Table 1. Summary of the attractiveness to *Apis* and non-*Apis* bees of crops grown in the U.S., whether crop requires bee pollination and if so, whether managed pollinators are used.

Also summarized is the bearing acreage of the crop, the extent to which the crop is used in seed production and whether the crop is harvested prior to bloom. The degree to which pollen and nectar are attractive is listed using a scale where "-" = not attractive, "+" = attractive under certain conditions, and "++" = high attractiveness; entry “N/AV” specifies when crop-specific data are unavailable; entry “N/AP” specifies when crop-specific data are not applicable.

Crop	Description	HB Poll.[1]	HB Nec.[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Ref No.	U.S. Bearing Acreage[2]	Seed Production[7]	Harvest Prior to Bloom	Notes
Alfalfa	*Medicago sativa*	+	++	+	++ Alfalfa leafcutting bee, Alkali bee	For seed production, only	For seed production, only	1	17,763,000	2011: 6600 acres	Yes	Only a small percentage of alfalfa is grown for seed; typically using managed alfalfa leafcutting bees, alkali bees or honey bees. Timing of hay or silage harvest, relative to bloom, varies by agronomic practice, with earlier cuts typically occurring prior to bloom and later cuts being harvested up to 25% bloom.[112]
Almonds	*Prunus amygdalus*; *P. communis*; *Amygdalus communis*	++	+	+	+*Osmia*	Yes	Yes	1	780,000		No	

Attractiveness of Agricultural Crops to Pollinating Bees for the Collection of Nectar and/or Pollen, 2017

Crop	Description	HB Poll.[1]	HB Nec.[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Ref No.	U.S. Bearing Acreage[2]	Seed Production[7]	Harvest Prior to Bloom	Notes
Anise, badian, fennel, corian, juniper berries	anise (*Pimpinella anisum*); badian or star anise (*Illicium verum*); caraway (*Carum carvi*); coriander (*Coriandrum sativum*); cumin (*Cuminum cyminum*); fennel (*Foeniculum vulgare*); juniper berries (*Juniperus communis*)	+	+	+	+	Yes (not juniper berries)	No	2	N/AV		No	
Apples	*Malus pumila*; *M. sylvestris*; *M. communis*; *Pyrus malus*	++	+	+	*++Andrena, Anthidium, Halictus, Osmia, Anthophora, Habropoda*	Yes	Yes	1	327,800		No	
Apricots	*Prunus armeniaca*	++	++	++	*+Osmia*	Yes	Yes	3	12,150		No	
Artichokes	*Cynara scolymus*	+	+	+	+	Yes	No	3,4, 81	7,000		Yes	
Asparagus	*Asparagus officinalis*	+	+	N/AV	N/AV	For seed production, only	For seed production, only	1	24,500		Yes	Only a small % of asparagus acreage is grown for seed.
Avocados	*Persea americana*	+	+	N/AV	+	Yes	Yes	1	59,950		No	
Bananas	*Musa sapientum*; *M. cavendishii*; *M. nana*	-	+	-	-	No	No	5	1,000		No	
Barley	*Hordeum* spp.	-	-	-	-	No	No	3	3,000,000		No	Wind pollinated
Beans	*Phaseolus* spp.	+	+	+	N/AV	No	No	3	77,200		No	Acreage is for snapbeans

Attractiveness of Agricultural Crops to Pollinating Bees for the Collection of Nectar and/or Pollen, 2017

Crop	Description	HB Poll.[1]	HB Nec.[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Ref No.	U.S. Bearing Acreage[2]	Seed Production[7]	Harvest Prior to Bloom	Notes
Blueberries	fruits of the genus *Vaccinium*	+	+	++	++*Andrena, Colletes, Osmia, Anthophora, Xylocopa*	Yes	Yes	1	77,700		No	Acreage is only for cultivated blueberries; *Apis M.* and Megachilidae used in commercial pollination.
Broad beans, horse beans, dry	*Vicia faba*	++	++	++	+*Anthophora, Eucera, Megachile, Xylocopa*	Yes		5	1,311,300		No	
Buckwheat	*Fagopyrum esculentum*	+	++	+	+	Yes	Yes	5, 73	33,678		No	
Cabbages and other brassica	Chinese, mustard cabbage, pak-choi (*Brassica chinensis*); white, red, Savoy cabbage, Brussels sprouts, collards, kale and kohlrabi (*Brassica oleracea* all varieties except *botrytis*)	++	++	+	+	For seed production, only	For seed production, only	1	Cabbage 60,180 (Annual); Brussels sprouts 7,569 (Census); Kale 6,256 (Census); Collards 12,542 (Census)		Yes	Only a small % of acreage is grown for seed.
Carobs	*Ceratonia siliqua*, Carob tree, locust bean	+	+	+	+	Yes	No	49, 74				Flowers visited mainly by flies and wasps
Carrots	*Daucus carota*	+	+	+	+ *Megachile rotundata*	For seed production, only	For seed production, only	1, 3	71,400 Fresh Market; 13,310 Processing	2012: 4941 acres	Yes	Only a small % of acreage is grown for seed.
Castor oil seed	*Ricinus communis*	+	-	N/AV	N/AV			EFSA	N/AV	Yes	No	
Cauliflowers and broccoli	*Brassica oleracea* var. *botrytis*, subvarieties *cauliflora* and *cymosa*, includes headed broccoli	++	++	+	+ *Andrenidae, Nomadidae, Megachilidae*	For seed production, only	For seed production, only	5	163,730 Fresh market and processing		Yes	Only a small % of acreage is grown for seed.

Attractiveness of Agricultural Crops to Pollinating Bees for the Collection of Nectar and/or Pollen, 2017

Crop	Description	HB Poll.[1]	HB Nec.[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Ref No.	U.S. Bearing Acreage[2]	Seed Production[7]	Harvest Prior to Bloom	Notes
Cherries	Mazzard, sweet cherry (*Prunus avium*; *Cerasus avium*); hard-fleshed cherry (var. *duracina*); heart cherry (var. *juliana*)	++	+	+	++ *Osmia*	Yes	Yes	1	86,790 Sweet; 36,500 Tart		No	
Chestnuts	*Castanea* spp.: *C. vesca*; *C. vulgaris*; *C. sativa*.	++	++	+	+	Yes	Yes	3	3,784			
Chick peas	Chickpea, Bengal gram, garbanzos (*Cicer arietinum*)	+	++	+	+ *Osmia, Megachile*	No	No	72	213,600; Note: Included in All Dry Bean Acres			Self-pollinated
Chicory roots	*Cichorium intybus* subsp. *sativum*	+	+	N/AV	+*Andrena, Anthidium, Halictus, Osmia*	Yes	N/AV	EFSA, 3	N/AV		Yes	
Chillies and peppers	Red and cayenne pepper, paprika, chillies (*Capsicum frutescens*; *C. annuum*); allspice, Jamaica pepper (*Pimenta officinalis*)	+	-	++	+	Yes	No	1	71,200 Chile and Bell			May be grown in glasshouses, with bumble bees for pollination
Clover for forage and silage	*Trifolium* spp. Various species grown for pasture, green fodder or silage	++	++	+	++ *Megachile, Osmia, Andrena, Anthidium*	For seed production, only	For seed production, only	1,5, 89, 102, 103	28,506 White, Red and Crimson		Yes	Only a small % of acreage is grown for seed.
Coffee, green	*Coffea* spp. (*arabica, robusta*, *liberica*)	+	-	N/AV	+	Yes	No	5	7300	Yes	No	Acreage related to all coffee, not specific to green coffee

Attractiveness of Agricultural Crops to Pollinating Bees for the Collection of Nectar and/or Pollen, 2017

Crop	Description	HB Poll.[1]	HB Nec.[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Ref No.	U.S. Bearing Acreage[2]	Seed Production[7]	Harvest Prior to Bloom	Notes
Corn	*Zea mays*	+	-	+	+	No	No	3	87,668,000			Wind pollinated, but can be visited during pollen shedding
Cotton	Upland cotton (*Gossypium hirsutum*) Pima Cotton (*Gossypium barbardense*)	-	+	+	*Halictus, Anthophora, Xylocopa, Megachile, Nomia, Ptilothrix*	No	No	5, 104, 105, 106, 107, 108, 109, 110, 111	7,664,400	Historical use of bees for hybrid seed production; however, hybrid cotton seed production is no longer considered economically viable		Used by some beekeepers for honey production
Cow peas	Cowpea, blackeye pea/ bean (*Vigna unguiculata*)	-	+[3]	+	+	Yes	N/AV	11	39,100 Blackeye Peas, Included with All Dry Beans		No	
Cranberries	American cranberry (*Vaccinium macrocarpon*)	+	+	++	*++Andrena, Agapostemon, Melitta, Megachile*	Yes	Yes	1	40,300		No	
Cucumbers and gherkins	*Cucumis sativus*	+	+	+	*+ Melissodes Andrena*	Yes	Yes	1	40,060 Fresh; 82,100 for Pickles	Yes		Small seed acreage
Currants	Black (*Ribes nigrum*); red and white (*R. rubrum*)	-	+	++	*+ Anthophora*	Yes	No	5	580 Total		No	
Dates	*Phoenix dactylifera*	+	+	N/AV	N/AV	No	No	3	8,400		No	Wind pollinated
Eggplants	*Solanum melongena*	-	-	++	+	For seed production, only	No	5	5,004		No	Only a small % of acreage is grown for seed.

Attractiveness of Agricultural Crops to Pollinating Bees for the Collection of Nectar and/or Pollen, 2017

Crop	Description	HB Poll.[1]	HB Nec.[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Ref No.	U.S. Bearing Acreage[2]	Seed Production[7]	Harvest Prior to Bloom	Notes
Elder	*Sambucus nigra*	+	+	+	+	No	No	6	N/AV			
Figs	*Ficus carica*	-	-	-	-	No	No	5	8,600		No	Wasp pollinated
Garlic	*Allium sativum*	+	+	N/AV	*+Halictus, Osmia*	For seed production, only	No	3	23,900		Yes	Only a small % of acreage is grown for seed.
Gooseberry	*Ribes grossularia*	-	+	++	+	Yes	No	5	N/AV		No	Little production in US
Grapefruit (inc. pomelos)	*Citrus maxima; C. grandis; C. paradisi*	++	++	+	N/AV	No	No	3, 9	73,300 (no pomelos)		No	
Grapes	*Vitis vinifera*	+	-	-	-	No	No	5	962,100		No	Wind pollinated
Grasses for forage; Sil	Including inter alia: bent, redtop, fiorin grass (*Agrostis* spp.); bluegrass (*Poa* spp.); Columbus grass (*Sorghum almum*); fescue (*Festuca* spp.); Napier, elephant grass (*Pennisetum purpureum*); orchard grass (*Dactylis glomerata*); Rhodes grass (*Chloris gayana*); *Phleum, Agropyron, Elymus, Phalaris, Koeleria, Stipa, Danthonia, Deschampsia, Bromus, Trisetum, Calamagrostis, Carex and Juncus*	+	-	-	-	No	No	5	35,328,000		Yes	Wind pollinated, source of pollen only when no other forage sources are available

Crop	Description	HB Poll.[1]	HB Nec.[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Ref No.	U.S. Bearing Acreage[2]	Seed Production[7]	Harvest Prior to Bloom	Notes
Groundnuts, with shell, peanuts	*Arachis hypogaea*	+	N/AV	+	+ *Lasioglossum, Megachile, Anthidium, Nomia*	N/AV	N/AV	EFSA	1,042,000			
Hazelnuts, with shell (filberts)	*Corylus avellana*	+	-	-	-	No	No	50	29,000			
Hemp	*Cannabis sativa*	+	-	+	N/AV	No	No	51	N/AV			Wind pollinated
Hops	*Humulus lupulus*	+	-	-	-	No	No	7, 82	35,224			
Kiwi fruit	*Actinidia chinensis*	+	+	+	+	Yes	Yes	1	4,200			
Leeks, other alliaceous vegetables	Leeks (*Allium porrum*); chives (*A. schoenoprasum*); other alliac	+	++	+	+ *Osmia, Hoplitis*	For seed production, only	No	3, 5	N/AV		Yes	Only a small % of acreage is grown for seed.
Leguminous for silage	Including inter alia: birdsfoot trefoil (*Lotus corniculatus*); lespedeza (*Lespedeza* spp.); kudzu (*Pueraria lobata*); sesbania (*Sesbania* spp.); sainfoin, esparcette (*Onobrychis sativa*); sulla (*Hedysarum coronarium*)	+	++	++	++ *Anthidium, Anthophora, Lasioglossum, Megachile, Osmia, Xylocopa*	Yes	Yes	3, 8, 102, 103	Birdsfoot - Not Published; 3,219 Lespedeza			Trefoil is valuable honey plant for beekeepers. Potential use of the *Megachilidae* to pollinate sweet clover and sanfoin
Leguminous vegetables	*Vicia faba*	++	++	++	+ *Anthophora, Eucra, Megachile*	Yes	No	1	N/AV		No	
Lemons/ limes	Lemon (*Citrus limon*); sour lime (*C. aurantifolia*); sweet lime (*C. limetta*)	++	++	N/AV	+	No	No	5	55,000 Lemons (Annual) 820 Limes (Census)			

Crop	Description	HB Poll.[1]	HB Nec.[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Ref No.	U.S. Bearing Acreage[2]	Seed Production[7]	Harvest Prior to Bloom	Notes
Lentils	*Lens esculenta*; *Ervum lens*	+	+[3]	-	+ *Megachile*	No	No	52	347,000			
Lettuce	*Lactuca sativa*	+	+	+	+	No	No	3, 5	259,100 Head, Leaf and Romaine		Yes	Self-pollinating
Linseed	*Linum usitatissimum* Flaxseed.	-	-	-	-	No	Yes	90	N/AV			Extensively grown in the Dakotas and the Canadian Prairies.
Lupins	*Lupinus alba*, *L. angustifolia*, *L. luteus*.	+	-	++	+	For seed production, only	No	91	N/AV			Only a small % of acreage is grown for seed.
Melonseed	*Cucumis melo*, includes seeds of other Cucurbitaceae	+	+	+	*+ Ceratina, Peponapis, Melissodes, Agapostemon*	Yes	Yes	5	N/AV		No	
Mushrooms and truffles	Edible mushrooms	N/AP	N/AP	N/AP	N/AP	No	No	40				Produced indoors in the dark, no bee pollination required
Mustard seed	White mustard (*Brassica alba; B. hirta*; *Sinapis alba*); black mustard (*Brassica nigra*; *Sinapis nigra*) *Brassica juncea*	++	++	+	+	Yes	N/AV	5		43,400	No	*B. juncea* extensively grown on Great Plains and southern Canadian prairies; is $^{2}/_{3}$ self fertile and $^{1}/_{3}$ out crossing, so bees partially required
Oat	*Avena* spp., mainly *Avena sativa*	-	-	-	-	No	No	3	1,030,000			Wind pollinated
Okra	*Abelmoschus esculentus*; *Hibiscus esculentus*	+	+	+	+	Yes	No	5	2,377			
Olives	*Olea europaea*	+	-	N/AV	N/AV	No	No	3	44,000			

Attractiveness of Agricultural Crops to Pollinating Bees for the Collection of Nectar and/or Pollen, 2017

Crop	Description	HB Poll.[1]	HB Nec.[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Ref No.	U.S. Bearing Acreage[2]	Seed Production[7]	Harvest Prior to Bloom	Notes
Onions	*Allium cepa*	+	+	-	+ *Halictus, Nomia*	For seed production, only	For seed production, only	5	143,340	dry bulb: 2010: 73213 acres	Yes	Only a small % of acreage is grown for seed.
Oranges	Common, sweet orange (*Citrus sinensis*); bitter orange (*C. aurantium*)	++	++	+	+ *Andrena, Xylocopa*	No	No	9	613,000			Variable among orange cultivars; honey bees brought to groves for orange blossom honey
Peaches/ nectarines	*Prunus persica*; *Amygdalus persica*; *Persica laevis*	+	+	+	+ *Osmia*	Yes	Yes	1	112,880 Peaches; 26,400 Nectarines			
Pears	*Pyrus communis*	+	+	+	+ *Osmia, Andrena*	Yes	Yes	1	54,400			
Peas	Garden pea (*Pisum sativum*); field pea (*P. arvense*)	+	+	+	+ *Eucera, Xylocopa*	No	No	7	797,000	2013; 406 acres		
Peppermint	*Mentha* spp.: *M. piperita*	+	++	++	+	No	No	39	68,800			Peppermint oil is produced from vegetative growth, without flowering or seed production
Persimmons	*Diospyros kaki*; *D. virginiana*	+	+	+	+	Yes	No	5	4,968			
Pistachios	*Pistacia vera*	-	-	-	-	No	No	53	178,000			Wind pollinated
Plums and sloes	Greengage, mirabelle, damson (*Prunus domestica*); sloe (*P. spinosa*)	+	+	+	+ *Osmia, Anthophora*	Yes	Yes	1	82,780			

Attractiveness of Agricultural Crops to Pollinating Bees for the Collection of Nectar and/or Pollen, 2017

Crop	Description	HB Poll.[1]	HB Nec.[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Ref No.	U.S. Bearing Acreage[2]	Seed Production[7]	Harvest Prior to Bloom	Notes
Poppy seed	*Papaver somniferum*	++	-	N/AV	N/AV	No	N/AV	EFSA, 92	N/AV			Mainly self fertile although cross pollination via insect, bees does occur
Potatoes	*Solanum tuberosum* Irish potato	-	-	+	*+Andrena*	For breeding, only	No	3	1,052,000			Only small % of acreage is grown for breeding
Pumpkins, squash and gourds	*Cucurbita* spp., includes marrows	+	+	++	*+ Agapostemon, Melissodes, Peponapis*	Yes	Yes	5	91,700 Pumpkins and Squash			
Pyrethrum, dried	*Chrysanthemum cinerariifolium*	+	+	+	+	No	No	3, 81	N/AV			
Quinces	*Cydonia oblonga*; *C. vulgaris*; *C. japonica*	+	+	N/AV	N/AV	N/AV	N/AV	EFSA	N/AV			
Rapeseed (including canola)	*Brassica napus* var. *oleifera*	++	++	+	++ *Megachile*	Yes	Yes	1,3,5	1,264,500 Canola; 1,700 Rapeseed	2013: 1,500 acres		Managed bees needed for hybrid seed production
Raspberries	*Rubus idaeus*	+	+	++	*+Osmia, Anderna, Coletes, Halictus*	Yes	Yes	1	17,300			
Rice, paddy	*Oryza* spp., mainly *Oryza sativa*.	-	-	-	-	No	No	3	2,468,000			Wind pollinated
Rye	*Secale cereale*	-	-	-	-	No	No	3	278,000			Wind pollinated
Rye grass for forage and silage	Italian ryegrass (*Lolium multiflorum);* English, perennial ryegrass (*L. perenne*).	-	-	-	-	No	No	3	N/AV			Wind pollinated

Attractiveness of Agricultural Crops to Pollinating Bees for the Collection of Nectar and/or Pollen, 2017

Crop	Description	HB Poll.[1]	HB Nec.[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Ref No.	U.S. Bearing Acreage[2]	Seed Production[7]	Harvest Prior to Bloom	Notes
Safflower seed	*Carthamus tinctorius*	+	+	N/AV	+	Yes	Yes	EFSA, 93	170,000			Safflower is basically self-pollinated, but bees or other insects are generally necessary for optimum fertilization and maximum yield
Serradella/ birdsfoot	*Ornithopus sativus*	+	++	N/AV	+ *Megachile*	Yes	N/AV	EFSA	N/AV			
Sesame seed	*Sesamum indicum*	+	++	N/AV	+	Yes	No	5	17,501			
Sorghum	*Sorghum bicolor, spp. bicolor*	+	-	N/AV	+	No	No	3, 83	6,910,000 Grain and Silage			
Soybeans	*Glycine soja*	+	+	+	+	No	No	1	75,869,000			
Spices	Including inter alia: bay leaves (*Laurus nobilis*); dill seed (*Anethum graveolens*); fenugreek seed (*Trigonella foenum-graecum*); saffron (*Crocus sativus*); thyme (*Thymus vulgaris*); turmeric (*Curcuma longa*)	+	+	+	+	No	No	5	N/AV			Attractiveness depends on the species
Spinach	*Spinacia oleracea*	-	-	-	-	No	N/AV	EFSA	31,440		Yes	
Strawberries	*Fragaria* spp.	+	+	+	+*Andrena*, Halictids, *Osmia*	No	Yes	3	58,190			Not essential, but some growers add supplemental hives to compliment wind pollination

Attractiveness of Agricultural Crops to Pollinating Bees for the Collection of Nectar and/or Pollen, 2017

Crop	Description	HB Poll.[1]	HB Nec.[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Ref No.	U.S. Bearing Acreage[2]	Seed Production[7]	Harvest Prior to Bloom	Notes
Sugar beet	*Beta vulgaris* var. *altissima*	-	+	N/AV	+	For breeding, only	No	3	1,154,200		Yes	Only a small % of acreage grown for breeding
Sugar cane	*Saccharum officinarum*	-	-	-	-	No	No	3	905,600	2013: 907 acres		Wind pollinated
Sunflower seed	*Helianthus annuus*	++	++	++	*++Halictus, Dieunomia, Megachile, Melissodes, Svastra, Xylocopa*	Yes	Yes	1	1,474,600	2013: 1,502,000 acres		
Sweet potatoes	*Ipomoea batatas*	+	+	+	+	For breeding, only	No	5, 41, 78, 79	113,200			Propagated vegetatively; only small % of acreage is grown for breeding
Tangerines, mandarins, clementines	Mandarin, tangerine (*Citrus reticulata*); clementine, satsuma (*C. unshiu*)	++	++	+	*+Andrena, Xylocopa*	No	No	9, 113, 114	52100 Tangerines and Mandarins			Does not require or use managed pollinators except for small acreage (~8,300 acres) in Florida for tangerines and certain varieties of mandarins.
Tobacco[5]	*Nicotiana tabacum*	+	-	+	+	No	No	44, 84	355,700		Yes	Typically deflowered as a standard production practice
Tomatoes	*Lycopersicon esculentum*	-	-	+	+	Yes	Yes	1	93,600 Fresh; 277,000 Processing			May be grown in glasshouses where bumble bees are needed for pollination
Triticale	*Triticum x Secale*	-	-	-	-	No	No	N/AV[6]	61,428			Triticale is a cross between wheat (Triticum) and rye (Secale), both wind pollinated

Attractiveness of Agricultural Crops to Pollinating Bees for the Collection of Nectar and/or Pollen, 2017

Crop	Description	HB Poll.[1]	HB Nec.[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Ref No.	U.S. Bearing Acreage[2]	Seed Production[7]	Harvest Prior to Bloom	Notes
Turnips for fodder	*Brassica rapa* var. *rapifera*.	++	++	+	+	For breeding, only	For breeding, only	3	N/AV		Yes	Only a small % of acreage is grown for breeding
Vetches	Spring/common vetch (*Vicia sativa*).	++	+	++	++	Yes	No	42	3,441			
Viper's grass	*Scorzonera hispanica*	+	+	+	+	Yes	No	43	N/AV			*Note citation is not yet published*
Walnuts with shell	*Juglans* spp.: *J. regia*.	+	-	-	-	No	No	EFSA, 45	245,000			Wind pollinated
Watermelons	*Citrullus vulgaris*	+	+	+	+ *Agapostemon, Floridegus, Halictus, Hoplitus, Melissodes*	Yes	Yes	1	123,330			
Wheat	*Triticum* spp.: common (*T. aestivum*), durum (*T. durum*), spelt (*T. spelta*).	-	-	-	-	No	No	3	45,157,000			

† Major crops based on Appendix D in the EFSA bee risk assessment guidance document and their attractiveness to pollinating bees. The table also contains relevant agronomic information associated with each crop. The entry "N/AV" specifies when crop-specific data are unavailable. Where "EFSA" is listed as the reference for a specific crop in this table, the data from Appendix D in the EFSA bee risk assessment guidance are used as the sole source of information on attractiveness ratings as no additional data were identified.

[1] HB= honey bee; Pol = Pollen; Nec = Nectar

[2] Estimates from the Census of Agriculture have a 2012 harvested acreage date. NASS fruit estimates have a 2012 reference date and vegetables refer to 2013. Fruit estimates are in bearing acres. Field crops and specialty crops are reported in harvested acres. All Census estimates are reported in harvested acreage. N/AV = not available. Please refer to reference 48 in **Table 3** for the citation related to these data.

[3] Extra-floral nectaries

[4] Mainly on extra-floral nectaries

[5] Unmanufactured tobacco

[6] Extrapolation based on wheat and rye

[7] Seed production refers to crops grown to produce seeds intended for crop propagation rather than for human or livestock consumption

Table 2. Additional crops identified in the 40 CFR crop groupings and their attractiveness to *Apis* and non-*Apis* bees, whether crop requires bee pollination and if so, whether managed pollinators are used.

The degree to which pollen and nectar are attractive is listed using a scale where "-" = not attractive, "+" = attractive under certain conditions, and "++" = high attractiveness; entry "N/AV" specifies when crop-specific data are unavailable. The table also contains relevant agronomic information associated with each crop.

Crop	EPA Crop Group	HB Poll[1]	HB Nec[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Reference Number	Notes
Arracha (PR) *Arracacia xanthorrhiza* (Apiaceae)	Roots and tuber vegetables	+	+	+	+	Yes	No	Extrapolated from carrot in **Table 1**	Bees important for seed production. Typically harvested prior to bloom.
Arrowroot *Maranta arundinacea* (Marantaceae)	Roots and tuber vegetables	*Uncertainty*[a]							
Chinese artichoke *Stachys affinis* (Lamiaceae)	Roots and tuber vegetables	*Uncertainty*[a]							
Jerusalem artichoke (Asteraceae)	Roots and tuber vegetables	+	+	+	+	No	No	38	Some genotypes produce viable seed which is generated by cross pollination by bees, mainly non-*Apis*.
Edible burdock (Asteraceae)	Roots and tuber vegetables	+	+	+	+	No	No	Extrapolated from Jerusalem artichoke above	
Edible canna (Cannaceae)	Roots and tuber vegetables	*Uncertainty*[a]							
Cassava (Euphorbiaceae)	Roots and tuber vegetables	-	-	-	-	No	No	3	
Turnip-rooted chervil (Apiaceae)	Roots and tuber vegetables	+	+	+	+	For seed production, only	No	Extrapolated from coriander in **Table 1**	Only a small % of acreage is grown for seed. Typically harvested prior to bloom.

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Crop	EPA Crop Group	HB Poll[1]	HB Nec[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Reference Number	Notes
Chufa (Cyperaceae)	Roots and tuber vegetables	*Uncertainty*[a]							
Dasheen (Araceae)	Roots and tuber vegetables	+	+	N/AV	N/AV	No	No	46, 77	Cultivated primarily vegetatively
Ginger (PR) (Zingiberaceae)	Roots and tuber vegetables	*Uncertainty*[a]							
Ginseng (Araliaceae)	Roots and tuber vegetables	N/AV	N/AV	N/AV	+	No	No	75	
Horseradish (Brassicaceae)	Roots and tuber vegetables	+	+	+	+	No	No	Attractiveness extrapolated from radish below	Asexual reproduction through root propagation.
Leren (PR) (Marantaceae)	Roots and tuber vegetables	*Uncertainty*[a]							
Turnip rooted parsley (Apiaceae)	Roots and tuber vegetables	+	+	+	+	No	No	Extrapolated from parsley below	Bees important for seed production. Typically harvested prior to bloom.
Parsnip (Apiaceae)	Roots and tuber vegetables	+	+	+	+	For seed production, only	No	3	Only a small % of acreage is grown for seed. Typically harvested prior to bloom.
Radish (Brassicaceae)	Roots and tuber vegetables	+	+	+	+ *Megachile*	For seed production, only	For seed production, only	3	Only a small % of acreage is grown for seed. Honey bees are the primary pollinators. Typically harvested prior to bloom.
Rutabaga and turnip (Brassicaceae)	Roots and tuber vegetables	++	++	+	+	For seed production, only	For seed production, only	3	Only a small % of acreage is grown for seed. Small % of acreage. Typically harvested prior to bloom.

Crop	EPA Crop Group	HB Poll[1]	HB Nec[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Reference Number	Notes
Salsify, (oyster plant) (Asteraceae)	Roots and tuber vegetables	*Uncertainty*[a]							
Salsify, spanish (Asteraceae)	Roots and tuber vegetables	*Uncertainty*[a]							
Skirret (Apiaceae)	Roots and tuber vegetables	+	+	+	+	Yes	No	Extrapolated from carrot on **Table 1**	Bees important for seed production. Typically harvested prior to bloom.
Tanier (Araceae)	Roots and tuber vegetables	*Uncertainty*[a]							
Yam bean (Fabaceae)	Roots and tuber vegetables	+	+	+	+	No	No	Extrapolated from Bean (lupinus) below	
True yam (Dioscoreaceae)	Roots and tuber vegetables	*Uncertainty*[a]							
Chive, Chinese (Liliaceae)	Bulb vegetables	+	++	+	+	For seed production, only	No	Extrapolated from chive above	Only a small % of acreage is grown for seed.
Daylily, bulb (Liliaceae)	Bulb vegetables	-	-	-	-	No	No	12	Primarily moth and butterfly pollinated
Elegans hosta (Liliaceae)	Bulb vegetables	+	-	+	+	No	No	7	
Fritillaria (Liliaceae)	Bulb vegetables	+	+	+	+	No	No	13	
Garlic, great headed (Liliaceae)	Bulb vegetables	+	+	+	+	No	No	3, 81	Rarely grown for seed
Garlic, serpent (Liliaceae)	Bulb vegetables	+	+	+	+	No	No	Extrapolated from great headed garlic above	Rarely grown for seed

Crop	EPA Crop Group	HB Poll[1]	HB Nec[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Reference Number	Notes
Kurrat (Liliaceae)	Bulb vegetables	+	++	N/AV	+ *Osmia, Hoplitis*	Yes	No	Extrapolated from leek in Table 1: 3, 5	Typically harvested prior to bloom. Requires pollination only when grown for seed; small % of acreage
Lily (Liliaceae)	Bulb vegetables	-	-	-	-	No	No	57	Rarely grown for seed
Onion (various varieties except green onion) (Liliaceae)	Bulb vegetables	+	+	+	+	For seed production, only	No	3, 14, 81, Attractiveness extrapolated from green onion in **Table 1**	Only a small % of acreage is grown for seed, but locally important (CA, AZ)
Shallot (Liliaceae)	Bulb vegetables	+	+	+	+	For seed production, only	No	3, 14, 81, Attractiveness extrapolated from green onion in **Table 1**	Only a small % of acreage is grown for seed, but locally important (CA, AZ)
Amaranth (Amaranthaceae)	Leafy Vegetables	+	+	+	+	Yes		94	Crop harvested prior to bloom
Arugula (Brassicaceae)	Leafy Vegetables	++	++	+	+	No	No	Extrapolated from mustard seed and cabbage on **Table 1**	Crop is harvested prior to bloom when not grown for seed production.
Cardoon (Asteraceae)	Leafy Vegetables	+	+	+	+	Yes	No	81, Attractiveness extrapolated from artichoke in **Table 1**	Crop is harvested prior to bloom when not grown for seed production.
Celery (Apiaceae)	Leafy Vegetables	+	+	+	+	Yes	No	3, Attractiveness to wild bees extrapolated from parsley	Crop harvested prior to bloom. Bees important for seed production.
Celtuce (Asteraceae)	Leafy Vegetables	+	+	+	+	No	No	Extrapolated from lettuce in **Table 1**	Crop is harvested prior to bloom when not grown for seed production.

Crop	EPA Crop Group	HB Poll[1]	HB Nec[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Reference Number	Notes
Chervil (Apiaceae)	Leafy Vegetables	+	+	+	+	No	No	3	Crop is harvested prior to bloom when not grown for seed production.
Chrysanthemum (Asteraceae)	Leafy Vegetables	+	+	+	+	No	No	81, extrapolation from pyrethrum in reference 3	Crop is harvested prior to bloom when not grown for seed production.
Corn salad (Valerianaceae)	Leafy Vegetables	*Uncertainty*[a]							Crop may be inherently attractive to bee pollinators, but harvested prior to bloom
Cress, garden (Brassicaceae)	Leafy Vegetables	++	++	+	+	No	No	Extrapolated from mustard seed and cabbage on **Table 1**	Crop is harvested prior to bloom when not grown for seed production.
Cress, upland (Brassicaceae)	Leafy Vegetables	++	++	+	+	No	No	Extrapolated from mustard seed and cabbage on **Table 1**	Crop is harvested prior to bloom when not grown for seed production.
Dandelion (Asteraceae)	Leafy Vegetables	++	++	++	++	No	No	80, Attractiveness extrapolated from lettuce in **Table 1**	Harvested prior to bloom. Flowers are removed by mechanical means when not grown for seed production. Important sources of nectar and pollen for all bee species early in the spring when few other flowers are blooming. All bumble bee species use it as a food source for early brood production.
Dock/sorrel (Polygonaceae)	Leafy Vegetables	*Uncertainty*[a]							Crop may be inherently attractive to bee pollinators, but harvested prior to bloom

Crop	EPA Crop Group	HB Poll[1]	HB Nec[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Reference Number	Notes
Endive (Asteraceae)	Leafy Vegetables	+	+	+	+	No	No	3, attractiveness extrapolated from lettuce in **Table 1**	Crop is harvested prior to bloom when not grown for seed production.
Fennel (Apiaceae)	Leafy Vegetables	++	++	+	+	Yes	No	3, Attractiveness to wild bees extrapolated from chervil above	Crop is harvested prior to bloom when not grown for seed production.
Orach (Chenopodiaceae)	Leafy Vegetables	*Uncertainty*[a]							Crop may be inherently attractive to bee pollinators, but harvested prior to bloom
Parsley (Apiaceae)	Leafy Vegetables	+	+	+	+	No	No	3, attractiveness ratings extrapolated from chervil above	Crop is harvested prior to bloom when not grown for seed production.
Purslane, garden (Apiaceae)	Leafy Vegetables	+	+	+	+	No	No	Extrapolated from chervil above	Crop is harvested prior to bloom when not grown for seed production.
Winter purslane (Portulaceae)	Leafy Vegetables	*Uncertainty*[a]							Crop may be inherently attractive to bee pollinators, but harvested prior to bloom
Radicchio (Asteraceae)	Leafy Vegetables	+	+	N/AV	*+Andrena, Anthidium, Halictus, Osmia*	Yes	N/AV	Attractiveness extrapolated from chicory in **Table 1**	Crop is harvested prior to bloom when not grown for seed production.
Rhubarb (Polygonaceae)	Leafy Vegetables	Open pollinated, rarely self-pollinated							Crop may be inherently attractive to bee pollinators, but harvested prior to bloom
New Zealand spinach (Aizoaceae)	Leafy Vegetables	*Uncertainty*[a]							Crop may be inherently attractive to bee pollinators, but harvested prior to bloom

Crop	EPA Crop Group	HB Poll[1]	HB Nec[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Reference Number	Notes
Swiss chard (Chenopodiaceae)	Leafy Vegetables	-	+	N/AV	+	Yes	No	Extrapolated from sugar beet in **Table 1**	Crop is harvested prior to bloom when not grown for seed production. Requires pollination only for breeding; small % of acreage
Vine spinach (Basellaceae)	Leafy Vegetables	*Uncertainty*[a]							Crop may be inherently attractive to bee pollinators, but harvested prior to bloom
Brussels sprouts (Brassicaceae)	Brassica leafy vegetables	++	++	+	+	No	No	Extrapolated from mustard seed and cabbage on **Table 1**	Harvested prior to bloom.
Cavalo broccolo (Brassicaceae)	Brassica leafy vegetables	++	++	+	+	No	No	Extrapolated from mustard seed and cabbage on **Table 1**	Harvested prior to bloom.
Collards (Brassicaceae)	Brassica leafy vegetables	++	++	+	+	No	No	Extrapolated from mustard seed and cabbage on **Table 1**	Harvested prior to bloom.
Kale (Brassicaceae)	Brassica leafy vegetables	++	++	+	+	No	No	Extrapolated from mustard seed and cabbage on **Table 1**	Harvested prior to bloom.
Kohlrabi (Brassicaceae)	Brassica leafy vegetables	++	++	+	+	No	No	Extrapolated from mustard seed and cabbage on **Table 1**	Harvested prior to bloom.
Mizuna (Brassicaceae)	Brassica leafy vegetables	++	++	+	+	No	No	Extrapolated from mustard seed and cabbage on **Table 1**	Harvested prior to bloom.

Crop	EPA Crop Group	HB Poll[1]	HB Nec[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Reference Number	Notes
Mustard greens (Brassicaceae)	Brassica leafy vegetables	++	++	+	+	No	No	Extrapolated from mustard seed and cabbage on **Table 1**	Harvested prior to bloom.
Mustard spinach (Brassicaceae)	Brassica leafy vegetables	++	++	+	+	No	No	Extrapolated from mustard seed and cabbage on **Table 1**	Harvested prior to bloom.
Rape greens (Brassicaceae)	Brassica leafy vegetables	++	++	+	+	No	No	Extrapolated from mustard seed and cabbage on **Table 1**	Harvested prior to bloom.
Bean (lupinus) (Fabaceae)	Legume vegetable	++	+	+	+	No	No	1, 3, 91	
Bean (vigna) (Fabaceae)	Legume vegetable	+	+	+	+	No	No	1, 3	
Guar (Fabaceae)	Legume vegetable	+	+	+	+	No	No	Extrapolated from Bean (lupinus) above	
Jackbean (Fabaceae)	Legume vegetable	+	+	+	+	No	No	Extrapolated from Bean (lupinus) above	
Lablab bean (Fabaceae)	Legume vegetable	+	+	+	+	No	No	Extrapolated from Bean (lupinus) above	
Pigeon pea (Fabaceae)	Legume vegetable	+	+	+	+	No	No	Extrapolated from Bean (lupinus) above	
Sword bean (Fabaceae)	Legume vegetable	+	+	+	+	No	No	Extrapolated from Bean (lupinus) above	
African eggplant (Solanaceae)	Fruiting vegetable	-	-	++	+	No	No	Extrapolated from entry for eggplant in **Table 1**	

Crop	EPA Crop Group	HB Poll[1]	HB Nec[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Reference Number	Notes
Bush tomato (Solanaceae)	Fruiting vegetable	-	-	++	+	No	No	Extrapolated from entry for eggplant in **Table 1**	Tomatoes grown in green houses require pollination by managed bumble bees.
Cocona (Solanaceae)	Fruiting vegetable	-	-	++	+	No	No	Extrapolated from entry for eggplant in **Table 1**	
Currant tomato (Solanaceae)	Fruiting vegetable	-	-	++	+	No	No	Extrapolated from entry for eggplant in **Table 1**	
Garden huckleberry (Solanaceae)	Fruiting vegetable	-	-	++	+	No	No	Extrapolated from entry for eggplant in **Table 1**	
Goji berry (Solanaceae)	Fruiting vegetable	-	-	++	+	No	No	Extrapolated from entry for eggplant in **Table 1**	
Groundcherry (Solanaceae)	Fruiting vegetable	-	-	++	+	No	No	Extrapolated from entry for eggplant in **Table 1**	
Martynia (Pedaliaceae)	Fruiting vegetable	*Uncertainty*[a]							
Naranjilla (Solanaceae)	Fruiting vegetable	-	-	++	+	No	No	Extrapolated from entry for eggplant in **Table 1**	
Pea eggplant (Solanaceae)	Fruiting vegetable	-	-	++	+	No	No	Extrapolated from entry for eggplant in **Table 1**	
Pepino (Solanaceae)	Fruiting vegetable	-	-	++	+	No	No	Extrapolated from entry for eggplant in **Table 1**	
Bell pepper (Solanaceae)	Fruiting vegetable	-	-	++	+	No	No	Extrapolated from entry for eggplant in **Table 1**	
Roselle (Malvaceae)	Fruiting vegetable	+	+	N/AV	N/AV	Yes	No	71	

Crop	EPA Crop Group	HB Poll[1]	HB Nec[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Reference Number	Notes
Scarlet eggplant (Solanaceae)	Fruiting vegetable	-	-	++	+	No	No	Extrapolated from entry for eggplant in **Table 1**	
Sunberry (Solanaceae)	Fruiting vegetable	-	-	++	+	No	No	Extrapolated from entry for eggplant in **Table 1**	
Tomatillo (Solanaceae)	Fruiting vegetable	-	-	++	+	No	No	Extrapolated from entry for eggplant in **Table 1**	
Tree tomato (Solanaceae)	Fruiting vegetable	-	-	++	+	No	No	Extrapolated from entry for eggplant in **Table 1**	
Chayote (Cucurbitaceae)	Cucurbit vegetable	+	+	+	+	No	No	3	
Citron melon (Cucurbitaceae) = watermelon	Cucurbit vegetable	+	+	+	+	Yes	Yes	3	
Momordica spp. (Cucurbitaceae)	Cucurbit vegetable	+	+	+	+	Yes	Yes	Extrapolated from entry above	
Calamondin (Rutaceae)	Citrus fruit	++	++	+	+	No	No	9	
Citron (Rutaceae)	Citrus fruit	++	++	+	+	No	No	Extrapolated from entry above	
Citrus hybrids (Rutaceae)	Citrus fruit	++	++	+	+	No	No	Extrapolated from entry above	
Kumquat (Rutaceae)	Citrus fruit	++	++	+	+	No	No	Extrapolated from entry above	
Mediterranean mandarin (Rutaceae)	Citrus fruit	++	++	+	+	No	No	Extrapolated from entry above	
Mount white lime (Rutaceae)	Citrus fruit	++	++	+	+	No	No	Extrapolated from entry above	
New guinea wild lime (Rutaceae)	Citrus fruit	++	++	+	+	No	No	Extrapolated from entry above	

Crop	EPA Crop Group	HB Poll[1]	HB Nec[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Reference Number	Notes
Tangelo (Rutaceae)	Citrus fruit	++	++	+	+	No	No	113	Does not require or use managed pollinators except for small acreage (~2,500 acres) of tangelos in Florida.
Tangor (Rutaceae)	Citrus fruit	++	++	+	+	No	No	Extrapolated from entry above	
Uniq fruit (Rutaceae)	Citrus fruit	++	++	+	+	No	No	Extrapolated from entry above	
Azarole (Rosaceae)	Pome fruit	++	+	+	++*Andrena, Anthidium, Halictus, Osmia, Anthophora, Habropoda*	Yes	No	Extrapolated from apple in **Table 1**	
Crabapple (Rosaceae)	Pome fruit	++	+	+	++*Andrena, Anthidium, Halictus, Osmia, Anthophora, Habropoda*	Yes	Yes	95, Extrapolated from apple in **Table 1;**	
Loquat (Rosaceae)	Pome fruit	++	+	+	++*Andrena, Anthidium, Halictus, Osmia, Anthophora, Habropoda*	Yes	No	Extrapolated from apple in **Table 1**	
Mayhaw (Rosaceae)	Pome fruit	++	+	+	++*Andrena, Anthidium, Halictus, Osmia, Anthophora, Habropoda*	Yes	No	Extrapolated from apple in **Table 1**	
Medlar (Rosaceae)	Pome fruit	++	+	+	++*Andrena, Anthidium, Halictus, Osmia, Anthophora, Habropoda*	Yes	No	Extrapolated from apple in **Table 1**	
Asian pear (Rosaceae)	Pome fruit	++	+	+	++*Andrena, Anthidium, Halictus, Osmia, Anthophora, Habropoda*	Yes	Yes	Extrapolated from apple in **Table 1**	

Crop	EPA Crop Group	HB Poll[1]	HB Nec[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Reference Number	Notes
Pseudocydonia sinensis (Rosaceae)	Pome fruit	++	+	+	*++Andrena, Anthidium, Halictus, Osmia, Anthophora, Habropoda*	Yes	No	Extrapolated from apple in **Table 1**	
Tejocote (Rosaceae)	Pome fruit	++	+	+	*++Andrena, Anthidium, Halictus, Osmia, Anthophora, Habropoda*	Yes	No	Extrapolated from apple in **Table 1**	
Capulin (Rosaceae)	Stone fruit	++	+	+	*++Andrena, Anthidium, Halictus, Osmia, Anthophora, Habropoda*	Yes	No	Extrapolated from apple in **Table 1**	
Jujube (Rhamnaceae)	Stone fruit	++	+	+	+	Yes	No	3,5	
Nectarine (Rosaceae)	Stone fruit	++	+	+	+	Yes	Yes	3,5	
Peach (Rosaceae)	Stone fruit	++	+	+	+	Yes	Yes	3,5	
Plum (various) (Rosaceae)	Stone fruit	++	+	+	+	Yes	Yes	3,5	
Plumcot (Rosaceae)	Stone fruit	++	+	+	+	Yes	No	Extrapolated from entry for Plum	
Sloe (Rosaceae)	Stone fruit	++	+	+	+	Yes	No	Extrapolated from entry for Plum	
Aronia berry (Rosaceae)	Berry and small fruit	+	+	+	+	Yes	No	8	
Bayberry (Myricaceae)	Berry and small fruit	*Uncertainty*[a]							
Bearberry (Ericaceae)	Berry and small fruit	+	+	++	*++Andrena, Colletes, Osmia, Anthophora, Xylocopa*	Yes	No	Extrapolated from blueberry in **Table 1**, similar flower	
Bilberry (Ericaceae)	Berry and small fruit	+	+	++	*++Andrena, Colletes, Osmia, Anthophora, Xylocopa*	Yes	No	Extrapolated from blueberry in **Table 1**, similar flower	

Crop	EPA Crop Group	HB Poll[1]	HB Nec[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Reference Number	Notes
Blackberry (Rosaceae)	Berry and small fruit	+	+	++	++	Yes	Yes	1,3,5	
Buffaloberry (Elaeagnaceae)	Berry and small fruit	*Uncertainty*[a]							
Che (Moraceae)	Berry and small fruit	*Uncertainty*[a]							
Chokecherry (Rosaceae)	Berry and small fruit	+	+	N/AV	N/AV	Yes	No	58, 59	
Cloudberry (Rosaceae)	Berry and small fruit	+	+	+	+	Yes	No	60, 61	
European barberry (Berberidaceae)	Berry and small fruit	*Uncertainty*[a]							
Highbush cranberry (Caprifoliaceae)	Berry and small fruit	*Uncertainty*[a]							
Edible honeysuckle (Caprifoliaceae)	Berry and small fruit	+	+	+	+	Yes	No	62	
Huckleberry (Ericaceae)	Berry and small fruit	+	+	++	++*Andrena, Colletes, Osmia, Anthophora, Xylocopa*	Yes	No	Extrapolated from blueberry in **Table 1**, similar flower	
Jostaberry (Grossulariaceae)	Berry and small fruit	-	+	+	+	Yes	No	63, Extrapolated from Currants in **Table 1**	
Juneberry (Rosaceae)	Berry and small fruit	+	+	+	+	Yes	No	7, 64	
Lingonberry (Ericaceae)	Berry and small fruit	+	+	+	+	Yes	No	65, 66	
Maypop (Passifloraceae)	Berry and small fruit	-	-	-	+ *Xylocopa*	Yes	No	67	
Mulberry (Moraceae)	Berry and small fruit	-	-	-	-	No	No	68	Wind pollinated
Partridgeberry (Rubiaceae)	Berry and small fruit	-	-	+	-	Yes	No	69	
Phalsa (Tiliaceae)	Berry and small fruit	+	+	+	+	Yes	No	3	

Crop	EPA Crop Group	HB Poll[1]	HB Nec[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Reference Number	Notes
Pin cherry (Rosaceae)	Berry and small fruit	++	+	+	++ *Osmia*	Yes	No	Extrapolated from cherry tree	
Salal (Ericaceae)	Berry and small fruit	+	+	++	++*Andrena, Colletes, Osmia, Anthophora, Xylocopa*	Yes	No	Extrapolated from blueberry in **Table 1**, similar flower	
Schisandra berry (Schisandraceae)	Berry and small fruit	*Uncertainty*[a]							
Beechnut (Fagaceae)	Tree nut	-	-	-	-	No	No	70	Wind pollinated
Brazil nut (Lecythidaceae)	Tree nut	+	+	++	+	No	No	15	
Bur oak (Fagaceae)	Tree nut	+	-	-	-	No	No	16	Wind pollinated
Butternut (Juglandaceae)	Tree nut	+	-	-	-	No	No	17	
Cashew (PR)(Anacardiaceae)	Tree nut	+	+	N/AV	N/AV	Yes	No	3	
Candlenut (Euphorbiaceae)	Tree nut	*Uncertainty*[a]							
Chinquapin (Fagaceae)	Tree nut	++	+	+	+	No	No	3	
Coconut (Arecaceae)	Tree nut	+	+	+	+	Yes	No	3	
Ginkgo (Ginkgoaceae)	Tree nut	-	-	-	-	No	No	18	
Guiana chestnut (PR) (Bombacaceae)	Tree nut	*Uncertainty*[a]							
Heartnut (Juglandaceae)	Tree nut	+	-	-	-	No	No	Similar to butternut (above), information transferred from above	
Hickory (Juglandaceae)	Tree nut	*Uncertainty*[a]							
Macadamia nut (PR) (Proteaceae)	Tree nut	+	+	N/AV	N/AV	Yes	No	3	

Crop	EPA Crop Group	HB Poll[1]	HB Nec[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Reference Number	Notes
Pachira (Bombacaceae)	Tree nut	*Uncertainty*[a]							
Peach palm nut (Arecaceae)	Tree nut	-	-	-	-	No	No	19	Pollinated by beetles
Pecan (Juglandaceae)	Tree nut	-	-	-	-	No	No	20	Wind pollinated
Pine nut (Pinaceae)	Tree nut	*Uncertainty*[a]							
Tropical almond (Combretaceae)	Tree nut	+	+	N/AV	N/AV	No	No	21	
Millet (Poaceae)	Cereal grains	+	-	-	-	No	No	Similar to Grasses (Poa) so information transferred from **Table 1**	Source of pollen only when no other forage sources are available
Popcorn (Poaceae)	Cereal grains	+	-	-	-	No	No	Similar to Grasses (Poa) so information transferred from **Table 1**	Source of pollen only when no other forage sources are available
Teosinte (Poaceae)	Cereal grains	+	-	-	-	No	No	Similar to Grasses (Poa) so information transferred from **Table 1**	Source of pollen only when no other forage sources are available
Wild rice (Poaceae)	Cereal grains	+	-	-	-	No	No	Similar to Grasses (Poa) so information transferred from **Table 1**	Source of pollen only when no other forage sources are available
Velvet bean (Fabaceae)	nongrass animal feeds	*Uncertainty*[a]							
Lupin (Fabaceae)	nongrass animal feeds	+	+	+	+	For seed production, only	For seed production, only	5	Only a small % of acreage is grown for seed using honey bees

Attractiveness of Agricultural Crops to Pollinating Bees for the Collection of Nectar and/or Pollen, 2017

Crop	EPA Crop Group	HB Poll[1]	HB Nec[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Reference Number	Notes
Crown vetch (Fabaceae)	nongrass animal feeds	+	+	++	++ *Megachile, Osmia*	For seed production, only	For seed production, only	Extrapolated from entry below	Only a small % of acreage is grown for seed. It is a poor seed producer as it produces little pollen or nectar,
Vetch (Fabaceae)	nongrass animal feeds	+	+	++	+ *Megachile, Osmia*	For seed production, only	For seed production, only	89	Only a small % of acreage is grown for seed using honey bees
Milk vetch (Fabaceae) *Astragalus* spp.	nongrass animal feeds	+	+	++	+ *Megachile*	For seed production, only	For seed production, only	96, 97	Only a small % of acreage is grown for seed; bumble bees more effective pollinators than honey bees or leafcutter bees.
Angelica (Apiaceae)	Herbs and spices	*Uncertainty*[a]							
Annatto (Bixaceae)	Herbs and spices	+	-	N/AV	N/AV	No	No	23	
Lemon balm (Lamiaceae)	Herbs and spices	+	+	+	+	No	No	24	
Basil (Lamiaceae)	Herbs and spices	+	+	+	+	For seed production, only	For seed production, only	7	Only a small % of acreage is grown for seed.
Borage (Boraginaceae)	Herbs and spices	+	++	+	+	For seed production, only	For seed production, only	25, 98, 99	Only a small % of acreage is grown for seed.
Burnet (Rosaceae)	Herbs and spices	+	+	+	+	No	No	26	
Camomille (Asteraceae)	Herbs and spices	+	+	N/AV	+	No	No	27, Extrapolated to potential US experience	
Black caraway (Ranunculaceae)	Herbs and spices	+	+	+	+	No	No	28, Extrapolated to potential US experience	
Caper buds (Capparaceae)	Herbs and spices	+	++	N/AV	+	For seed production, only	For seed production, only	29, Extrapolated to potential US experience	Only a small % of acreage is grown for seed.

Attractiveness of Agricultural Crops to Pollinating Bees for the Collection of Nectar and/or Pollen, 2017

Crop	EPA Crop Group	HB Poll[1]	HB Nec[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Reference Number	Notes
Catnip (Lamiaceae)	Herbs and spices	+	++	++	++	For seed production, only	For seed production, only	7, 30	Only a small % of acreage is grown for seed.
Celery seed (Apiaceae)	Herbs and spices	+	+	+	+	For seed production, only	For seed production, only	3	Only a small % of acreage is grown for seed.
Chinese chives (Liliaceae)	Herbs and spices	+	++	+	+	For seed production, only	For seed production, only	Extrapolated from chive, 3	Only a small % of acreage is grown for seed.
Cinnamon (Lauraceae)	Herbs and spices	+	+	N/AV	N/AV	For seed production, only	For seed production, only	31	Only a small % of acreage is grown for seed.
Clary (Lamiaceae)	Herbs and spices	+	+	+	+	For seed production, only	For seed production, only	7	Only a small % of acreage is grown for seed.
Costmary (Asteraceae)	Herbs and spices	+	+	+	+	For seed production, only	For seed production, only	Extrapolated from chamomile, 27	Only a small % of acreage is grown for seed.
Culantro (Apiaceae)	Herbs and spices	*Uncertainty*[a]							
Horehound (Lamiaceae)	Herbs and spices	+	+	+	+	For seed production, only	For seed production, only	Extrapolated from 24	Only a small % of acreage is grown for seed.
Hyssop (Lamiaceae)	Herbs and spices	+	+	++	++	For seed production, only	For seed production, only	7	Only a small % of acreage is grown for seed.
Lavendar (Lamiaceae)	Herbs and spices	+	++	++	++	For seed production, only	For seed production, only	3, 5	Only a small % of acreage is grown for seed.
Lemongrass (Graminae)	Herbs and spices	-	-	-	-	No	No	3	As a grass, primarily wind pollinated
Lovage (Apiaceae)	Herbs and spices	*Uncertainty*[a]							
Mace (Myristicaceae)	Herbs and spices	-	-	-	-	No	No	32	
Marigold (Asteraceae)	Herbs and spices	+	+	-	+	No	No	55	
Marjoram (Lamiaceae)	Herbs and spices	+	+	+	+	No	No	56	
Nasturtium (Tropaeolaceae)	Herbs and spices	+	+	++	+	No	No	7	
Nutmeg (Myristicaceae)	Herbs and spices	-	-	-	-	No	No	32	

Attractiveness of Agricultural Crops to Pollinating Bees for the Collection of Nectar and/or Pollen, 2017

Crop	EPA Crop Group	HB Poll[1]	HB Nec[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Reference Number	Notes
Parsley (Apiaceae)	Herbs and spices	+	+	+	+	No	No	33	Bees important for seed production
Rue (Rutaceae)	Herbs and spices	+	+	+	+	Yes	No	85	Bees important for seed production
Rosemary (Lamiaceae)	Herbs and spices	++	++	+	+	No	No	34	Perennial shrub, propagated vegetatively
Sage (Lamiaceae)	Herbs and spices	*Uncertainty*[a]							
Savory (Lamiaceae)	Herbs and spices	+	+	+	+	Yes	No	86	Bees important for seed production
Tansy (Asteraceae)	Herbs and spices	+	+	+	+	No	No	35	
Tarragon (Asteraceae)	Herbs and spices	+	+	+	+	No	No	87	
Vanilla (Orchidaceae)	Herbs and spices	+	+	+	+	No	No	3	Flowers main pollinated by hand
Wintergreen (Ericaceae)	Herbs and spices	-	-	+	-	No	No	36	Flowers visited mostly by bumble bees
Wormwood (Asteraceae)	Herbs and spices	*Uncertainty*[a]							
Woodruff (Rubiaceae)	Herbs and spices	*Uncertainty*[a]							
Borage (Boraginaceae)	Oilseed	++	+	+	+	Yes	No	3, 37	
Calendula (Asteraceae)	Oilseed	+	+	+	+	Yes	No	3	
Chinese tallow (Euphorbiaceae)	Oilseed	+	+	+	+	Yes	No	3	
Crambe (Brassicaceae)	Oilseed	+	+	+	+	Yes	No	3	
Cuphea (Lythraceae)	Oilseed	+	+	+	+	Yes	No	3, 10	
Echium (Boraginaceae)	Oilseed	+	+	+	+	Yes	No	3	

Attractiveness of Agricultural Crops to Pollinating Bees for the Collection of Nectar and/or Pollen, 2017

Crop	EPA Crop Group	HB Poll[1]	HB Nec[1]	Bumble Bees	Solitary Bees	Requires Bee Pollination	Uses Managed Pollinators	Reference Number	Notes
Euphorbia (Euphorbiaceae)	Oilseed	+	+	+	+	Yes	No	3	
Evening primrose (Onagraceae)	Oilseed	+	+	+	+	Yes	No	3	
Flax seed (Linaceae)	Oilseed	+	+	+	+	No	No	3	
Gold of pleasure (Brassicaceae)	Oilseed	+	+	+	+	Yes	No	3	
Hare's ear mustard (Brassicaceae)	Oilseed	+	+	+	+	Yes	No	3	
Jojoba (Simmondsiaceae)	Oilseed	+	+	+	+	Yes	No	3	
Lesquerella (Brassicaceae)	Oilseed	+	+	+	+	Yes	No	100, 101	
Lunaria (Brassicaceae)	Oilseed	+	+	+	+	Yes	No	3	
Meadowfoam (Limnanthaceae)	Oilseed	+	+	+	+ *Osmia*	Yes	No	3	
Milkweed (Asclepiadaceae)	Oilseed	+	+	+	+	Yes	No	88	
Niger seed (Asteraceae)	Oilseed	+	+	+	+	Yes	No	3	
Oil radish (Brassicaceae)	Oilseed	+	+	+	+	Yes	No	3	
Rose hip (Rosaceae)	Oilseed	+	+	+	+	Yes	No	3	
Stokes aster (Asteraceae)	Oilseed	+	+	+	+	Yes	No	3	
Stokes aster (sweet rocket) (Brassicaceae)	Oilseed	+	+	+	+	Yes	No	3	
Tallowwood (Olacaceae)	Oilseed	+	+	+	+	Yes	No	3	
Veronia (Asteraceae)	Oilseed	+	+	+	+	Yes	No	3	
Tea oil plant (Theaceae)	Oilseed	+	+	+	+	Yes	No	3	

[a]Where no data are identified for a given crop, there is uncertainty regarding its attractiveness to pollinating bees, and "*Uncertainty*" is listed in the row