heat'
Betula populifolia 'Whitespire Sr.'
Carpinus betulus
Catalpa speciosa
Celtis laevigata
Celtis occidentalis

Recommended Street Trees for Long Island, cont.

Cladrastis kentukea
Corylus colurna
Eucommia ulmoides
Ginkgo biloba
Gleditsia triacanthos var. *inermis*
(resistant cultivars only i.e. 'Shademaster' 'Skyline', 'Halka')
Gymnocladus dioicus
Liquidambar styraciflua
Liriodendron tulipifera
Maclura pomifera var. *inermis* (male)
Metasequoia glyptostroboides
Nyssa sylvatica
Ostrya virginiana
Platanus x *acerifolia*
Prunus sargentii
Quercus acutissima
Quercus bicolor
Quercus coccinea
Quercus imbricaria
Quercus lyrata
Quercus macrocarpa
Quercus muehlenbergii
Quercus palustris
Quercus phellos
Quercus robur
Quercus rubra
Quercus shumardii
Sorbus alnifolia
Styphnolobium japonicum
Taxodium distichum
Tilia americana
Tilia cordata
Tilia tomentosa
Tilia x *euchlora*
Ulmus parvifolia
Ulmus cultivars
(resistant cultivars only)
Zelkova serrata

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info@atlanticnurseries.com
Contact: Katherine Biene Schaefer

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www.deleasod.com
sgeiser@deleasod.com
Contact: Scott Geiser

Farm Family Casualty Long Island Agency
859 Connetquot Ave, Ste 11, Islip Terrace, NY 11752
631-277-7770
Contact: Vincent Daley

Fowler's Garden Center
175 North Sea Road, Southampton NY 11968
631-283-5515
www.fowlersgardencenter.com
info@fowlersgardencenter.com
Contact: Jamie Wilson

Glover Perennials
725 Sterling Lane, PO Box 759, Cutchogue, NY 11935
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www.gloverperennials.com
info@gloverperennials.com
Contact: Jim Glover

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www.halfhollownursery.com
hhn11@optonline.net
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www.islandbiogreens.com
kenkraus@hotmail.com
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Long Island Nursery & Landscape Association
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www.LINLA.org
info@linla.org
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northforkn@optonline.net
Contact: Jackie Kolodziejski

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drodgers@nfbgi.com
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percharm@optonline.net
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scott@pinewoodperennials.com
www.pinewoodperennials.com
Contact: Scott Clark

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heatherraso4@gmail.com
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Fowler's Garden Center

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Atlantic Nurseries Inc
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Island Bio Green

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Island Bio Green
Professional Tree Surgeons

Fertilizer, Inorganic
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Island Bio Greens
Professional Tree Surgeons

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Pesticides: Fungicides
- DeLalio Sod Farms LLC
- DeLea Sod Farms
- Fowler's Garden Center
- Island Bio Greens
- Professional Tree Surgeons

Pesticides: Herbicides
- DeLalio Sod Farms LLC
- Fowler's Garden Center

Pesticides: Insecticides
- Atlantic Nurseries Inc
- DeLalio Sod Farms LLC
- Fowler's Garden Center
- Professional Tree Surgeons

Pesticides: Rodenticides
- Atlantic Nurseries Inc
- Fowler's Garden Center

Plant Health Care
- Fowler's Garden Center

Plant Material
- Atlantic Nurseries Inc
- Charlie & Sons Landscapes
- Fowler's Garden Center
- Half Hollow Nursery
- North Fork Boutique Gardens Inc.
- Perennial Charm Nursery
- Pinewood Perennial Gardens
- Shade Trees Nurseries

Plants: Aquatic Plants
- Fowler's Garden Center
- Perennial Charm Nursery

Plants: Bedding Plants/Annuals
- Atlantic Nurseries Inc
- Fowler's Garden Center
- Half Hollow Nursery
- Perennial Charm Nursery
- Shade Trees Nursery Inc

Plants: Bulbs
- Atlantic Nurseries Inc

- Fowler's Garden Center
- Half Hollow Nursery

Plants: Dwarf Conifers
- Atlantic Nurseries Inc
- Fowler's Garden Center
- Half Hollow Nursery
- North Fork Nursery

Plants: Edibles
- Atlantic Nurseries Inc
- Fowler's Garden Center
- Glover Perennials
- North Fork Boutique Gardens Inc.

Plants: Grasses
- Atlantic Nurseries Inc
- Fowler's Garden Center
- Glover Perennials
- Half Hollow Nursery
- North Fork Boutique Gardens Inc.
- Perennial Charm Nursery
- Pinewood Perennial Gardens LLC

Plants: Groundcovers
- Atlantic Nurseries Inc
- Fowler's Garden Center
- Glover Perennials
- Half Hollow Nursery
- North Fork Boutique Gardens Inc.
- Perennial Charm Nursery
- Pinewood Perennial Gardens LLC

Plants: Hanging Baskets
- Atlantic Nurseries Inc
- Fowler's Garden Center

Plants: Hardy Mums
- Atlantic Nurseries Inc
- Fowler's Garden Center
- Half Hollow Nursery
- Perennial Charm Nursery

Plants: Herbaceous Perennials
- Atlantic Nurseries Inc
- Fowler's Garden Center
- Glover Perennials

Half Hollow Nursery
North Fork Boutique Gardens Inc.
Perennial Charm Nursery
Pinewood Perennial Gardens LLC

Plants: Herbs
Atlantic Nurseries Inc
Fowler's Garden Center
North Fork Boutique Gardens Inc.
Perennial Charm Nursery

Plants: Native
Atlantic Nurseries Inc
Fowler's Garden Center
Glover Perennials
North Fork Boutique Gardens Inc.
Perennial Charm Nursery
Pinewood Perennial Gardens LLC

Plants: Poinsettias
Fowler's Garden Center

Plants: Specialty Annuals
Fowler's Garden Center

Plants: Tropical
Atlantic Nurseries Inc
Fowler's Garden Center

Plants: Shrubs - Container
Atlantic Nurseries Inc
Fowler's Garden Center
Glover Perennials
Half Hollow Nursery
North Fork Boutique Gardens Inc.
North Fork Nursery
Perennial Charm Nursery
Pinewood Perennial Gardens LLC

Plants: Shrubs - Field
Fowler's Garden Center
Half Hollow Nursery
North Fork Nursery
Perennial Charm Nursery
Pinewood Perennial Gardens LLC

Plants: Specialty Annuals
Atlantic Nurseries Inc
Fowler's Garden Center
Perennial Charm Nursery

Plants: Specimen Conifers
Atlantic Nurseries Inc
Half Hollow Nursery
North Fork Nursery
Warner Nursery

Plants: Succulents
Atlantic Nurseries Inc
Fowler's Garden Center
Glover Perennials

Plants: Trees - Container
Atlantic Nurseries Inc
Fowler's Garden Center
Half Hollow Nursery
North Fork Nursery
Perennial Charm Nursery
Warner Nursery

Plants: Trees - Field
Half Hollow Nursery
North Fork Nursery
Warner Nursery

Plants: Vines
Atlantic Nurseries Inc
Fowler's Garden Center
Glover Perennials
Half Hollow Nursery
North Fork Boutique Gardens Inc.
Perennial Charm Nursery
Pinewood Perennial Gardens LLC

Power Equipment Sales & Service
Professional Tree Surgeons

Posting Signs
Professional Tree Surgeons

Pruning Supplies
Atlantic Nurseries Inc
Fowler's Garden Center

Half Hollow Nursery
Professional Tree Surgeons

Retail Supplies
Fowler's Garden Center

Sand & Gravel
DeLea Sod Farms

Seed
DeLalio Sod Farms LLC
DeLea Sod Farms
Fowler's Garden Center

Seed: Custom blended
DeLalio Sod Farms LLC
DeLea Sod Farms
Island Bio Greens

Seed: Grass
DeLalio Sod Farms LLC
DeLea Sod Farms
Fowler's Garden Center
Half Hollow Nursery
Island Bio Greens

Sod
DeLalio Sod Farms LLC
DeLea Sod Farm
Fowler's Garden Center

Soil Conditioners
Atlantic Nurseries Inc
Half Hollow Nursery
Island Bio Greens

Soil: Custom Blends
DeLea Sod Farms

Soil: Potting & Mixes
Atlantic Nurseries Inc
Fowler's Garden Center

Soil: Top
Atlantic Nurseries Inc
DeLalio Sod Farms LLC
DeLea Sod Farms
Fowler's Garden Center

Statuary & Fountains
Atlantic Nurseries Inc
Fowler's Garden Center

Stone
Fowler's Garden Center

Trade Tools
Atlantic Nurseries Inc
DeLalio Sod Farms LLC
Fowler's Garden Center
Professional Tree Surgeons

Trellises
Atlantic Nurseries Inc
Fowler's Garden Center

Truck Covers
Half Hollow Nursery

Turf: Golf
DeLea Sod Farms

Turf: Sports
DeLea Sod Farms

Water Garden, Design
Charlie & Sons Landscapes
Fowler's Garden Center
Glover Perennials
Fowler's Garden Center
Perennial Charm Nursery

Water Garden, Products & Supplies
Fowler's Garden Center

Watering Supplies
Atlantic Nurseries Inc
Fowler's Garden Center

Wholesale Grower, Field & Container
Atlantic Nurseries Inc
Fowler's Garden Center
Glover Perennials
Half Hollow Nursery
North Fork Boutique Gardens Inc.
Perennial Charm Nursery
Shade Trees Nurseries, Inc.

Trees to Be Cautious of for Fall Transplanting

Over the years, nursery growers, arborists, and landscapers have found that some species are more prone to difficulties when transplanted in the fall balled-and-burlapped rather than in the spring. You may want to consider transplanting the following species only in the spring, or use extra precautions if you do transplant in the fall. (Source: Himelick, E.B. 1984. Tree and Shrub Transplanting Manual. Urbana, IL: International Society of Arboriculture.)

Abies spp.
Betula spp.
Carpinus caroliniana
Carya spp.
Chionanthus virginicus
Cladrastis kentukea
Cornus florida
Diospyros virginiana
Fagus spp.
Ginkgo biloba
Ilex opaca
Juglans spp.
Koelreuteria paniculata
Laburnum spp.
Larix spp.
Liquidambar styraciflua
Liriodendron tulipifera
Magnolia spp.
Nyssa sylvatica
Ostrya virginiana
Oxydendrum arboreum
Populus spp.
Prunus spp.
Quercus alba
Quercus bicolor
Quercus coccinea
Quercus imbricaria
Quercus macrocarpa
Quercus muehlenbergii
Quercus phellos
Quercus prinus
Quercus robur
Quercus rubra
Quercus shumardii
Quercus velutina
Salix spp.
Sassafras albidum
Taxodium spp.

Plants Suitable for a Wet Location

Trees - Evergreen

Chamaecyparis thyoides
Magnolia grandiflora
Thuja occidentalis

Trees - Deciduous

Acer x *freemanii*
Acer rubrum
Amelanchier spp.
Betula nigra
Celtis occidentalis
Fraxinus pennsylvanica
Hamamelis macrophylla
Hamamelis virginiana
Ilex decidua
Liquidambar styraciflua
Magnolia virginiana
Metasequoia glyptostroboides
Nyssa sylvatica
Quercus bicolor
Quercus palustris
Quercus phellos
Salix alba
Salix babylonica
Taxodium distichum
Viburnum x *jackii*

Shrubs - Evergreen

Ilex glabra
Chamaecyparis thyoides
Thuja occidentalis

Shrubs - Deciduous

Aronia arbutifolia
Aronia melanocarpa
Clethra alnifolia
Cornus alba
Cornus sericea
Hamamelis vernalis
Hamamelis virginiana
Ilex decidua
Ilex verticillata
Itea japonica
Itea virginica
Lindera benzoin
Rhododendron canadense
Rhododendron nudiflorum
Rhododendron vaseyi
Rhododendron viscosum
Salix
Sambucus nigra
Vaccinium corymbosum
Viburnum acerifolium
Viburnum dentatum
Viburnum lentago

Ground Covers

Vaccinium macrocarpon

Perennials

Aconitum
Acorus
Ajuga
Aruncus dioicus
Asclepias incarnata
Asperula odorata
Aster novae-angliae
Astilbe
Astrantia
Bergenia
Brunnera
Caltha palustris
Chelone
Cimicifuga racemosa
Convallaria
Dodecatheon
Equisetum
Erianthus
Eupatorium
Ferns
Filipendula, most
Galium
Geranium
Helenium autumnale
Hemerocallis hybrids
Hibiscus moscheutos & hybrids
Hosta
Houttuynia
Iris ensata
Iris siberica
Iris tectorum
Juncus
Ligularia
Liriope
Lobelia
Mentha
Mertensia virginica
Monarda
Oenothera
Physostegia virginiana
Primula
Primula japonica
Pulmonaria
Rodgersia
Thalictrum
Tiarella
Tradescantia
Tricyrtis
Trollius
Typha
Veratrum
Veronicastrum

Long Island Native Plants

Ferns

Athyrium filix-femina	Lady Fern
Dennstaedtia punctilobula	Hay-scented Fern
Onoclea sensibilis	Sensitive Fern
Osmunda cinnamomea	Royal Fern
Osmunda regalis	Royal Fern
Polystichum acrostichoides	Christmas Fern
Thelypteris noveboracensis	New York Fern

Grasses, Sedges, Rushes

Ammophila breviligulata	Beach Grass
Andropogon gerardii	Big Bluestem
Andropogon glomeratus	Bushy Bluestem
Andropogon virginicus	Broomsedge
Carex crinite	Fringed Sedge
Carex laxiculmis	Spreading Sedge
Carex pensylvanica	Pennsylvania Sedge
Deschampsia flexuosa	Wavy-hair Grass
Elymus virginicus	Eastern Wild Rye
Eragrostis spectabilis	Purple Lovegrass
Juncus canadensis	Canadian Rush
Juncus effusus	Soft Rush
Juncus gerardii	Saltmarsh Rush/Black Grass
Juncus greenei	Greene's Rush
Juncus tenuis	Path Rush
Panicum virgatum	Switchgrass
Schizachyrium scoparium	Little Bluestem
Schoenoplectus pungens	Three-square Bulrush
Schoenoplectus tabernaemontanii	Softstem Bulrush
Sisyrinchium angustifolium	Blue-eyed Grass
Scirpus cyperinus	Wool Grass
Sorghastrum nutans	Indian Grass
Spartina patens	Salt Meadow Cordgrass
Spartina pectinata	Freshwater Cordgrass

Perennials (includes Aquatics)

Achillea millefolium	Common Yarrow
Ageratina altissima	White Snakeroot
Arisaema triphyllum	Jack-in-the-Pulpit
Asclepias incarnata	Swamp Milkweed
Asclepias syriaca	Common Milkweed
Asclepias tuberosa	Butterfly Weed
Baptisia tinctoria	Wild Yellow Indigo
Caltha palustris	Marsh Marigold
Chelone glabra	Turtle Head
Chrysopsis mariana	Maryland Golden Aster
Cirsium discolor	Field Thistle
Eupatorium hyssopifolium	Hyssop-leaved Thoroughwort
Eupatorium perfoliatum	Boneset
Eupatorium pilosum	Rough Boneset
Eurybia divaricata	White Wood Aster
Euthamia caroliniana	Coastal Grass-leaved Goldenrod

Long Island Native Plants, cont.

Euthamia graminifoilia	Grass-leaved Goldenrod
Eutrochium dubium	Eastern Joe Pye Weed
Eutrochium fistulosum	Hollow-stemmed Joe Pye Weed
Geranium maculatum	Wild Geranium
Geum canadense	White Avens
Hibiscus moscheutos	Swamp Rose Mallow
Iris versicolor	Blue Flag
Lathyrus japonicus	Beach Pea
Lespedeza capitata	Round-headed Bush Clover
Lobelia cardinalis	Cardinal Flower
Lobelia siphiliticata	Great Blue Lobelia
Lycopus americanus	American Water-Horehound
Mimulus ringens	Monkey Flower
Monarda fistulosa	Wild Bergamot
Peltandra virginica	Arrow Arum
Pontederia cordata	Pickerelweed
Pycnanthemum muticum	Short-toothed Mountain Mint
Sagittaria latifolia	Arrowhead
Solidago bicolor	White Goldenrod
Solidago nemoralis	Gray Goldenrod
Solidago canadensis	Canada Goldenrod
Solidago odora	Sweet Goldenrod
Solidago rugosa	Wrinkle-leafed Goldenrod
Solidago sempervirens	Seaside Goldenrod
Symphyotrichum dumosum	Bushy Aster
Symphyotrichum ericoides	Heath Aster
Symphyotrichum lateriflorum	Calico Aster
Symphyotrichum novae-angliae	New England Aster
Symphyotrichum novi-belgii	New York Aster
Symphyotrichum patens	Late Purple Aster
Symphyotrichum puniceum	Purple-stemmed Aster
Symphyotrichum undulatum	Wavy-leaved Aster
Teucrium canadense	Germander/Wood Sage
Verbena hastata	Blue Vervain
Vernonia noveboracensis	New York Ironweed
Viola cuculatta	Marsh Blue Violet

Shrubs

Arctostaphylos uva-ursi	Bearberry
Aronia arbutifolia	Red Chokeberry
Aronia melanocarpa	Black Chokeberry
Baccharis halimifolia	Groundsel Bush
Cephalanthus occidentalis	Buttonbush
Clethra alnifolia	Summersweet
Comptonia peregrina	Sweet Fern
Cornus amomum	Silky/Swamp Dogwood
Decodon verticillatus	Water Willow
Gaylussacia baccata	Black Huckleberry
Hudsonia tomentosa	Sand Heather
Ilex glabra	Inkberry
Ilex verticillata	Winterberry
Iva frutescens	Marsh Elder
Juniperus communis	Common Juniper

Kalmia latifolia	Mountain Laurel
Leucothoe racemosa	Swamp Sweetbells
Lyonia ligustrina	Maleberry
Morella caroliniensis	Bayberry
Opuntia humifusa	Prickly Pear Cactus
Prunus maritima	Beach Plum
Rhododendron viscosum	Swamp Azalea
Rhus copalina	Winged Sumac
Rhus glabra	Smooth Sumac
Rosa carolina	Pasture Rose
Rosa palustris	Swamp Rose
Rosa virginiana	Virginia Rose
Salix discolor	Pussy Willow
Sambucus nigra	American Elderberry
Spiraea alba	White Meadowsweet
Spiraea tomentosa	Rosy Meadowsweet
Vaccinium angustifolium	Lowbush Blueberry
Vaccinium corymbosum	Highbush Blueberry
Vaccinium macrocarpon	Cranberry
Viburnum acerifolium	Maple-leaved Viburnum
Viburnum dentatum var. *lucidum*	Smooth Arrowwood
Viburnum dentatum var. *venosum*	Southern Arrowwood

Trees, Tall Shrubs

Acer rubrum	Red Maple
Alnus incana	Speckled Alder
Amelanchier canadensis	Coastal Shadbush
Amelanchier laevis	Smooth Shadbush
Betula lenta	Sweet Birch
Betula populifolia	Gray Birch
Carpinus caroliniana	Ironwood
Carya glabra	Pignut Hickory
Carya tomentosa	Mockernut Hickory
Celtis occidentalis	Hackberry
Chamaecyparis thyoides	Altlantic White Cedar
Cornus alternifolia	Pagoda Dogwood
Cornus florida	Flowering Dogwood
Crataegus crus-gali	Cockspur Hawthorn
Crataegus mollis	Downy Hawthorn
Crataegus punctata	Dotted Hawthorn
Fagus grandifolia	American beech
Fraxinus americana	White Ash
Fraxinus pensylvanica	Green Ash
Hamamelis virginiana	Witchazel
Ilex opaca	American Holly
Juglans cinerea	Butternut
Juglans nigra	Black Walnut
Juniperus virginiana	Eastern Red Cedar
Lindera benzoin	Spicebush
Liquidambar styraciflua	Sweetgum
Liriodendron tulipifera	Tulip Poplar
Nyssa sylvatica	Tupelo
Pinus rigida	Pitch Pine
Pinus strobus	White Pine
Populus tremuloides	Quaking Aspen

Long Island Native Plants, cont.

Prunus serotina	Black Cherry
Quercus alba	White Oak
Quercus coccinea	Scarlet Oak
Quercus ilicifolia	Bear Oak
Quercus montana	Chestnut Oak
Quercus stellata	Post Oak
Quercus velutina	Black Oak
Salix nigra	Black Willow
Sassafras albidum	Sassafras
Tilia americana	American Basswood

Vines & Lianas:

Lonicera sempervirens	Coral Honeysuckle
Parthenocissus quinquefolia	Virginia Creeper
Vitis labrusca	Fox Grape
Apios americana	Groundnut
Strophostyles umbellata	Wild Pink Fuzzy Bean

Reviewed 2016 by Victoria Bustamante, Warrens Nursery Inc. and Provenance Natives.

Plants for Various Conditions

Following are lists of plants that might be considered for use in various situations, both environmental and ornamental. These lists are by no means complete but meant to provide ideas for plant use when needed. In some cases, the plants may prefer the conditions while in others they may be tolerant of the conditions they are listed under. In general, plants are able to survive difficult conditions better after they are established. Other species and/or cultivars might exist in the genus that would also be suitable for those conditions. Where only the genus is listed, all species within the genus might not be suitable.

The following can be used as a guide for light conditions.

Sunny	4-6 hours of direct sun/ day during the growing season
Partial Shade	< 4 hours of direct sun
Shade	No direct sun

Perennials for Cut Flowers

Acanthus spinosus
Achillea filipendulina
Achillea millefolium
Aconitum napellus
Anthemis tinctoria
Aquilegia hybrida
Armeria maritima
Astilbe
Aster
Campanula persicifolia
Centaurea cyanus
Chrysanthemum coccineum
Chrysanthemum morifolium
Convallaria majalis
Coreopsis lanceolata
Coreopsis verticillata
Delphinium elatum
Dianthus caryophyllus
Digitalis
Dicentra eximia
Dicentra spectabilis
Doronicum cordatum
Echinacea purpurea
Erigeron speciosus
Eupatorium
Gaillardia x *grandiflora*
Geum hybrids
Gypsophila elegans
Gypsophila paniculata
Helenium autumnale
Helleborus niger
Heuchera
Iris ensata
Iris siberica
Iris spusia
Lavandula angustifolia
Liatris
Lilium
Linaria purpurea 'Canon J. Went'
Lychnis chalcedonica
Lobelia cardinalis
Lupinus 'Russell Hybrid'
Monarda didyma
Paeonia lactiflora
Papaver orientale
Penstemon
Physostegia virginiana
Platycodon grandiflorus
Pyrethrum
Rudbeckia
Stokesia laevis
Trollius europaeus
Veronica spicata

Grey-Leafed Perennials

Achillea 'Moonshine'
Anaphalis sp.
Artemisia, esp. *A. ludoviciana* & *A. l.* 'Silver Queen', *A. schmidtiana* 'Nana'
Cerastium sp.
Crambe maritima
Dianthus sp. & cv.
Eryngium maritimum
Festuca ovina glauca
Helictotrichon sempervirens
Lavandula angustifolia
Lychnis coronaria
Potentilla, some
Ruta graveolens & cvs.
Salvia argentea
Salvia officinalis
Scabiosa graminifolia
Sedum, some
Stachys byzantina
Thalictrum speciosissimum
Verbascum bobmyciferum (biennial)
Veronica incana
Veronica 'Minuet'

Long Blooming Perennials

Achillea 'Coronation Gold'
Achillea filipendulina 'Gold Plate'
Armeria maritima
Anaphalis triplinervis
Astilbe chinensis pumila
Brunnera macrophylla
Campanula carpatica
Chrysanthemum parthenium
Chrysanthemum 'Snow Lady'
Chrysogonum virginianum
Cimicifuga racemosa
Coreopsis 'Flying Saucers'
Coreopsis 'Goldfink'
Coreopsis x *grandiflora*
Dicentra 'Bountiful'
Dicentra 'Luxuriant'
Dicentra eximia
Echinacea purpurea cvs.
Erigeran karvinskianus
Gaura 'Whirling Butterflies'
Gaura 'Siskyou Pink'
Geranium sanguineum prostratum (lancastriense)
Heliopsis cvs.
Monarda didyma cvs.
Nepeta x *faassenii,* if cut back after first bloom
Oenothera speciosa
Phlox paniculata cvs.
Platycodon grandiflorus
Polygonum amplexicaule 'Atrosanguineum'
Rudbeckia fulgida var. *sullivantii* 'Goldsturm'
Salvia 'Blue Hill'
Salvia 'Maraschino'
Salvia nemorosa 'Superba'
Salvia plumosa
Salvia 'Snow Hill'
Scabiosa 'Butterfly Blue'
Scabiosa 'Pink Mist'
Sedum 'Autumn Joy'
Tradescantia x *andersoniana* (virgiana of gardens)
Verbascum 'Southern Charm'
Verbena 'Homestead Purple'
Verbena 'Sissinghurst'
Verbena 'Taylortown Red'

Perennials - Flowering Month By Month

March

Arabis caucasica	(March to May)
Helleborus niger	(March and April)
Helleborus orientalis	(March to May)
Phlox subulata	(March to May)

April

Ajuga reptans	(April and May)
Anemone pulsatilla	(April and May)
Arabis caucasica	(March to May)
Aubrieta deltoides	(April and May)
Aurina saxatilis	(April and May)
Bergenia cordifolia	(April and May)
Brunnera macrophylla	(April to June)
Erysimum asperum	(April and May)
Helleborus niger	(March and April)
Helleborus orientalis	(March and April)
Iberis sempervirens	(April and May)
Mertensia virginica	(April and May)
Phlox subulata	(March to May)
Primula x *polyantha*	(April and May)
Pulmonaria saccharata	(April and May)
Viola odorata	(April and May)

May

Ajuga reptans	(April and May)
Anemone pulsatilla	(April and May)
Aquilegia hybrida	(May and June)
Arabis caucasica	(March to May)
Armeria maritima	(May and June)
Aubrieta deltoides	(April and May)
Aurina saxatilis	(April and May)
Bergenia cordifolia	(April and May)
Brunnera macrophylla	(April to June)
Centaurea montana	(May to July)
Cerastium tomentosum	(May and June)
Convallaria majalis	(May)
Dianthus caesius 'Tiny Rubies'	(May)
Dianthus pulmarius	(May and June)
Dicentra eximia	(May to September)
Dicentra spectabilis	(May and June)
Dictamnus albus	(May and June)
Doronicum cordatum	(May)
Epimedium x *rubrum*	(May and June)
Erysimum asperum	(April and May)
Galium odoratum	(May and June)
Geum hybrids	(May to August)
Hemerocallis spp.	(May to September)
Iberis sempervirens	(April and May)
Iris germinica hybrids	(May and June)

May, cont.

Lamiastrum galeobdolon	(April and May)
Mertensia virginica	(April and May)
Paeonia lactiflora	(May and June)
Paeonia suffruticosa	(May and June)
Paeonia tenuifolia rubra plena	(May)
Phlox stolonifera	(May and June)
Phlox subulata	(March and May)
Polemonium caeruleum	May and June)
Primula x *polyantha*	(April and May)
Pulmonaria angustifolia	(April and May)
Pulmonaria saccharata	(April and May)
Thymus serpyllum	(May and June)
Tiarella cordifolia	(May)
Trollius europaeus	(May and June)
Viola odorata	(April and May)
Waldsteinia fragarioides	(May and June)

June

Achillea filipendulina	June to August)
Anthemis tinctoria	(June to September)
Aquilegia hybrida	(May and June)
Armeria maritima	(May and June)
Asclepias tuberosa	(June to August)
Astilbe x *arendsii*	(June and July)
Brunnera macrophylla	(April to June)
Campanula carpatica	(June to August)
Campanula persicifolia	(June and July)
Centaurea montana	(May to July)
Cerastium tomentosum	(May and June)
Chrysanthemum coccineum	(June and July)
Clematis x *jackmanii*	(June to September)
Coreopsis lanceolata	(June to September)
Coreopsis verticillata	(June to September)
Delphinium elatum	(June and July)
Dianthus plumarius	(May and June)
Dicentra eximia	(May to September)
Dicentra spectabilis	(May and June)
Dictamnus albus	(May and June)
Digatalis purpurea	(June and July)
Epimedium x *rubrum*	(May and June)
Erigeron speciosus	(June and July)
Gaillardia x *grandiflora*	(June to September)
Galium odoratum	(May and June)
Gypsophila paniculata	(June and July)
Hemerocallis hybrids	(May to September)
Heuchera sanguinea	(June and July)
Iris hybrids	(May and June)
Iris ensata	(June and July)
Iris sibirica	(June)
Lavandula angustifolia	(June to September)
Linum perenne	(June to August)

June, cont.

Lupinus 'Russell Hybrid'	(June)
Lychnis chalcedonica	(June and July)
Monarda didyma	(June to August)
Oenothera fruticosa	(June to August)
Paeonia lactiflora	(May and June)
Paeonia suffruticosa	(May and June)
Papaver orientale	(June and July)
Polemonium caeruleum	(May and June)
Rudbeckia fulgida	(June to September)
Saponaria ocymoides	(June)
Stokesia laevis	(June to September)
Teucrium chamaedrys	(June and July)
Thymus serpyllum	(May and June)'
Trollius europaeus	(May and June)
Veronica spicata	(June to August)
Waldsteinia fragarioides	(May and June)
Yucca filamentosa	(June to August)

July

Acanthus spinosissimus	(July and August)
Achillea filipendulina	(June to August)
Achillea millefolium	(July to September)
Anthemis tinctoria	(June to September)
Asclepias tuberosa	(June to August)
Astilbe x *arendsii*	(June and July)
Belamcanda chinensis	(July to September)
Campanula carpatica	(June to August)
Campanula persicifolia	(June and July)
Catananche caerulea	(July and August)
Centaurea montana	(May to July)
Chrysanthemum coccineum	(June and July)
Cimicifuga racemosa	(July and August)
Clematis x *jackmanii*	(June to September)
Coreopsis lanceolata	(June to September)
Coreopsis verticillata	(June to September)
Delphinium elatum	(June and July)
Dicentra eximia	(May to September)
Digitalis purpurea	(June and July)
Echinacea purpurea	(July to September)
Echinops exaltatus	(July to September)
Erigeron speciosus	(June and July)
Eryngium amethystinum	(July and August)
Gaillardia x *grandiflora*	(June to September)
Gypsophila paniculata	(June and July)
Helenium autumnale	(July to October)
Hemerocallis hybrids	(May to September)
Heuchera sanguinea	(June and July)
Iris ensata	(June and July)
Lavandula angustifolia	(June to September)
Liatris spicata	(July to September)
Linum perenne	(June to August)
Lobelia cardinalis	(July to September)
Lychnis chalcedonica	(June and July)
Mondarda didyma	(June to August)

July, cont.

Oenothera fruticosa	(June to August)
Papaver orientale	(June and July)
Phlox paniculata	(July to September)
Physostegia virginiana	(July to September)
Platycodon grandiflorus	(July to September)
Rudbeckia fulgida	(June to September)
Stokesia laevis	(June to September)
Teucrium chamaedrys	(June and July)
Veronica spicata	(June to August)
Yucca filamentosa	(June to August)

August

Acanthus spinosissimus	(July and August)
Achillea filipendulina	(June to August)
Achillea millefolium	(July to September)
Aconitum napellus	(August and September)
Anthemis tinctoria	(June to September)
Asclepias tuberosa	(June to August)
Aster novae-belgii	(August to October)
Astilbe chinensis	(July to August)
Belamcanda chinensis	(July to September)
Campanula carpatica	(June to August)
Catananche caerulea	(July and August)
Ceratostigma plumbaginoides	(August to October)
Chrysanthemum morifolium	(August to October)
Climicifuga racemosa	(July and August)
Clematis x jackmanii	(June to September)
Coreopsis lanceolata	(June to September)
Coreopsis verticillata	(June to September)
Dicentra eximia	(May to September)
Echinacea purpurea	(July to September)
Echinops exaltatus	(July to September)
Eryngium amethystinum	(July and August)
Gaillardia x *grandiflora*	(June to September)
Helenium autumnale	(July to October)
Hemerocallis hybrids	(May to September)
Hibiscus moscheutos	(July to October)
Hosta plantaginea	(August and September)
Liatris spp.	(July to September)
Linum perenne	(June to August)
Lobelia cardinalis	(July to September)
Monarda didyma	(June to August)
Oenothera fruticosa	(June to August
Phlox paniculata	(July to September)
Physostegia virginiana	(July to September)
Platycodon grandiflorus	(July to September)
Sedum spectabile	(August to October)
Stokesia laevis	(June to September)
Veronica spicata	(June to August)
Yucca filamentosa	(June to August)

September

Achillea millefolium	(July to September)
Aconitum nepallus	(August and September)
Anthemis tinctoria	(June to September)
Aster novae-belgii	(August to October)
Belamcanda chinensis	(July to September)
Ceratostigma plumbaginoides	(August to October)
Chrysanthemum morifolium	(August to October)
Clematis x *jackmanii*	(June to September)
Coreopsis lanceolata	(June to September)
Coreopsis verticillata	(June to September)
Dicentra exima	(May to September)
Echinacea purpurea	(July to September)
Echinops exaltatus	(July to September)
Gaillardia x *grandiflora*	(June to September)
Helenium autumnale	(July to October)
Hemerocallis hybrids	(May to September)
Hibiscus moscheutos	(July to October)
Hosta plantaginea	(August and September)
Lavandula angustifolia	(June to September)
Liatris spp.	(July to September)
Lobelia cardinalis	(July to September)
Lythrum salicaria	(July to September)
Phlox paniculata	(July to September)
Physostegia virginiana	(July to September)
Platycodon grandiflorus	(July to September)
Sedum spectabile	(August to October)
Stokesia laevis	(June to September)

October

Aster novae-belgii	(August to October)
Ceratostigma plumbaginoides	(August to October)
Helenium autumnale	(July to October)
Hibiscus moscheutos	(July to October)
Sedum spectabile	(August to October)

Plants that are Rabbit Resistant

Achillea	*Epimedium*
Aconitum	*Filipendula hexapetala*
Anaphalis margaritacea	*Geranium*
Artemisia	*Hosta*
Aster	*Kniphofia*
Astilbe	*Myrrhis odorata*
Baptisia australis	*Narcissus*
Bergenia	*Papaver orientale*
Campanula persicifolia	*Salvia argentea*
Cimicifuga	*Sedum spectabile*
Colchicum autumnale	*Stachys byzantina*
Digitalis	*Trollius*
Doronicum 'Miss Mason'	*Yucca*

Perennials That Are Known For Fragrance

Cimicifuga
Clematis montana var. *rubens*
Convallaria
Dianthus
*Ferns
**Geranium*
Hemerocallis 'Hyperion'
Hemerocallis 'Joan Senior'
Hosta plantaginea
Hosta 'Royal Standard'
Hosta 'So Sweet'
**Houttuynia*
Iris germanica
**Lamium*
**Lavandula*
Lilium 'Oriental'
**Monarda*
**Nepeta*
**Origanum*
Paeonia
**Perovskia*
Phlox
Phlox divaricata
**Rosmarinus officinalis*
**Salvia*
**Santolina*
**Thymus*
Viola

*Fragrant Foliage

Plants for Ground Covers

Ajuga reptans
Alchemilla mollis
Arctostaphylos uva-ursi
Asarum spp.
Aster ericoides 'Snow Flurry'
Astilbe chinensis
Bergenia cordifolia
Carex flaccosperma
Carex morrowii 'Ice Dance'
Catharanthus roseus
Ceratostigma plumbaginoides
Chrysogonum virginianum
Convallaria majalis
Cotoneaster dammeri
Cotoneaster salicifolius
Epimedium x *perralchicum*
Epimedium x *versicolor*
Festuca ovina var. *glauca*
Galium odoratum
Gaultheria procumbens
Geranium x *cantabrigiense*
Heuchera americana
Juniperus horizontalis
Lamium maculatum
Liriope spicata
Mazus reptans
Microbiota decussata
Phlox stolonifera
Phlox subulata
Rubus calycinoides
Sarcococca hookeriana var. *humilis*
Sedum acre
Sedum spurium 'John Creech'
Stachys byzantina
Teucrium chamaedrys
Thymus spp.
Tiarella cordifolia
Veronica spp.
Waldsteinia ternata

Summer Flowering Woody Plants

Trees

Clethra barbinervis	July
Franklinia alatamaha	July-September
Heptacodium miconioides	August
Koelreuteria paniculata	July
Lagerstroemia	July-September
Magnolia virginiana	June-July
Oxydendrum arboreum	July-September
Styphnolobium japonicum	July- August
Stewartia ovata	July-August
Stewartia pseudocamellia	July

Shrubs

Abelia 'Edward Goucher'	July-fall
Abelia x *grandiflora*	July-fall
Aesculus parviflora	July
Callicarpa dichotoma	July
Calluna vulgaris	July
Caryopteris x *clandonensis*	September
Clethra acuminata	July
Clethra alnifolia	August
Cornus kousa	June
Cornus sericea	June-July
Cotinus coggygria	June-July
Daphne x *transatlantica* 'Jim's Pride'	May-June then sporadically
Hibiscus syriacus	August-September
Hydrangea arborescens	June-September depending on cultivar
Hydrangea macrophylla	July-September
Hydrangea paniculata	July-September
Hydrangea quercifolia	June-July
Hypericum calycinum	June-September
Hypericum frondosum	June-July
Potentilla fruticosa	June-frost
Rhododendron arborescens	July
Rhododendron prunifolium	July-August
Rhododendron viscosum	July
Spiraea x bumalda	June-August
Viburnum plicatum var. *tomentosum* 'Watanabei'	June-frost

Vines

Clematis various	June-September
Hydrangea anomala subsp. *petiolaris*	Late June
Lonicera x *heckrottii*	June-frost
Schizophragma hydrangeoides	June-July

pH Requirements for Common Ornamental Plants

	pH range		
	Acid 4.5<pH<6	Slightly acid 6<pH<7	Slightly alkaline 7<pH<8
Abelia x *grandiflora*	XXXX	XXXX	
Abies balsamea	XXXX	XXXX	
Abies fraseri	XXXX	XXXX	
Acer buergerianum	XXXX	XXXX	
Acer campestre	XXXX	XXXX	XXXX
Acer griseum	XXXX	XXXX	XXXX
Acer nikoense	XXXX	XXXX	
Acer pensylvanicum	XXXX	XXXX	
Acer rubrum	XXXX	XXXX	
Acer saccharum	XXXX	XXXX	XXXX
Acer triflorum	XXXX	XXXX	
Aesculus glabra		XXXX	
Aesculus hippocastanum	XXXX	XXXX	XXXX
Aesculus parviflora	XXXX	XXXX	
Amelanchier arborea	XXXX	XXXX	
Amelanchier canadensis	XXXX	XXXX	
Arctostaphylos uva-ursi	XXXX	XXXX	
Aronia spp.	XXXX	XXXX	
Betula lenta	XXXX	XXXX	
Betula nigra	XXXX		
Betula pendula	XXXX	XXXX	
Buxus sempervirens		XXXX	XXXX
Calluna vulgaris	XXXX		
Calycanthus floridus	XXXX	XXXX	XXXX
Carpinus caroliniana	XXXX	XXXX	XXXX
Carya ovata		XXXX	
Castanea spp.	XXXX	XXXX	
Cephalanthus occidentalis	XXXX	XXXX	
Celastrus scandens	XXXX	XXXX	XXXX
Cercis canadensis	XXXX	XXXX	XXXX
Chaenomeles japonica		XXXX	XXXX
Chamaecyparis obtusa	XXXX	XXXX	
Chionanthus virginicus	XXXX	XXXX	
Cladrastis kentukea	XXXX	XXXX	XXXX
Clematis spp.	XXXX	XXXX	XXXX
Clethra alnifolia	XXXX	XXXX	
Cornus alternifolia	XXXX	XXXX	
Cornus florida	XXXX	XXXX	
Cornus kousa	XXXX	XXXX	
Cornus mas	XXXX	XXXX	XXXX
Cornus sericea	XXXX	XXXX	
Corylopsis glabrescens	XXXX		

	pH range		
	Acid 4.5<pH<6	Slightly acid 6<pH<7	Slightly alkaline 7<pH<8
Corylus colurna	XXXX	XXXX	XXXX
Corylus americana	XXXX	XXXX	XXXX
Cotinus coggygria	XXXX	XXXX	XXXX
Cotoneaster horizontalis	XXXX	XXXX	
Cotoneaster spp.	XXXX	XXXX	XXXX
Crataegus spp.	XXXX	XXXX	XXXX
Daphne spp.	XXXX	XXXX	
Deutzia spp.	XXXX	XXXX	XXXX
Enkianthus campanulatus	XXXX	XXXX	
Fagus grandifolia	XXXX	XXXX	
Forsythia spp.	XXXX	XXXX	XXXX
Franklinia alatamaha	XXXX	XXXX	
Fraxinus americana	XXXX	XXXX	XXXX
Ginkgo biloba	XXXX	XXXX	XXXX
Gleditsia triacanthos	XXXX	XXXX	XXXX
Gymnocladus dioicus	XXXX	XXXX	XXXX
Halesia carolina	XXXX	XXXX	
Hamamelis virginiana	XXXX	XXXX	
Hibiscus syriacus	XXXX	XXXX	XXXX
Hydrangea anomala subsp. *petiolaris*		XXXX	XXXX
Hydrangea paniculata	XXXX	XXXX	XXXX
Hypericum prolificum		XXXX	XXXX
Ilex aquifolium	XXXX		
Ilex crenata	XXXX	XXXX	
Ilex glabra	XXXX		
Ilex x *meserveae*		XXXX	XXXX
Ilex opaca	XXXX		
Ilex verticillata	XXXX		
Juniperus horizontalis	XXXX	XXXX	XXXX
Kalmia latifolia	XXXX	XXXX	
Koelreuteria paniculata	XXXX	XXXX	XXXX
Kolkwitzia amabilis	XXXX	XXXX	XXXX
Laburnum x *watereri*		XXXX	XXXX
Larix decidua	XXXX	XXXX	
Leucothoe fontanesiana	XXXX	XXXX	
Liquidambar styraciflua	XXXX	XXXX	
Lindera benzoin	XXXX	XXXX	
Liriodendron tulipifera	XXXX	XXXX	XXXX
Magnolia grandiflora	XXXX	XXXX	
Magnolia soulangiana	XXXX	XXXX	
Magnolia stellata	XXXX	XXXX	
Magnolia virginiana	XXXX	XXXX	
Mahonia aquifolium	XXXX	XXXX	
Malus floribunda	XXXX	XXXX	XXXX

	pH range		
	Acid 4.5<pH<6	Slightly acid 6<pH<7	Slightly alkaline 7<pH<8
Malus prunifolia	XXXX	XXXX	XXXX
Metasequoia glyptostroboides	XXXX		XXXX
Morella caroliniensis	XXXX	XXXX	
Nyssa sylvatica	XXXX	XXXX	
Ostrya virginiana	XXXX	XXXX	
Oxydendrum arboreum	XXXX	XXXX	
Paxistima canbyi	XXXX	XXXX	XXXX
Philadelphus coronarius	XXXX	XXXX	XXXX
Photinia villosa	XXXX		
Picea abies	XXXX	XXXX	
Picea pungens	XXXX	XXXX	
Picea glauca	XXXX	XXXX	
Picea omorika	XXXX	XXXX	XXXX
Pieris japonica	XXXX	XXXX	
Pinus aristata	XXXX	XXXX	XXXX
Pinus cembra		XXXX	
Pinus densiflora		XXXX	
Pinus mugo	XXXX	XXXX	XXXX
Pinus resinosa	XXXX	XXXX	
Pinus strobus	XXXX	XXXX	
Pinus sylvestris	XXXX	XXXX	
Pinus wallichiana	XXXX		
Platanus occidentalis	XXXX	XXXX	XXXX
Prunus cerasifera	XXXX	XXXX	XXXX
Prunus virginiana	XXXX	XXXX	
Pseudotsuga menziesii	XXXX	XXXX	
Pyracantha coccinea	XXXX	XXXX	XXXX
Quercus alba	XXXX	XXXX	
Quercus bicolor	XXXX	XXXX	
Quercus imbricaria	XXXX	XXXX	
Quercus palustris	XXXX		
Quercus phellos	XXXX		
Quercus robur	XXXX	XXXX	XXXX
Quercus rubra	XXXX	XXXX	
Quercus velutina	XXXX	XXXX	
Rhododendron carolinianum	XXXX		
Rhododendron catawbiense	XXXX		
Rhododendron mucronulatum	XXXX		
Rhododendron obtusum	XXXX		
Rhus aromatica	XXXX	XXXX	XXXX
Rosa spp.	XXXX	XXXX	
Rosa wichuraiana	XXXX	XXXX	
Salix babylonica	XXXX	XXXX	XXXX
Sassafras albidum	XXXX	XXXX	
Sciadopitys verticillata	XXXX	XXXX	

	pH range		
	Acid 4.5<pH<6	Slightly acid 6<pH<7	Slightly alkaline 7<pH<8
Sorbus americana	XXXX	XXXX	
Sorbus aucuparia	XXXX	XXXX	XXXX
Spiraea x vanhouttei		XXXX	XXXX
Stewartia sinensis	XXXX	XXXX	
Symphoricarpos albus	XXXX	XXXX	XXXX
Syringa x persica		XXXX	XXXX
Syringa vulgaris		XXXX	XXXX
Taxus baccata	XXXX	XXXX	XXXX
Taxus cuspidata		XXXX	XXXX
Taxus x media	XXXX	XXXX	XXXX
Thuja occidentalis		XXXX	XXXX
Tilia americana	XXXX	XXXX	XXXX
Tilia cordata	XXXX	XXXX	XXXX
Tilia tomentosa	XXXX	XXXX	XXXX
Tsuga canadensis	XXXX	XXXX	
Tsuga caroliniana	XXXX	XXXX	
Ulmus parvifolia	XXXX	XXXX	XXXX
Vaccinium corymbosum	XXXX		
Viburnum acerifolium	XXXX	XXXX	
Viburnum x burkwoodii	XXXX	XXXX	XXXX
Viburnum carlesii	XXXX	XXXX	
Viburnum lantana	XXXX	XXXX	XXXX
Viburnum plicatum var. tomentosum	XXXX	XXXX	XXXX
Vitex agnus-castus		XXXX	
Weigela florida	XXXX	XXXX	XXXX
Zelkova serrata	XXXX	XXXX	XXXX

Lime and Adjusting pH

Soil pH, or soil reaction, is a measure of the acidity or alkalinity of the soil. On a scale of 0 to 14, a pH of 7.0 is neutral, below 7 the pH becomes more acidic while above 7 soil becomes more alkaline. Generally, ornamental plants grow best between pH 5.5 and 7.5, with some preferring the lower end of the range and others the higher end. Plants grow better when planted in a soil at the optimum pH for the plant species. The soil pH influences the availability of the various mineral elements needed for plant growth. Maximum availability of most plant nutrients occurs at approximately 6.5. Soil pH is regulated by the amount of bases (calcium, magnesium, and potassium) relative to the hydrogen ion concentration present in the soil. In areas like Long Island, the soil pH is normally low (acidic) due to the parent material from which the soil developed. Applying lime increases the soil pH. Overtime, calcium and magnesium levels decrease due to plant uptake and leaching from precipitation and irrigation causing the pH to become more acidic. Always take a composite soil sample and have the pH tested.

Lime Products

Agricultural limestone is a term used for types of lime used in agriculture including calcite, or dolomite, calcium oxide, and calcium hydroxide.

- **Calcitic limestone:** mostly calcium carbonate
- **Dolomitic limestone:** has a higher concentration of magnesium than calcitic limestone. Dolomitic limestone will vary in the concentration of magnesium.
- **Calcium oxide:** also called quicklime or burned lime. Produced by heating limestone.
- **Calcium hydroxide:** also called hydrated or slaked lime. Produced by adding water to calcium oxide.
- **Marl:** lime harvested from fresh-water deposits created from alkaline water runoff from nearby land.
- **Basic slag:** material left over from iron smelting or other industries. Can contain trace elements, sometimes boron.

The amount of lime required to effect a change in pH is determined by the texture of the soil, type and purity of lime used, and particle size. The Calcium Carbonate Equivalent (CCE) is a measure of the capability that the liming material can neutralize acid compared to pure calcium carbonate. Even mined calcite will not have a CCE of 100%. Pure dolomitic limestone has a CCE of 119% or has 19% more neutralizing power than calcium carbonate. Calcium hydroxide has a CCE of 136%.

Material	Chemical formula	% CCE
Pure calcitic limestone	$CaCO_3$	100
Dolomitic limestone	$MgCO_3$	119
Calcium oxide, quicklime, burned lime	CaO	179
Calcium hydroxide; hydrated or slaked lime	$Ca(OH)_2$	136
Marl	$CaCO_3$	70-90
Basic slag	$CaSiO_3$	60-90

CCE = Calcium Carbonate Equivalent

Common Conversion Factors:

$CaO \times 1.79 = CaCO_3$
$MgO \times 2.50 = CaCO_3$
$MgCO_3 \times 1.19 = CaCO_3$
$Ca(OH)2 \times 1.36 = CaCO_3$

$CaCO_3 \times 0.56 = CaO$
$CaCO_3 \times 0.4 = MgO$
$CaCO_3 \times 0.84 = MgCO_3$
$CaCO_3 \times 0.73 = Ca(OH)_2$

$MgO \times 0.602 = Mg$
$MgCO_3 \times 0.288 = Mg$
$Mg \times 1.66 = MgO$
$Mg \times 3.47 = MgCO_3$

$CaCO_3 \times 0.400 = Ca$
$CaO \times 0.714 = Ca$
$Ca \times 2.5 = CaCO_3$
$Ca \times 1.4 = CaO$

Particle size is measured by passing the lime through sieves of various sizes. The fineness of the material affects how rapidly the lime will react in the soil. Finer mesh sieves have a higher % efficiency rating, therefore the greater the amount of lime that passes through finer mesh sieves, the quicker the reaction time. The Effective Neutralizing Value (ENV) of the lime material is calculated based on both the CCE and the particle sizes. The ENV can be found on the package of lime.

Soil texture also affects the amount of lime required to change the pH. Finer soils or soils higher in clay require more lime to effect a change in pH than coarser soils.

Limestone Recommendations to Raise the Soil pH to 6.2 (lbs of limestone/1,000ft2)

- The amount of limestone needed to raise the soil pH to 6.2, is based upon initial soil pH and soil texture.
- Use the 2.5" depth rate when you are performing maintenance applications to established lawns and landscapes.
- Use the 8" depth rate when you are fully incorporating the lime, such as during initial lawn or bed preparation.

	Soil Texture							
	Loamy Sand		Sandy Loam		Loam		Silt Loam	
Initial Soil pH	2.5"	8"	2.5"	8"	2.5"	8"	2.5"	8"
4.5	31	92	47	138	78	230	109	321
4.6-4.7	31	92	39	115	70	207	101	298
4.8-4.9	23	69	39	115	70	207	101	298
5.0-5.1	23	69	31	92	62	184	94	275
5.2-5.3	16	46	31	92	55	161	86	253
5.4-5.5	12	37	23	69	39	115	62	184
5.6-5.7	8	23	16	46	31	92	47	138
5.8-5.9	8	23	12	37	16	46	31	92
6.0	5	14	8	23	12	37	16	46

- To calculate limestone rate in tons per acre, multiple the lbs./1,000ft2 rate by 43.56, and then divide by 2000.

Adjusting Aglime Material Required:

$$\frac{\text{Limestone recommendation}}{\text{ENV of the aglime being used}} \times 100$$

Example:

Soil test result recommends 4 tons of limestone per acre
ENV (from package of lime) = 80%

$$\frac{4 \text{ tons}}{80} \times 100 = 5 \text{ tons of lime product is required}$$

Soils heavily limed may be too alkaline for certain plants such as those in the family Ericaceae including rhododendron, azalea, Kalmia, Leucothoe, Pieris, etc. Soil pH can be decreased through the addition of several materials. Caution should be used with aluminum sulfate since the available aluminum in the soil will increase and could be toxic to sensitive plants.

Materials and Rate to Decrease the Soil pH by 1 Unit below pH 6.0.

	Rate (lb/100 ft2)		
Material	**Sandy Loam**	**Loam**	**Clay Loam or Peat**
Aluminum Sulfate	2.5	5	7
Iron Sulfate	2.5	5	7
Sulfur	0.5	1	1.5

Cornell Cooperative Extension - Suffolk County has a lab which tests soil for pH and soluble salts at its location at 423 Griffing Avenue, Riverhead, NY. Samples can also be dropped off at our location at the Bayard Cutting Arboretum, Montauk Highway, Oakdale, NY and staff members will forward the samples to the lab in Riverhead. The cost for testing per sample is $5. For more information contact Cornell Cooperative Extension.

Amount of Sod Required to Cover an Area

1 Pallet = 600 $ft.^2$
1 piece = 10 $ft.^2$

Volume of Mulch Needed to Cover an Area 3" Deep

Cubic yards	will cover square feet
1	108
2	216
3	324
4	432
5	540
10	1080
20	2160
30	3240
40	4320
50	5400
100	10800

Useful Formulas for Calibrating a Pesticide Sprayer

GPM – Gallons Per Minute
GPA – Gallons Per Acre
MPH – Miles Per Hour
W - Nozzle spacing (in inches) for broadcast spraying
W - Spray width (in inches) for single nozzle, band spraying or boomless spraying.

$$\text{Speed (MPH)} = \frac{\text{Distance (ft)} \times 60}{\text{Time (sec)} \times 88}$$

$$\text{GPM (Per Nozzle)} = \frac{\text{GPA} \times \text{MPH} \times \text{W}}{5940}$$

$$\text{GPA} = \frac{5940 \times \text{GPM (Per Nozzle)}}{\text{MPH} \times \text{W}}$$

$$\text{GPM (Per Nozzle)} = \frac{\text{GAL/1000FT}^2 \times \text{MPH} \times \text{W}}{136}$$

$$\text{GAL/1000FT}^2 = \frac{136 \times \text{GPM (Per Nozzle)}}{\text{mph} \times \text{W}}$$

Amount of Growing Media for Containers

Although nursery container size and shape will vary, use the following as a general guideline.

- 1 bag (2.8cf) of media will fill:
  - 21 - 1 gal containers
  - 12 - 2 gal containers
  - 9 - 3 gal containers
- 1 bale (3.8cf) of media will fill:
  - 49 - 1 gal containers
  - 28 - 2 gal containers
  - 20 - 3 gal containers

Irrigation Abbreviations and Conversion Factors

Abbreviations for Common Units

ft hd	feet of head
ft/min	feet per minute
ft/sec	feet per second
gph	gallons per hour
gpm	gallons per minute
hr	hour
in	inches
in/hr	inches/hour
l/sec	liters/sec
m	meters
mm	millimeters
m hd	meters of head
m/sec	meters per second
min/wk	minutes per week
psi	pounds per square inch

Multiply	*by*	*To obtain*
psi	6.89476	kilopascals
psi	0.068948	bars
bars	100	kilopascals
psi	2.31	feet of head

Velocity

Multiply	*by*	*To obtain*
ft/sec	0.3048	meter/second

Power

Multiply	*by*	*To obtain*
Kilowatts	1.3410	horsepower

Flow and Water Volume

Multiply	*by*	*to obtain*
U.S. Gallons per minute (gpm)	0.1337	Cubic feet per minute
Cubic feet per minute	7.48	U.S. gallons per minute
Cubic feet per second	448.8	U.S. gallons per minute
U.S. gallons per minute	0.00223	Cubic feet per second
Acre inches per hour	453	U.S. gallons per minute
British Imperial gallons	1.201	U.S. gallons
U.S. gallons	0.833	British Imperial gallons
Acre feet	325,850	U.S. gallons
Acre inches	27154	U.S. gallons

Velocity in feet per second

(0.408 x GPM) / Inside diameter of pipe in inches, squared

Q=AV (quantity = area x velocity) ("the basic equation of water flow") (example: quantity in feet per second = square feet of area x feet per second velocity)

One inch of water depth = 0.62 gallons per square foot of area

Water Pressure

Multiply	*by*	*to obtain*
ft hd	0.433	psi
psi	2.31	ft hd
m hd	3.28	ft hd
ft hd	0.3049	m hd

Precipitation Rates

Equilateral Triangular Spacing with a 360° Arc

Customary:

$$\text{In/hr} = \frac{\text{GPM} \times 96.25}{(\text{Head Spacing})^2 \times 0.866}$$

Metric:

$$\text{mm/hr} = \frac{\text{meter}^3 \times 1000}{\text{meter}^2 \times 0.866}$$

Square/Rectangular Spacing

$$\text{In/hr} = \frac{\text{GPM} \times 96.25}{\text{Head Spacing} \times \text{Row Spacing}}$$

$$\text{mm/hr} = \frac{\text{m}^3 \times 1000}{\text{Head Spacing} \times \text{Row Spacing}}$$

Square/Rectangular Spacing for Specific Arc

$$\text{In/hr} = \frac{34650 \times \text{GPM}}{\text{Degrees of Arc} \times \text{Head Spacing} \times \text{Row Spacing}}$$

$$\text{mm/hr} = \frac{\text{m}^3/\text{hr} \times 1000}{\text{Degrees of Arc} \times \text{Head Spacing} \times \text{Row Spacing}}$$

Horsepower (expressed as a decimal)

GPM x ft of head
3960 x pump efficiency

Run Time

$$\text{Min/wk} = \frac{\text{total weekly requirement (in/wk)} \times 60 \text{ (min/hr)}}{\text{precipitation rate (in/hr)}}$$

$$\text{Min/wk} = \frac{\text{total weekly requirement (mm/wk)} \times 60 \text{ (min/hr)}}{\text{precipitation rate (mm/hr)}}$$

Pipe Velocity

$$\text{ft/sec} = \frac{0.4085 \times \text{flow (gpm)}}{(\text{inside pipe diameter in inches})^2}$$

$$\text{m/sec} = \frac{1273.24 \times \text{flow (l/sec)}}{(\text{inside pipe diameter in mm})^2}$$

Slope

$$\text{Slope} = \frac{\text{rise (measure of length)}}{\text{run (measure of length)}}$$

Recent NY State Laws Affecting the Horticulture Industry

Spotted Lanternfly Protective Zone Order & Quarantine

Effective October 2018

Spotted lanternfly (*Lycorma delicatula*), a planthopper first detected in Pennsylvania in 2014, was detected in Suffolk County in October 2018. In response to detections in Suffolk County and other earlier detections in New York, a Quarantine and Protective Zone Order was implemented. The purpose of the Quarantine is to help slow the spread of the pest from infested areas from establishing within NYS. The Quarantine requires certificates of inspection issued from the impacted states on the following regulated articles entering NYS:

- Any living life stage of the SLF.
- Brush, debris, bark, or yard waste.
- Landscaping, remodeling, or construction waste.
- Logs, stumps, or any tree parts.
- Firewood of any species.
- All plants and plant parts, including but not limited to nursery stock, green lumber, fruit and produce and other material living, dead, cut, fallen (including stumps), roots, branches, mulch, and composted and uncomposted chips.
- And many other items including trucks, landscaping equipment, outdoor items, etc.

For a complete list of quarantine items, visit the NYS Department of Agriculture and Markets: https://www.agriculture.ny.gov/AD/release.asp?ReleaseID=3821

The Spotted Lanternfly Protective Zone Order further assists in the prevention of this pest by conducting surveys, and timely monitoring of the pest in affected areas. Protective Zones are established in the following counties: Bronx, Broome, Chemung, Chenango, Delaware, Dutchess, Greene, Kings, Nassau, Orange, Otsego, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Tioga, Ulster and Westchester.

To learn more about the pest, visit the NYSDEC Spotted Lanternfly information page at http://www.dec.ny.gov/animals/113303.html

Oak Wilt Protective Zone Order

Effective March 2017

In response to the oak wilt detections across Suffolk County in 2016, the NYSDEC issued a Protective Zone Order that covers all of Suffolk County to limit the rate of spread of oak wilt. A protective zone is ordered when 3 or more towns have confirmed pest detections within a county. Oak wilt is a serious fungal disease that affects all oak species in our region, especially oaks in the red oak group.

Shipment of Oak Trees Outside of Suffolk County

Nurseries operating within the Oak Wilt Protective Zone will still be able to ship oaks outside of Suffolk County, but first a limited permit needs to be issued by a NYS Agriculture and Markets Horticultural Inspector under a compliance agreement. The compliance agreement and limited permit are renewed annually.

If you need a Nursery Shipping Compliance Agreement for Oak or have questions regarding the limited permit, contact your NYS Ag and Markets Suffolk County Horticultural Inspector:
Michael Dorgan –Supervisor, 516-315-9003
michael.dorgan@agriculture.ny.gov

Bruce Amundsen- South Shore, 631-831-6897
bruce.amundsen@agriculture.ny.gov

Bob Leonti- North Shore, 631-831-6895
robert.leonti@agriculture.ny.gov

Movement of Firewood and Wood Products Outside of Suffolk County

Transportation of firewood or wood products outside of Suffolk County can only occur from August to March, and is not allowed from April 1st to July 31st. Shipment or movement of firewood and/or forest products is possible with a limited permit issued by the NYSDEC Division of Lands and Forests; some exceptions apply. Visit the NYSDEC firewood information website at http://www.dec.ny.gov/animals/28722.html for more information or contact DEC Forest Health with any firewood/wood products permitting questions at 631-640-0652.

To learn more about oak wilt, the protective zone order, and NYS firewood regulations visit the NYS DEC Oak Wilt website at http://www.dec.ny.gov/lands/46919.html.

Prohibited and Regulated Invasive Species

Effective March 2015

The purpose of the regulation is to manage invasive species that have been classified as either “regulated” or “prohibited.” The list covers several different categories of invasive organisms, however this synopsis pertains to invasive terrestrial plants only. To view a complete list of prohibited and regulated plants go to page 37.

Plants on the Prohibited List will not be allowed for intent to sell, import, purchase, transport, introduction, or propagation. Regulated plants will be allowed for possession, sale, purchase, propagation and transport however, introduction into a "free-living state" either purposely or accidentally will be illegal. Free-living states are defined as natural areas, public lands, lands that are continually or intermittently connected to public lands, and various public waterways, including water-using facilities with outflow to public waters. Regulated plants that are offered for sale or sold must be affixed with official labeling noting its potential environmental impacts. Refer to Part 575.6 in the Express Terms (http://www.dec.ny.gov/regulations/93848.html) for details on labeling specifications, and other details pertaining to the regulation.

Phosphorus Fertilizer Restrictions
Effective 2012

A phosphorus fertilizer is defined as a fertilizer with a phosphate content of 0.67% or greater, not including compost. This law prohibits the use of phosphorus fertilizer on non-agricultural turf in New York State EXCEPT when:

- a soil test demonstrates that additional P is needed for growth OR
- when applied to newly established turf during the first growing season.

Even if a soil test shows that additional P is needed, application of P to non-agricultural turf is PROHIBITED:

- between December 1st and April 1st;*
- within 3 feet of surface water where there is at least a 10 foot buffer of continuous natural vegetation and a spreader guard, deflector shield, or drop spreader is used to apply the fertilizer, EXCEPT when applied to newly established turf during the first growing season.*
- within 20 feet of surface water without a 10 foot buffer and a spreader guard, deflector shield, or drop spreader is not used, EXCEPT when applied to newly established turf during the first growing season.*

Application of fertilizer to any impervious surface, including parking lots, roadways, and sidewalks, is also prohibited. If such application does occur, the fertilizer must be immediately contained and either legally applied or placed in an appropriate container.

Retailers who sell any fertilizer with a phosphate content of 0.67% or greater, must:

- Display P-containing fertilizer separately from non-P-containing fertilizer; and
- Display a sign at least 8 ½ " X 11" in size near the P-containing fertilizer that says,

"Phosphorus runoff poses a threat to water quality. Therefore, under New York law, phosphorus-containing fertilizer may only be applied to lawn or non-agricultural turf when: (1) A soil test indicates that additional phosphorus is needed for growth of that lawn or non-agricultural turf; or (2) The fertilizer is used for newly established lawn or non-agricultural turf during the first growing season."

*Please note that Long Island county laws relating to timing of fertilizer application and distance to surface waters are more stringent and supersede state laws. See below.

Pesticide Use Restrictions at Day Care Centers and Schools
Effective 2011

No day care center or public or private school in New York State shall apply pesticides to playgrounds, turf, or athletic and playing fields EXCEPT:

- anti-microbial pesticides;
- aerosol pesticides with a directed spray in containers of 18 fluid ounces or less, when used to protect individuals from an imminent threat from stinging and biting insects;
- non-volatile insect or rodent bait in tamper-resistant containers;
- exempt pesticides as classified by the US EPA under 40 CRF Part 152.25;
- boric acid;
- disodium octaborate tetrahydrate;
- horticultural soaps and oils that do not contain synthetic pesticides or synergists; and
- for emergency pesticide applications as determined by the county health department.

If an emergency application is made, parents and staff must be notified. All other laws pertaining to pesticide lawn care applications still apply.

Recent County Laws Affecting the Horticulture Industry

Suffolk County Turf Fertilizer Reduction Law
Effective 2009

Application Restrictions:

- No fertilizer on county-owned property besides: 1. Golf courses, which must use only the minimum amount of slow-release and organic fertilizers, not to exceed 3lbs of N/1,000 sq ft. 2. Suffolk County Farm, which must establish strategies to meet the goal of nitrogen reduction. 3. Athletic fields, which must develop and implement an annual plan of BMP's. 4. Newly seeded or planted landscapes and newly seeded or newly sodded areas.
- No fertilizer to turf on non-county-owned property Nov. 1st-April 1st, besides sod farms.
- No fertilizer on county-owned property or to turf on non-county-owned property, within 20 ft. of regulated surface water, unless there is at least a 10 ft. vegetation buffer.

"Fertilizer" is defined as any organic or inorganic source of essential plant nutrients. This definition does NOT include lime, mycorrhizae, or mulch. Compost, manure and compost teas WITHOUT a fertilizer analysis label are also exempt from the application restrictions.

Landscapers in Suffolk County must take a one-time continuing education class on nitrate pollution in order to renew their Consumer Affairs license. Contact 631-853-5957 to find out when the next class is offered.

In addition, the law also requires that retail establishments post signs and informational brochures to advise consumers about the proper use and application of fertilizers and nitrogen pollution. The signs and brochures must be displayed within 10 feet of every fertilizer display area in the store.

Nassau County Turf Fertilizer Reduction Law
Effective 2009

Application Restrictions:

- No fertilizer to turf on any property (both county and non-county owned property) Nov. 15th-April 1st, except property that is being used to produce an agricultural commodity.

**Note that the beginning of the fertilizer ban period in Nassau County is Nov. 15th, while the beginning of the ban period in Suffolk County is Nov. 1st. "Fertilizer" is defined the same way as the Suffolk County Law defines it.

Amendment to Suffolk County Invasive Plant Species Law (Do Not Sell List)
Effective November 2015

In November 2015, the Suffolk County legislature adopted local law 30 to amend the Do Not Sell List which regulates non-native invasive plant species. This amendment allows for the sale of cultivars classified as exempt and/or conditionally exempt status as approved by the NYS Cultivar Committee. These cultivars have been scientifically evaluated and found to be either sterile or unlikely to spread to natural areas. To review the exempt cultivar last, refer to page 52.

Fertilizer Calculations

Nitrogen (N), phosphorus (P), and potassium (K) in fertilizers are expressed as elemental nitrogen (N) and the oxide forms of phosphorus (P_2O_5) and potassium (K_2O). When reading soil test reports and recommendations it is important to determine whether the oxide or elemental form is being expressed. If the elemental form is being used, convert to the oxide form before calculating the amount of fertilizer required. No conversion is required for nitrogen since it is always expressed in the elemental form.

Conversions for P and K:

$P \times 2.29 = P_2O_5$	$P_2O_5 \times 0.44 = P$
$K \times 1.2 = K_2O$	$K_2O \times 0.83 = K$

Example 1:

- Recommendation is to apply 100 lbs of K per acre.
- First convert to the oxide form: 100 x 1.2 = 120 lbs of K_2O
- If you are using a 0-0-60 fertilizer, apply 120 lbs/0.60 = 200 lbs
- 200 lbs per acre of 0-0-60 will apply 100 lbs of K per acre

Example 2:

- Recommendation is to apply 100 lbs of N per acre
- No conversion to an oxide form is necessary for N
- If you are using a 20-8-8 fertilizer, apply 100/0.20 = 500 lbs
- 500 lbs per acre of 20-8-8 will apply 100 lbs of N per acre

Essential Plant Nutrients

Certain nutrients are essential for plant growth. These elements may originate from the atmosphere or the soil and roots take up most of them. Currently, seventeen essential nutrients have been identified. Carbon, hydrogen, and oxygen are provided by carbon dioxide and water while the other 14 are taken up from the soil. Macronutrients are required in higher concentrations than micronutrients by plants although concentration does not determine essentiality.

Classification of macro and micronutrients and chemical abbreviation

ELEMENT

Macronutrients	**Abbreviation**
Nitrogen	N
Potassium	K
Calcium	Ca
Phosphorus	P
Magnesium	Mg
Sulfur	S
Micronutrients	
Iron	Fe
Chlorine	Cl
Manganese	Mn
Zinc	Zn
Boron	B
Copper	Cu
Molybdenum	Mo
Nickel	Ni

Nutrient Mobility in Plants

Nutrients move through the plant by way of the vascular system – xylem, where movement is up and phloem where movement can travel in two directions (bi-directional translocation). The degree to which a nutrient is mobile, or capable of being retranslocated in the phloem from one part of the plant to another has an effect on the location where deficiency symptoms appear. Highly mobile elements (see below) can be translocated from older leaves to younger leaves to satisfy the higher demand for the nutrient in the growing parts if the element becomes limiting in the soil. This causes the deficiency symptoms to first appear on older leaves. Elements with intermediate or low mobility cannot be remobilized and moved from older tissue to actively growing areas thus deficiency symptoms appear on younger plant parts.

MOBILITY OF NUTRIENT ELEMENTS IN PLANTS

High Mobility	**Intermediate or Low Mobility**
Nitrogen	Calcium
Phosphorous	Iron
Potassium	Manganese
Magnesium	Zinc
Sulfur	Copper
Chlorine	Boron
	Molybdenum

Correcting a Nutrient Problem

The growth of a plant is determined by the most limiting factor. These growth factors include nutrients, light, water, temperature, CO_2, and O_2. The 'law of the minimum', as it is called, can be looked at in the context of nutrient management. The level of nutrients in the plant tissue partly determines plant growth. As the nutrient level increases from a deficient level, plant growth increases. At some point, plant growth levels off even if nutrient levels continue to increase. This area where above adequate nutrient levels exist is also called a 'luxury zone'. Increasing the nutrient supply does not increase plant growth and eventually can negatively impact growth when elements are in excessive amounts. In addition, excessive amounts of fertilizer, such as nitrogen, can increase certain insect and disease problems. Nutrient management should be approached with this in mind. Once maximum growth is realized, additional fertilizer only wastes money, can increase plant problems, and causes environmental pollution.

Although roots can selectively take up nutrients, too much of one can affect the uptake of others. In other words, it is not the absolute level of nutrients that is important but the ratio among them. Toxicity symptoms of one element might actually be expressed as the deficiency symptoms of another. Plants can be healthy even when the nutrient supply is low as long as the levels are balanced.

Before fertilizing to correct a deficiency, it is important to correctly identify the deficient element. Deficiency symptoms can differ among plant species therefore it is difficult to provide descriptions of symptoms that would apply to most plants. When confronted with a potential problem, foliar and soil testing are advised to determine if a deficiency exists. Be aware that environmental and/or certain pest problems could directly or indirectly cause a nutrient deficiency symptom. In these cases, correcting the growing conditions or managing the pest problem is the best course of action, as applying a fertilizer will most likely not correct the problem. Some nutrient deficiencies, such as iron and manganese, are due to elevated soil pH, which makes the nutrients unavailable for plant uptake. Adjusting the soil pH is the best method for correcting these types of nutrient deficiencies for the long term.

Following are common fertilizer products and nutrient content for various essential nutrients that are sometimes determined deficient in plants.

Macronutrients

Calcium-containing carriers and Ca Content

Name	Ca %
Liming Materials	
Calcitic limestone	32
Dolomitic limestone	22
Hydrated lime	46
Calcium oxide	60
Fertilizers	
Calcium nitrate	19
Superphosphate	20
Triple superphosphate	14
Others	
Gypsum	23

Magnesium-containing carriers and Mg Content

Name	Mg %
Liming Materials	
Dolomitic limestone	6-12
Magnesium oxide	50-55
Other	
Potassium magnesium sulfate (Sul-Po-Mag)	11
Magnesium sulfate	10

Nitrogen-containing Fertilizers and Nitrogen Content

Name	N Content %
Inorganic	
Ammonium nitrate	34
Ammonium sulfate	21
Anhydrous ammonia	82
Monoammonium phosphate	11
Diammonium phosphate	16-18
Calcium nitrate	16
Sodium nitrate	16
Potassium nitrate	13
Synthetic Organic	
Urea	45-46
Sulfur-coated urea	40
Urea-formaldehyde	38
Natural Organic	
Cotton seed meal	12-13
Milorganite	12
Animal manure	10-12
Sewage sludge	10-20
Chicken litter	20-40

Phosphorous-containing Fertilizers and P Content

Name	% P_2O_5 Available
Superphosphate	20
Triple superphosphate	45
Monoammonium phosphate	49
Diammonium phosphate	47
Ammonium polyphosphate	34
Phosphoric acid	55
Rock Phosphate	3-26
Bone meal	22-28

Potassium-containing Fertilizers and K Content

Name	K_2O%
Potassium chloride (muriate of potash)	60-63
Potassium sulfate	50-52
Potassium magnesium sulfate (Sul-Po-Mag)	22
Potassium nitrate	44
Potassium hydroxide	83

Micronutrients

Boron-containing carriers and B Content

Name	B %
Fertilizer borate	14-15
Foliarel	21
Solubor	20
Borax	11

Iron-containing carriers and Fe Content

Name	Fe %
Ferrous ammonium phosphate	29
Ferrous ammonium sulfate	14
Ferrous sulfate	19-21
Ferric sulfate	23
Iron chelates	5-11
Iron polyflavonoids	9-10

Manganese-containing carriers Mn Content

Name	Content %
Manganese sulfate	26-28
Manganese oxide	41-68
Manganese chelate	5-12

Molybdenum-containing carriers and Mo Content

Name	Mo %
Ammonium molybdate	54
Sodium molybdate	39-41
Molybdenum trioxide	66

Zinc-containing carriers and Zn Content

Name	Zn %
Zinc sulfate	35
Zinc oxide	78-80
Zinc chelates	9-14
Zinc polyflavonoids	10

Conversion factors

Temperature Formulas

°F = 9/5 (°C) + 32
Fahrenheit temperature = (1.8 x Celsius temperature) + 32

°C = 5/9 [(°F) - 32]
Celsius temperature = 0.55556 (Fahrenheit temperature – 32)

Metric Decimal Multiples and Sub multiples

Multiples and sub multiples	*Prefixes*	*Symbols*
109 or 1000000000	giga	G
106 or 1000000	mega	M
103 or 1000	kilo	k
102 or 100	hecto	h
101 or 10	deca	da
10-1 or 0.1	deci	d
10-2 or 0.01	centi	c
10-3 or 0.001	milli	m
10-6 or 0.000001	micro	µ
10-9 or 0.000000001	nano	n

Metric base units and abbreviations

Quantity	*Name of Unit*	*Symbol*
Length	Meter	m
	Centimeter	cm
Mass	Kilogram	Kg
	gram	g
Volume	Liter	l
	Milliliter	ml

Parts per Million (PPM)

PPM = milligrams/Kilogram = mg/Kg
PPM = milligrams/liter = mg/l

Example: 2 PPM = 2 mg/ l of solution
2 PPM = 1 mg/ 500 ml of solution

PPM = percent (%) x 10^4
% = PPM x .0001

Example: 1% concentration x 10^4 = 10,000 PPM
0.1% concentration x 10^4 = 1,000 PPM

Metric to Customary Conversions

Length/Distance

Multiply	*by*	*To obtain*
Centimeters	0.394	Inches
Meters	3.281	Feet
Meters	1.094	Yards
Kilometers	0.621	Miles

Mass

Multiply	*by*	*To obtain*
Grams	0.035	Ounces
Kilograms	2.205	Pounds

Volume

Multiply	*by*	*To obtain*
Milliliters (cc)	0.034	Ounces (US liquid)
Milliliters (cc)	0.068	Tablespoons
Milliliters (cc)	0.203	Teaspoons
Milliliters (cc)	0.061	Cubic inches
Milliliters (cc)	0.004	Cups (US)
Liters	4.226	Cups (US)
Liters	2.113	Pints (US liquid)
Liters	1.057	Quarts (US liquid)
Liters	0.264	Gallons
Cubic meters	35.31	Cubic feet
Cubic meters	1.308	Cubic yards
Cubic meters	0.0008	Acre-foot
Cubic meters	6.290	Bushels

Area

Multiply	*by*	*To obtain*
Square centimeters	0.155	Square inches
Square meters	10.76	Square feet
Square meters	1.196	Square yards
Square meters	0.000247	Acres
Square hectares	2.47	Acres

Customary to Metric Conversion

Length/Distance

Multiply	*by*	*To obtain*
Inches	2.54	Centimeters
Feet	0.305	Meters
Yards	0.914	Meters
Miles	1.610	Kilometers

Mass

Multiply	*by*	*To obtain*
Ounces	28.35	Grams
Pounds	0.454	Kilograms

Volume

Multiply	*by*	*To obtain*
Ounces (US liquid)	29.57	Milliliters (cc)
Tablespoons	14.79	Milliliters
Teaspoons	4.929	Milliliters
Cups (US)	236.6	Milliliters
Cups (US)	0.237	Liters
Pints (US liquid)	0.473	Liters
Quarts (US liquid)	0.946	Liters
Gallons	3.785	Liters
Cubic inches	16.39	Milliliters (cc)
Cubic feet	0.028	Cubic meters
Cubic yards	0.764	Cubic meters
Bushel (US)	0.035	Cubic meters
Acre-foot	1233.5	Cubic meters

Area

Multiply	*by*	*To obtain*
Square inches	6.451	Sq. centimeters
Square feet	0.093	Square meters
Square yards	0.836	Square meters
Acre	4046.9	Square meters
Acre	0.405	Hectares

General Conversions:

Length/Distance

Multiply	*by*	*To obtain*
Inches	0.083	Feet
Inches	0.028	Yards
Feet	12	Inches
Feet	0.333	Yards
Feet	0.00019	Miles
Yards	36	Inches
Yards	3	Feet
Yards	0.00057	Yards
Miles	5280	Feet
Miles	1760	Yards

Mass

Multiply	*by*	*To obtain*
Ounce	0.062	Pounds
Pounds	16	Ounce
Pounds	0.0005	Ton (short)
Tons (short)	2000	Pounds

Volume

Multiply	*by*	*To obtain*
Teaspoons	0.333	Tablespoons
Teaspoons	0.167	Ounces (US liquid)
Teaspoons	0.021	Cups (US)
Teaspoons	0.010	Pints (US liquid)
Tablespoons	3.001	Teaspoons
Tablespoons	0.500	Ounces (US liquid)
Tablespoons	0.062	Cups (US)
Tablespoons	0.031	Pints US liquid)
Cups (US)	48.00	Teaspoons
Cups (US)	16.00	Tablespoons
Cups (US)	8.000	Ounces (US liquid)
Cups (US)	0.500	Pints (US liquid)
Cups (US)	0.250	Quarts (US liquid)
Pints (US liquid)	16	Ounces (US liquid)
Pints (US liquid)	2.000	Cups (US)
Pints (US liquid)	0.500	Quarts (US liquid)
Pints (US liquid)	0.125	Gallons (US)
Quarts (US liquid)	32	Ounces (US liquid)
Quarts (US liquid)	4.0	Cups (US)
Quarts (US liquid)	2	Pints (US liquid)
Quarts (US liquid)	0.25	Gallons (US)
Gallons (US)	128	Ounces (US liquid)
Gallons (US)	16	Cups (US)
Gallons (US)	8	Pints (US liquid)
Gallons (US)	4	Quarts (US liquid)

Cubic inches	0.0006	Cubic feet
Cubic inches	0.000021	Cubic yards
Cubic feet	1728	Cubic inches
Cubic feet	0.037	Cubic yards
Cubic feet	0.804	Bushels (US)
Cubic yards	27	Cubic feet
Cubic yards	21.70	Bushels (US)
Cubic yards	0.0006	Acre-feet
Bushels (US)	1.244	Cubic feet
Bushels (US)	0.046	Cubic yards
Bushels (US)	0.000029	Acre-feet
Acre-foot	43560	Cubic feet
Acre-foot	1613	Cubic yards
Acre-foot	35003	Bushels (US)

Area

Multiply	*by*	*To obtain*
Square inches	0.007	Square feet
Square feet	144	Square inches
Square feet	0.111	Square yards
Square mile	640	Acres
Square yards	1296	Square inches
Square yards	9	Square feet
Acre	43560	Square feet
Acre	4840	Square yards
Circumference of circle	0.3183	Diameter of the circle
Diameter of circle	3.14	Circumference of circle
Diameter squared	0.7854	Area of circle
Radius squared	3.14	Area of circle

Area of a square or rectangle
Length x width

Area of a triangle (with a 90°)

$$\frac{\text{Length x width}}{2}$$

Using Growing Degree Days for Insect and other Pest Management

When pest management is based on calendar timings, daily temperatures are not taken into consideration. This can result in misleading information regarding current insect and pest activity. Insects, like plants and many organisms, are dependent on temperature to develop. Depending on weather conditions, especially temperatures, insect and plant development may vary from year to year by a few weeks, consequently predicting the proper time for control measures can be difficult.

Knowing that insect and plant development is dependent on temperature it is possible to utilize daily maximum and minimum temperatures and a “threshold” or “base” temperature and calculate the accumulation of heat units, which are referred to as Growing Degree Days (GDD). By tracking accumulated GDD during the season you can document the rate of development of a particular plant or insect pest. The rate of insect development increases as temperatures exceed the base temperature and decreases as temperatures drop below the base temperature. It is possible to use this information for predicting insect pests as well as certain weed pests.

There are several mathematical equations that can be used to for calculating accumulated GDD based on daily maximum and minimum temperatures. The easiest method is to average the daily maximum and minimum temperatures and subtract from it the base temperature. The threshold or base temperature used for most situations is 50°F.

$$\frac{\text{Max Temp + Min Temp}}{2} \text{ - Base Temperature (50°F.) = Daily GDD}$$

For each day that the average temperature is one degree above the base temperature, one degree-day accumulates. Each day from March 1 to September 30 the daily GDD is calculated and added to the previous day’s total. If the average temperature falls below the base temperature this would return a negative GDD. In this case the daily GDD calculation should be entered as **zero** since negative numbers are not included.

Cornell Cooperative Extension – Suffolk County calculates accumulated GDD for a number of locations on Long Island and in New York City. Commercial growers of nursery stock, vegetables and fruit, as well as arborists, landscape gardeners, those in charge of athletic fields, parks, and golf courses and other horticulture related entities can receive this information via email. To sign up for the email, which also includes soil temperatures and precipitation data contact Cornell Cooperative Extension by phone at 631-727-7850, or email Sandra Vultaggio at sib7@cornell.edu.

Meteorological Extremes

The following table lists the Meteorological Extremes (°F) at Brookhaven National Laboratory. The period covered is from 1949 to the present. http://www.bnl.gov/weather

Absolute Highest Temperature	100.5°F July 21 1991 & July 22, 1957
Absolute Lowest Temperature	-23.0°F January 22, 1961
Average Yearly Temperature	50.39°F
Coldest Year	1967 (Avg. Temp. = 47.5°F)
Warmest Year	2012 (Avg. Temp. = 54.2°F)
Greatest Daily Temperature Range	56.5°F
Least Daily Temperature Range	0.5°F
Maximum Annual Degree Days	6753 for 1967
Maximum Monthly Degree Days	1414 in January 1977
Average Annual Precipitation	48.93"
Maximum Annual Precipitation	68.66" in 1989
Minimum Annual Precipitation	34.35" in 1965
Maximum Monthly Precipitation	22.14" in October 2005
Minimum Monthly Precipitation	Trace in June 1949
Maximum Daily Precipitation	9.02" September 10 - 11, 1954 Hurricane Edna
Maximum Hourly Rainfall	2.10" September 10 - 11, 1954 Hurricane Edna
Maximum Seasonal Snowfall	90.8" 1995 - 96
Minimum Seasonal Snowfall	4.5" 1997 - 98
Maximum Monthly Snowfall	35.8" February 2013
Maximum Daily Snowfall	19.0" February 1978
Maximum Snowfall, Single Storm	30.9" February 2013
Longest Period Snow Cover	55 days (Dec. 26, 1947 - February 18, 1948)
Absolute First Day of Snowfall	October 17
Absolute Last Day of Snowfall	April 27
Peak Wind Speed	125 mph - August 31, 1954 Hurricane Carol
Lowest Barometric Pressure	28.375" September 12, 1960 Hurricane Donna

Personal Protective Equipment - Gloves

Listed on the label of your pesticide in the Personal Protective Equipment (PPE) section, there should be a glove type or a category A-H. The label may provide several examples of glove materials which are resistant to that chemical. To find what types of gloves can be used with the pesticide, consult the chart on the next page. According to the Environmental Protection Agency's Worker Protection Standard, only unlined gloves or gloves with separatable liners may be used.

Not all gloves will give you the same level of protection. Some glove materials will last longer against certain types of pesticides and chemicals. They will be highly, moderately or slightly chemical resistant.

With highly chemical resistant gloves, you should clean or replace them at the end of each day's work period. Rinse off all pesticides at rest breaks.

With moderately chemical resistant gloves, you may need to clean or replace them within an hour or two of contact.

With slightly chemical resistant gloves, you may need to clean or replace them within 10 minutes of contact.

Not chemical resistant. Do not wear this type of material as PPE when contact is possible.

The chart on the next page shows the information in an alternative grid format.

The chart on page 124 gives you a range of PPE materials from which to choose for each glove category that may be listed on your pesticide label. It also tells you how long you can expect the material to be resistant to the pesticide you are using. For example, the label might say: "If you want more options, follow the instructions for category F on an EPA chemical resistance selection chart." This means you should select PPE made from barrier laminate, butyl, nitrile or Viton because they are highly chemical resistant to that pesticide.

Selection Category Listed On Pesticide Label	TYPE OF PERSONAL PROTECTIVE MATERIAL								
	Barrier Laminate	Butyl Rubber >14 mils	Nitrile Rubber >14 mils	Neoprene Rubber* >14 mils	Natural Rubber >14 mils	Polyethylene	Polyvinyl Chloride (PVC) >14 mils	Viton >14 mils
A (dry and water based foundations)	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH
B	HIGH	HIGH	SLIGHT	SLIGHT	NONE	SLIGHT	SLIGHT	SLIGHT
C	HIGH	HIGH	HIGH	HIGH	MOD	MOD	HIGH	HIGH
D	HIGH	HIGH	MOD	MOD	NONE	NONE	NONE	SLIGHT
E	HIGH	SLIGHT	HIGH	HIGH	SLIGHT	NONE	MOD	HIGH
F	HIGH	HIGH	HIGH	MOD	SLIGHT	NONE	SLIGHT	HIGH
G	HIGH	SLIGHT	SLIGHT	SLIGHT	NONE	NONE	NONE	HIGH
H	HIGH	SLIGHT	SLIGHT	SLIGHT	NONE	NONE	NONE	HIGH

* Includes natural rubber blends and laminates. " MOD" = Moderate

Requirements for Service Containers

Any person utilizing a service container containing a pesticide must comply with ECL 33-130(1), and must ensure that the container bears the following, or must directly affix to the container a label bearing:

1. The name and address of the manufacturer or registrant as it appears on the pesticide product label
2. The registered product name and the USEPA registration number
3. The maximum volume or weight of pesticide that the container can hold.

In addition, if the service container contains pesticides with any substance or substances in quantities highly toxic to humans, the service container must also bear:

1. The skull and crossbones
2. The word "POISON" prominently, in red, on a background of distinctly contrasting color
3. A statement of an antidote for the pesticide

As an alternative to both of these requirements, a person may directly and securely affix a copy of the registered product label of the pesticide to the container or application device and indicate maximum weight and volume.

Please also note that in addition to properly labeling service/ alternative containers, certified applicators, certified technicians, and commercial pesticide apprentices must have a copy of the entire label in their custody during pesticide use.

NYS DEC Contact & Reporting Information

Following is some information useful to those involved in the application and sale of pesticides.

Albany Address

NYS DEC
Division of Materials Management
Bureau of Pesticides Management
625 Broadway, Albany, NY 12233-7254
518-402-8748 • 518-402-9024 fax
www.dec.ny.gov • dmm@dec.ny.gov

NYS DEC Region 1
Bureau of Pesticide Management
Bldg 40, SUNY Stony Brook, Stony Brook, NY 11790-2356
631-444-0350 • 631-444-0231 fax

Pesticide Reporting Law

DEC PRL webpage:
http://www.dec.ny.gov/chemical/27506.html

The Pesticide Sales and Use Database Group (PSUR) at Cornell University, the contractor who processes electronic submissions, will be providing technical support and is available to assist you in installing and using the electronic reporting options. For more information, please contact PSUR by:

Phone: 518-402-8748 • Email: prl@gw.dec.state.ny.us

Annual reports should be submitted to Pesticide Reporting Section, NYSDEC, PO Box 10699, Albany, NY 12201-5699 or submit your data electronically at www.nysprl.com.

Annual Reports for Commercial Applicators/Technicians/ Businesses/Agencies

Forms required:

- Form 44-15-26 Applicator/Technician Pesticide Annual Report
- Form 44-15-26A List of Commercial Applicators (for businesses/agencies)

Deadline: February 1 of the year immediately following the reporting year is the deadline to submit Annual Reports for commercial applicators/businesses/agencies. Application information from each commercially certified applicator and technician must be submitted on Form 44-15-26. Pesticide businesses/agencies are required to fill out and attach Form 44-15-26A to the front of the Annual Report Form 44-15-26 being submitted for applicators employed by the business/agency.

Forms can be obtained from the DEC or their website at
http://www.dec.ny.gov/chemical/8879.html

Annual reports can be submitted electronically. For more information contact the DEC or visit
http://www.nysprl.com

Annual Reports for Commercial Permittees

Forms required:

- Form 44-15-25 Restricted Use Pesticides Annual Report for Commercial Permittees (Including Importers, Manufacturers and Compounders). This form is required to report any sales of restricted use pesticides to New York purchasers.
- Form 44-15-27 Commercial Permittee Annual Report for Sales of Restricted Use Pesticides and General Use Agricultural Pesticides to Certified Private Applicators

Deadline: February 1 of the year immediately following the reporting year.

Forms can be obtained from the DEC

Annual reports can be submitted electronically. For more information contact the DEC or visit http://www.nysprl.com

Pesticide Business/Agency Registration

Official DEC info page:
http://www.dec.ny.gov/chemical/32631.html

Deadline: Renewal applications must be received at least 3 weeks before your registration expires.

Forms can be obtained from the DEC or their website at
http://www.dec.ny.gov/docs/materials_minerals_pdf/busform.pdf

Requirements:

- Need a certified applicator or technician.
- Completed application.
- Valid insurance certificate for the business showing coverage currently in effect and showing the DEC Albany office as certificate holder. Insurance Company must be licensed or recognized by the NYS Insurance Department.
- All sole proprietorship applicants must be in good standing with child support, if applicable.

The Business Registration fee is $900 and the registration period is three years. Some Agencies may be fee exempt.

Mail form to: NYS DEC
Division of Solid & Hazardous Materials
Bureau of Pesticides Management
625 Broadway
Albany, NY 12233-7254

Commercial Permit Application

Required for distribution, sale, offer for sale, purchase for the purpose of resale or possession for the purpose of resale of a restricted use pesticide. Any person who engages in the sale of a restricted-use pesticide shall be certified by the Commissioner. Each business requiring a Commercial Permit must employ or retain under contract at least one applicator who is certified in NYS.

Official DEC info: http://www.dec.ny.gov/chemical/32631.html

Forms can be obtained from the DEC or their website at http://www.dec.ny.gov/docs/materials_minerals_pdf/comform.pdf

The Commercial Permit Application fee is $600 for 2 years.

Mail form to: NYS DEC
Division of Materials Management
Bureau of Pesticides Management
625 Broadway
Albany, NY 12233-7254

Pesticides Registered in New York

Official DEC info page:
http://www.dec.ny.gov/chemical/8528.html

Pesticide products that are registered in New York State can be found on the NYS Pesticide Administration Database (NYSPAD). NYSPAD is an information portal that allows users to view pesticide product labels, search for re-certification courses and exams, and more.

- http://www.dec.ny.gov/nyspad/?0

Be sure the label on the product you are using matches the approved label in NYS.

NOTE: Some products registered in New York State are prohibited from use in Nassau and Suffolk Counties and will be indicated in the entries at each website. There are over 400 New York State registered products that are prohibited from use in Nassau and Suffolk County. Additional products have Long Island use limits. Applicators are advised that some products, while not on the prohibited list, can contain language relating to the products ability to leach and contaminate groundwater especially where the groundwater table is shallow and soils are permeable. Applicators should determine the appropriateness of their use under site-specific circumstances.

Extension Educators

Cornell Cooperative Extension of Suffolk County

Extension Education Center
423 Griffing Avenue, Suite 100, Riverhead, NY 11901-3071
Tel: 631-727-7850 • Fax: 631-852-3205
www.ccesuffolk.org
**denotes educators located at LIHREC*

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tsy3@cornell.edu

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fz88@cornell.edu

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djz45@cornell.edu

Roxanne Zimmer - Community Horticulture
rz378@cornell.edu

Agriculture Administrative Assistants

Melissa Elkins – Agriculture Program
me336@cornell.edu

Sarah Osborn – Agricultural Stewardship Program
so348@cornell.edu

Cornell University's Long Island Horticultural Research and Extension Center (LIHREC)

3059 Sound Avenue, Riverhead, NY 11901
Tel: 631-727-3595 • Fax: 631-727-3611
www.LongIslandHort.cornell.edu

Mark Bridgen – Director, Floriculture and Micropropagation
mpb27@cornell.edu

Margery Daughtrey – Plant Pathology / Ornamentals
mld9@cornell.edu

Meg McGrath – Plant Pathology / Vegetables
mtm3@cornell.edu

Cornell Cooperative Extension of Nassau County

www.ccenassau.org

Horticulture Education Center
832 Merrick Avenue, East Meadow, NY 11554
Phone/Fax: 516-565-5265

Vincent Drzewucki - Resource Educator
vad37@cornell.edu

Professional Horticulture Associations

American Hort *(Formerly American Nursery & Landscape Association)*
2130 Stella Court, Columbus, OH 43215
Tel: Ohio 614-487-1117 ● D.C. 202-789-2900
carolb@AmericanHort.org ● www.americanhort.org/

American Horticultural Society
7931 East Boulevard Drive, Alexandria, VA 22308
Tel: 703.768.5700 ● Fax: 703.768.8700
webmaster@ahsgardening.org ● www.ahsgardening.org

American Society of Landscape Architects, New York Chapter
205 E 42nd St, 14th floor, New York, NY 10017
Tel: 212-269-2984
secretary@aslany.org ● www.aslany.org/

Christmas Tree Farmers Association of New York
PO Box 705, Salem NY 12865
Tel: (518) 854-7386
info@CTFANY.org ● www.ctfany.org

Garden Centers of America
2873 Saber Drive, Clearwater, Florida 33759
Tel: 800-721-0024
MemberServices@GardenCentersofAmerica.com
www.gardencentersofamerica.org

Horticulture Research Institute
525 9th St. NW, Suite 800, Washington, DC 20004
Tel: 202-789-2900
craigr@americanhort.org ● www.hriresearch.org

International Plant Propagator's Society (Eastern Region)
1700 North Parish Drive, Southold, NY 11971
Tel: 1-631-765-9638
ippser@gmail.com ● www.ena.ipps.org

International Society of Arboriculture
P.O. Box 3129 (Mailing address)
2101 West Park Court
Champaign, IL 61826
Tel: 217-355-9411 ● Fax: 1-217-355-9516
www.isa-arbor.com

Irrigation Association of New York
P.O. Box 237, Greenlawn, N.Y. 11740
Tel: 631-423-0429
www.iany.org

Long Island Arboricultural Association, Inc.
P.O. Box 540, Hampton Bays, NY 11941
Tel: 631-415-4315
info@longislandarborist.org ● www.longislandarborists.org

Long Island Farm Bureau
104 Edwards Avenue Suite 3, Calverton, NY 11913
Tel. 631-727-3777 ● Fax 631-727-3721
www.lifb.com

Long Island Flower Growers Association
P.O. Box 102, Jamesport, NY 11947
Tel: 631-886-2213
info@lifga.com ● www.grownonli.com/

Long Island Golf Course Superintendents Association
P.O. Box 84, Wading River, NY 11792
Tel: 631-886-2434 ● Fax: 631-886-2434
ligcsa@gmail.com ● www.ligcsa.com

Long Island Native Plant Initiative, Inc. (LINPI)
P.O. Box 1279, Hampton Bays, NY 11946
Tel: 631-560-9945
www.linpi.org

Long Island Invasive Species Management Area (LIISMA)
1725 Brentwood Road Building 2, Brentwood, NY 11717
Tel: 631-560-9945
liismaprism@gmail.com ● www.liisma.org/

Long Island Nursery & Landscape Association
136 Everett Rd, Albany, NY 12205
Tel: 516-249-0545 ● Fax: 518-427-9495
info@linla.org ● www.linla.org

Nassau/Suffolk Landscape Grounds Association
P.O. Box 489, Brightwaters, NY 11718
Tel: 631-655-2250
nslga2@optonline.net ● www.nslga.org

National Association of Landscape Professionals
12500 Fair Lakes Circle, Suite 200, Fairfax, VA 22033
Tel: 800-395-2522 ● Fax: 703-322-2066
info@landscapeprofessionals.org
www.landscapeprofessionals.org

NYS Arborists ISA Chapter
136 Everett Rd, Albany, NY 11205
Tel: 518-694-5507 ● Fax: 518-935-9436
info@nysarborists.com ● www.nysarborists.com

NYS Nursery and Landscape Association
136 Everett Rd, Albany, NY 11205
Tel: 518-694-4430 or 518-694-4431
info@nysnla.com ● www.nyslna.com

NYS Turfgrass Association
P.O. Box 612, Latham, NY 12110
Tel: 518-783-1229 ● Fax: 518-783-1258
nysta@nysta.org ● www.nysta.org

Perennial Plant Association
P.O Box 6682, Raleigh, NC 27628
Tel: 888-440-3122
info@perennialplant.org ● www.perennialplant.org

Professional Certified Applicators of Long Island
P.O. Box 1106, Sound Beach, NY 11789
Tel: 631-744-0634
pcaofli@gmail.com ● www.pcaofli.com

Quality Parks
Port Jefferson, NY 11777
Tel: 631-255-6512
mblock@qualityparks.org ● www.qualityparks.org

Tree Care Industry Association
136 Harvey Rd, Suite 101, Londonberry, NH 03053
Tel: 800-733-2622 ● Fax: 603-314-5386
www.tcia.org

Colleges/Schools on Long Island with Horticulture Programs

Farmingdale State College
Department of Ornamental Horticulture
2350 Broadhollow Road
Thompson Hall
Farmingdale, New York 11735
Tel: 631-420-2113
jonathan.lehrer@farmingdale.edu
www.farmingdale.edu/horticulture

Wilson Tech
Adult Education
17 Westminister Ave.
Dix Hills, NY 11746
Tel: 631-667-6000
www.wilsontech.org

Gardens and Arboretums in the Long Island/New York City Area

Bailey Arboretum
Bayville Road and Feeks Lane, Lattington, NY 11560
516-571-8020 • www.baileyarboretum.org

Bayard Cutting Arboretum
440 Montauk Hwy., Great River, NY 11739
631-581-1002
www.bayardcuttingarboretum.com

Bridge Gardens
36 Mitchell Lane, Bridgehampton, NY 11932
631-283-3195
www.peconiclandtrust.org/bridge_gardens.html

Brooklyn Botanic Garden
1000 Washington Avenue, Brooklyn, NY 11225
718-623-7200 • www.bbg.org

Clark Botanic Garden
193 I.U. Willets Road, Albertson, NY 11507
516-484-8602
www.clarkbotanic.org

Conservatory Garden
Central Park
105th Street and Fifth Avenue, New York, NY 10029
212-360-2766
www.centralpark.com

Farmingdale State College Ornamental Horticulture Gardens
2350 Broadhollow Rd, Farmingdale, NY 11735
631-420-2113
www.farmingdale.edu/horticulture

The Garden City Bird Sanctuary & Arboretum
Garden City, NY 11530 (opposite 181 Tanners Pond Rd.)
Tel: 516-326-1720
www.gcbirdsanctuary.org

The Hofstra University Arboretum
129 Hofstra University, Hempstead, NY 11549
516-463-6623
www.hofstra.edu/community/Arbor/index.html

The John P. Humes Japanese Stroll Garden
347 Oyster Bay Rd, Mill Neck, NY 11765
516-676-4486
www.gardenconservancy.org/preservation/preservation-portfolio/humes-japanese-stroll-garden

Joseph Lloyd Manor House
Society for Preservation of Long Island Antiquities
Lloyd Lane and Lloyd Harbor Road, Lloyd Harbor, NY 11743
631-692-4664 • www.splia.org

LongHouse Reserve
133 Hands Creek Rd., East Hampton, NY 11937
631-329-3568 • www.longhouse.org

The Madoo Conservancy
618 Sagg Main Street, Sagaponack, NY 11962
631-537-8200 • www.madoo.org

Nassau County Museum of Art
One Museum Drive at Northern Blvd., Roslyn Harbor, NY 11576
516-484-9337
www.nassaumuseum.org

The NY Botanical Garden
200th St. and Kazimiroff Blvd., Bronx, NY 10458
718-817-8700 • www.nybg.org

Old Westbury Gardens
71 Old Westbury Road, Old Westbury, NY 11568
516-333-0048
www.oldwestburygardens.org

Planting Fields Arboretum
1395 Planting Fields Road
PO Box 58, Oyster Bay, NY 11771
516-922-9200
www.plantingfields.org

Queens Botanical Garden
43-50 Main Street, Flushing, NY 11355
718-886-3800
www.queensbotanical.org

Thompson House Herb Garden
Preservation Long Island
91 North Country Road, Setauket, NY 11733
631-692-4664 • www.splia.org

Water Mill Museum Herb Garden
41 Old Mill Road, Water Mill, NY 11976
631-726-4625
www.watermillmuseum.org

Wave Hill
West 249 Street and Independence Avenue, Bronx, NY 10471
718-549-3200
Info@wavehill.org • www.wavehill.org

Agency Contact Information:

NYS Department of Agriculture and Markets
Division of Plant Industry
4 Stewart Avenue
Westhampton Beach, NY 11978
Tel: (631) 288-1751

General Information
Tel: (800) 554-4501
www.agriculture.ny.gov/PI/PIHome.html

New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233
www.dec.ny.gov

- *Chemical Bulk Storage Helpline* 518-402-9543
- *Hazardous Waste Generators, Small Quantity Generators, and Household Hazardous Wastes* (800) 462-6553
  8:30 AM - 4:45 PM and an after-hours answering machine
- *Inspector General Hotline* (800) 367-4448
- *Poachers and Polluters* (800) TIPP-DEC
- *Regulatory Fee Program* (800) 225-2566
  9 AM - 12 PM and 1:30 PM - 4 PM
- *Spills Hotline* (800) 457-7362
  or (518) 457-7362, twenty-four-hour service

New York State Department of Labor
State Campus, Building 12
Albany, NY 12240
info.nysdol@labor.ny.gov
www.labor.ny.gov

Division of Labor Standards
400 Oak St, Suite 101
Garden City, NY 11530
Tel: (516) 794-8195

Suffolk County Agriculture and Farmland Protection Board Ag District Review
Right-to-Farm Issues
C/O Cornell University Cooperative Extension
423 Griffing Avenue
Riverhead, NY 11901
Tel: (631) 727-7850

Suffolk County Department of Health Services
3500 Sunrise Highway, Ste 124
P.O. Box 9006
Great River, NY 11739
Tel: (631) 853-3000
www.suffolkcountyny.gov/departments/healthservices.aspx

Suffolk County Department of Health Services
Migrant Housing General Sanitation
Division of Public Health / Bureau of Public Health Protection
360 Yaphank Avenue, Suite 2A
Yaphank, NY 11980
Tel: (631) 852-5998

Suffolk County Farmland Select Committee
Purchase of Development Rights
H. Lee Dennison Building 4th Floor
100 Veterans Memorial Highway
Hauppauge, NY 11788
Tel: (631) 853-5111

Suffolk County Planning Department
H. Lee Dennison Building 4th Floor
100 Veterans Memorial Highway
Hauppauge, New York 11788
Tel: (631) 853-5191

Suffolk County Soil and Water Conservation District
423 Griffing Ave
Riverhead, NY 11901
Tel: (631) 852-3285

USDA/APHIS/PPQ
Animal and Plant Health Inspection Service
4 Stewart Avenue
Westhampton Beach, NY 11978
Tel: (631) 288-4191
www.aphis.usda.gov

USDA/Natural Resources Conservation Service
423 Griffing Ave.
Riverhead, NY 11901
Tel: (631) 727-2315
www.ny.nrcs.usda.gov

US Department of Labor
Wage and Hour Division
1400 Old Country Road, Suite 410
Westbury, NY 11590
Tel: (516) 338-1890
www.dol.gov

US Department of Transportation
1200 New Jersey Avenue, SE
Washington D.C. 20590
Tel: (202) 366-4000
www.dot.gov

Notes

Notes

Notes

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