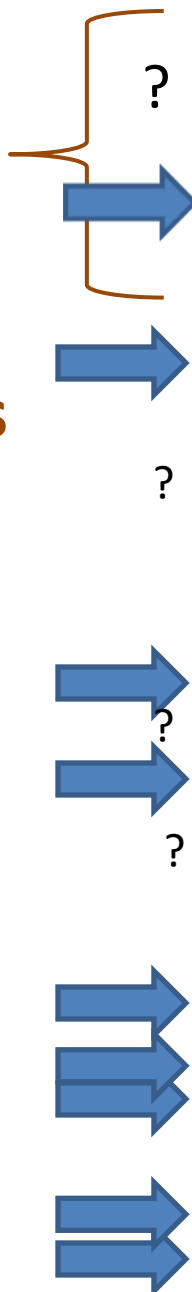


Which Annuals And Perennials Are Good For Pollinators?



The Top Six Annuals are not the Most Attractive to Pollinators

Annuals	Value in 2014 (\$)
Petunias	262,959
Geraniums (from vegetative cuttings)	223,954
Pansies (Violas)	186,024
Begonia	133,349
Impatiens, other (I. wallerana)	114,829
Impatiens, New Guinea	99,950
Marigold	82,362
Combination planter/color bowl	81,344
Geraniums (from seeds and plug seedlings)	46,657
Calibrachoa	44,592
Vinca (Catharanthus roseus)	42,236
Coleus	19,900
Zinnia	16,472
Verbena	15,863
Gerbera daisy	14,261
Salvia, annual	13,977
Fuchsia	13,805
Caladium	12,639
Dahlia	12,533
Snapdragon	12,119
Alyssum, sweet (Lobularia)	11,381
Lobelia	11,259
Portulaca	9,606
Dianthus	7,736



Annuals attractive to bees table

Common name Genus species

(scientific name)

Blue salvia (mealycup sage) *Salvia farinacea*

Borage or starflower *Borago officinalis*

Calendula *Calendula officinalis*

Clary sage *Salvia sclarea*

(biennial)

Common lantana *Lantana camara*

Common sunflower *Helianthus annuus*

Cornflower *Centaurea cyanus*

*Cosmos *Cosmos bipinnatus*

Dahlia (open types) *Dahlia* cv.

Garden heliotrope *Heliotrope arborescens*

Mignonette *Reseda odorata*

Pentas *Pentas* spp.

Pineapple sage *Salvia elegans*

Popcorn plant *Cassia didymobotrya*

*Snapdragon *Antirrhinum majus*

Spider flower *Cleome* spp.

Sweet William

**Dianthus barbatus*

*Sweet alyssum *Lobularia maritime*

Tithonia *Tithonia rotundifolia*

Vervain *Verbena bonariensis*

*Zinnia *Zinnia elegans*



THE PLANT LOVER'S GUIDE TO

SALVIAS

JOHN WHITTLESEY

Herbaceous perennials

attractive to bees

Common name (scientific name)

Anise hyssop *Agastache foeniculum*

Aromatic aster *Symphotrichum oblongifolium*

Aster *Aster novae-angliae* – ‘Purple Dome’

Astilbe, false spirea *Astilbe* spp.

Basil, sweet basil (annual) *Ocimum basilicum*

Bee balm *Monarda* spp.

Bellflower *Campanula* spp.

Betony *Stachys monieri*

Bigleaf ligularia *Ligularia dentate*

Black-eyed Susan,
coneflower

Rudbeckia spp.

Blanket flower *Gaillardia*

Blazing star *Liatris spicata*

Butterfly bush *Buddleja* or *Buddleia*

Butterfly weed *Asclepias tuberosa*

Calamint *Calamintha nepeta*

Carolina lupine *Thermopsis villosa*

Catmint *Nepeta* spp.

Chrysanthemum

(open types)

Chrysanthemum

Anise hyssop



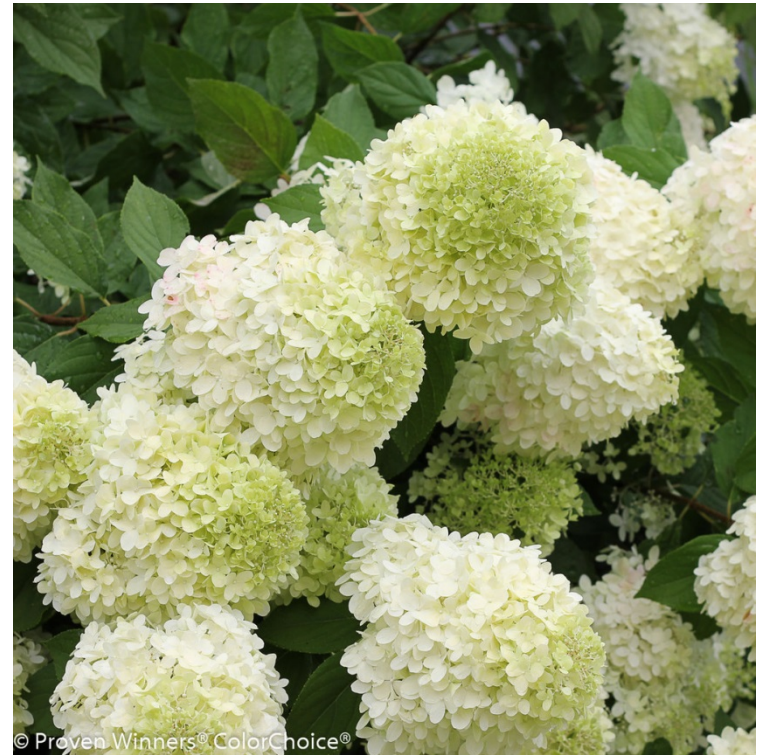
Bee balm *Monarda* spp

Shrubs attractive to bees

Common name (scientific name)

Black chokeberry *Aronia melanocarpa*
Bottlebrush buckeye *Aesculus parviflora*
Buttonbush *Cephalanthus occidentalis*
Common witch-hazel *Hamamelis virginiana*
Cotoneaster *Cotoneaster*
Dwarf fothergilla *Fothergilla gardenia*
Eastern ninebark *Physocarpus opulifolius*
Elderberry *Sambucus* spp.
Holly: American, box-leaved,
Merserve hybrid, winterberry, *Ilex* spp.
Mockorange *Philadelphus coronarius*
Panicle Hydrangea *Hydrangea paniculata*
Potentilla (bush cinquefoil) *Potentilla fruticosa*
Privet *Ligustrum vulgare*
Raspberry, blackberries *Rubus* spp.
Silky, gray, redosier dogwoods, *Cornus* spp.
Spicebush *Lindera benzoin*
Spirea *Spiraea* spp.
Sumacs *Rhus* spp.

Summersweet, sweet
pepperbush
Clethra alnifolia
Viburnums *Viburnum* spp.
Wild prairie rose *Rosa arkansana*



Hydrangea paniculata 'Limelight'

Trees attractive to bees

Source: Lovell 1926, Pellet 1947, Oertel 1980, Tew 2006, Mader et al. 2011.

**Common name Genus species
(scientific name)**

Bloom

Eastern redbud *Cercis canadensis* April

Red maple *Acer rubrum* April

Alternate-leaved, pagoda
or green osier dogwood

Cornus alternifolia May

Black tupelo, blackgum *Nyssa sylvatica*

Callery pear *Pyrus calleryana* May

Cherry, peach, plum,
almond

Prunus spp. (many) May

Crabapple, apple *Malus* spp. (many) May

Hawthorn *Crataegus* spp. (many) May

Serviceberry *Amelanchier* spp. May

Willow *Salix* spp. May



Wind-pollinated trees attractive to bees

Source: Kraemer and Favi. 2005,
Maclvor et al. 2014, Oertel 1980

Common name (scientific name)

Ash *Fraxinus* spp. Somewhat attractive

Birch *Betula* spp. Somewhat attractive

Elm *Ulmus* spp. Very attractive

Hickory *Carya* spp. Somewhat attractive

Oak *Quercus* spp. Very attractive

Poplar *Populus* spp. Very attractive

Maple *Acer* spp. Highly attractive

Willow *Salix* spp. Highly attractive



Red maple

Selective products to minimize impact on pollinators

- Insecticidal soap
- Horticultural oil
- B.t.



Acelepryn (Chlorantraniliprole).

This EPA Reduced Risk chemical interrupts the normal muscle contraction of insects resulting in paralysis and death. It has systemic activity and can be applied as a foliar spray or through the soil. It is labeled against turf pests and pests of ornamentals including leaf-feeding caterpillars, lace bugs, aphids, birch leafminer, and as a bark spray for clearwing borers.



Flupyradifurone, in a new chemical class: the Butenolides

Acute oral toxicity LD50 (female Rat) > 2,000 mg/kg

Restricted entry interval **(REI) of 4 hours** (12 in CA)

CAUTION

(Reduced Risk)

Can be used for **aphids, whitefly, scales and mealybug** control

Can be used as a **soil-applied systemic** or as a **foliar spray**

Toxic to adult bees in laboratory studies via oral exposure, however, not toxic to bees through contact exposure, and field studies conducted with this product have shown no effects on honeybee colony development.

GENERAL POLLINATOR BEST MANAGEMENT PRACTICE

In order to minimize exposure to pollinators, it is recommended that foliar insecticides are applied late in the afternoon, evening, or at night outside of daily peak foraging periods.

Not Registered in the State of New York

Selective products to minimize impact on pollinators



Acetamiprid (**Tristar**) is in the Neonicotinoid class of chemicals and is classified as reduced risk by EPA. It kills insects by disrupting nerve function.

Acetamiprid is a systemic and absorbed through the foliage. It is labeled to control a broad range of pest insects on ornamental plants including aphids, adelgids, caterpillars, European pine sawfly, mealybugs, leafhoppers, armored and soft scales, plant bugs, whiteflies, fungus gnat larvae, thrips, and leafmining flies.



Gowan[®]
The Go To Company



Hexythiazox (**Hexygon**) is a mite growth regulator that disrupts the normal development of mites. It is effective against immature **spider mites** and eggs, has long residual activity and applied at low rates. Hexygon is **selective for spider mites** in the Tetranychidae family, which include all ornamental spider mite pests. It is less toxic to predator mites (selective). There is no bee precautionary statement on the label of Hexygon and it is generally **considered nontoxic to bees**, although there is a caution that there may be a short residual (~2 hr) effect on alfalfa leafcutting and alkali bees.

**When an Insecticide is Necessary Adjust
Timing of Application to Minimize the Impact
on Pollinators:**

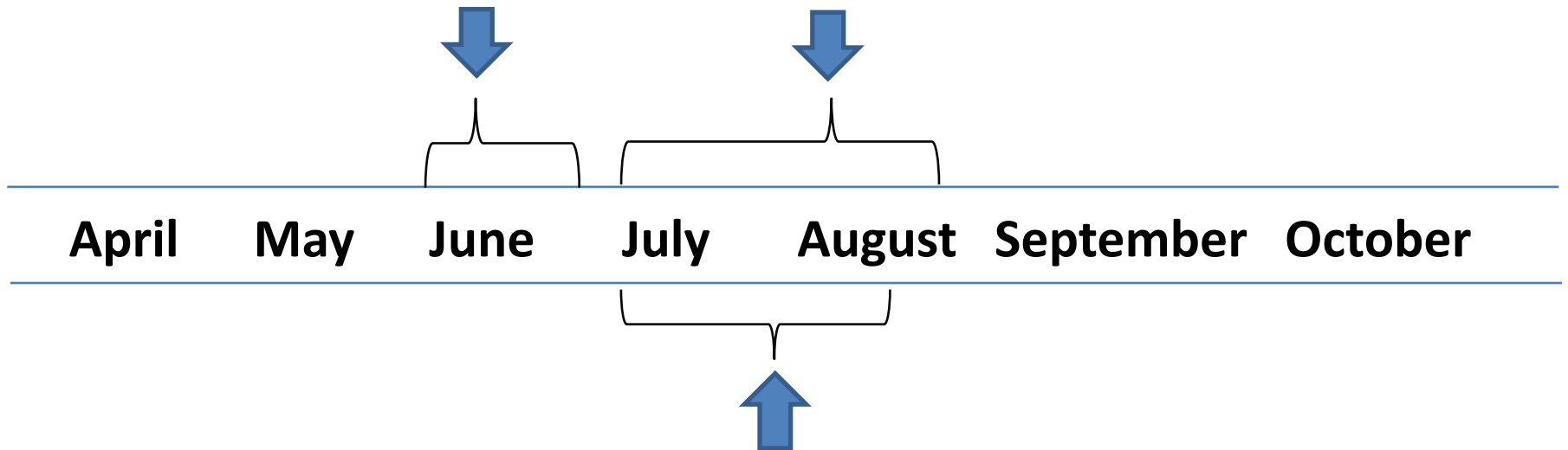
AFTER FLOWERING IS OVER



Linden (*Tilia* spp.) trees in flower



Japanese beetle feeding on linden leaves



April May June July August September October

Foliar spray applied if defoliation is expected to exceed 30% of total leaf area

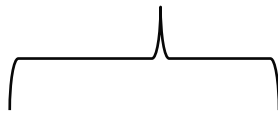
Ash trees in flower



EAB adults and foliage feeding



EAB larvae tunnel
Under the bark



April

May

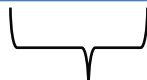
June

July

August

September

October



**Make trunk injections in late May
after trees are done flowering**



Michigan State University Extension
Department of Entomology
Michigan Pollinator Initiative

