

Phyto dermatitis: Reactions in the Skin Caused by Plants

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Numerous occupations are associated with the risk of developing reactions to plants and woods. These include food handlers, caterers, green grocers/market gardeners, farmers, agricultural workers, florists, nursery workers, landscapers, forestry workers and loggers. It is estimated that 50% of agricultural occupational skin disease is due to plants, trees and natural vegetation (O'Malley et al 1988). Reactions to pesticides and chemicals account for less than 20% of skin reactions in agricultural workers.

Plants harm skin in numerous ways. Dermatitis due to mechanical injury, irritant contact, allergic contact, photo reactions (phytophotodermatitis) and contact urticaria (pharmacologic injury) are some of the known reactions to plants. In many cases, it is only specific parts of the plants that cause the reaction such as the bulb of tulips or lilies or the pollen in tansy. Some plants can cause more than one type of skin reaction such as tulips causing hives and allergic contact dermatitis.

Types of Plant Dermatitis

Mechanical: Dermatitis can be caused by cuts, abrasions and punctures from thorns, spines and hairy appendages on the plants. These can become secondarily infected with bacteria, mycobacteria or fungi. Prickly pears, pineapples, barberry, bamboo and rose thorns are examples of plant material that can cause mechanical injury to the skin.

Irritant: This reaction can occur in anyone and does not require sensitization to a chemical. A reaction develops when the skin comes in contact with an irritating chemical present in the plant. If there is skin trauma from spines or hairy appendages on the plant, the reaction can be worse. Working in hot or wet working conditions can make the reaction intensified. Examples of chemical irritants from plants include acids, proteolytic enzymes and calcium oxalate crystals. This is the most common skin reaction to plants. Mustards, chile peppers, pineapple, mayweed, cowhage and yarrow are examples of plants that contain irritating chemicals that can injure the skin.

Photo Dermatitis (Phytophotodermatitis): The reaction is caused by furocoumarin chemicals (psoralens) present in plants in combination with Ultraviolet A light. After exposure to the plant saps and sunlight, blisters form in a few hours. When the blisters resolve, there is dark, streaky hyperpigmentation that can last for months. Most common plants for causing this reaction are celery, carrots, parsnips, limes, figs, Queen Anne's lace and giant hogweed.

Allergic Contact Dermatitis: Unlike irritant dermatitis, allergic contact dermatitis requires a sensitized immune system. Not everyone will have a reaction caused by low molecular weight compounds. This reaction requires previous sensitization to the compound. It may take up to 48 hours to develop a reaction. The rash may persist for a few weeks before healing. The most common plant causing this reaction is poison

oak/ivy. The huge family of *Compositae* plants contain chemical compounds known as sesquiterpene lactones which are sensitizers and irritants. Chrysanthemums and numerous agricultural weeds such as dandelion, goldenrod, black-eyed Susan and tansy in this plant family cause allergic contact dermatitis. Instead of developing blisters like poison ivy, rashes from the *Compositae* family are usually chronic, dry, itchy, eczematous reactions on the hands. Florists who are allergic to tulips and Alstroemeria can develop severe reactions to these flowers. Except for poison oak/ivy rashes, this type of reaction is the least common form of dermatitis.

Contact Urticaria or Pharmacologic Injury: Urticaria (hives) develop after contact with the plant or plant product. Irritant hairs on the surface of the plant can enhance penetration of the pharmacological chemicals into the skin. Development of urticaria may be a non-allergic or allergic reaction.

In the non-allergic reaction, any person is susceptible to the reaction. Nettles with stinging hairs contain histamines, acetylcholine and serotonin and cause a burning reaction in the skin with development of hives. The reaction can last for a few hours.

In the allergic type of urticaria, people with atopic eczema are more prone to serious reactions with swelling of the lips, eyes, throat and generalized hives. There is usually a pre-existing sensitization in the allergic type reaction. Proteins (such as latex) and pollen in plants cause the allergic reaction. Garlic, onions, tulips and lilies can cause this type of reaction in susceptible people.

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Plants and Skin Reactions

Safety & Health Assessment & Research for Prevention (SHARP) Program
Washington State Department of Labor and Industries

PLANT	GENUS	ALLURT	NALLURT	ACD	MECH	IRR	PHOTO
Acacia	Acacia spp.	No	No	Yes	No	No	No
African violet	Saintpaulia spp.	No	No	No	Yes	No	No
Alder, speckled	Alnus rugosa	No	No	Yes	No	No	No
Alfalfa	Medicago sativa	Yes	No	No	No	No	No
Almond nut	Prunis dulcis	Yes	No	No	No	No	No
Anemone	Anemone spp.	No	No	No	No	Yes	No
Angelica	Angelica archangelica	No	No	No	No	No	Yes
Anise	Pimpinella anisum	No	No	No	No	No	Yes
Anise seed	Pimpinella anisum	No	No	Yes	No	No	No
Anthurium	Anthurium spp.	No	No	No	No	Yes	No
Apples	Malus domestica	Yes	No	No	No	No	No
Apricot	Prunus armeniaca	Yes	No	No	No	No	No
Arnica, wolf's bane, mountain tobacco	Arnica montana	No	No	Yes	No	No	No
Artichoke	Cynara scolymus	No	No	Yes	No	No	No
Ash	Fraxinus spp.	No	No	Yes	No	No	No
Asparagus	Asparagus officinalis	No	No	Yes	No	Yes	No
Aster	Aster spp.	No	No	Yes	No	No	No
Balsam fir	Abies balsamea	No	No	Yes	No	No	No
Bamboo	Bambusa spp.	No	No	No	Yes	No	No
Banana	Musa spp.	Yes	No	No	No	No	No
Barberry	Berberis spp.	No	No	No	Yes	No	No
Barley	Hordeum vulgare	Yes	No	No	Yes	No	No
Beech, American	Fagus grandifolia	No	No	Yes	No	No	No
Beech, European	Fagus sylvatica	No	No	Yes	No	No	No
Beggar ticks	Bidens frodosa	No	No	No	Yes	No	No
Begonia	Begonia rex	No	No	No	No	Yes	No
Bergamot orange	Citrus aurantium v. bergamia	No	No	No	No	No	Yes
Bindweed	Convolvulus arvensis	No	No	No	No	Yes	No
Birch, European	Betula verrucosa	Yes	No	No	No	No	No

ALLURT=allergic urticaria; NALLURT=nonallergic urticaria; ACD=allergic contact dermatitis; MECH=mechanical; IRR=Irritant; PHOTO=Photodermatitis

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Birch, paper	<i>Betula papyrifera</i>	No	No	Yes	No	No	No
Bishop's weed	<i>Ammi majus</i>	No	No	No	No	No	Yes
Bitter orange	<i>Citrus aurantium</i>	No	No	No	No	No	Yes
Bitterweed	<i>Helenium amarum</i>	No	No	Yes	No	No	No
Black-eyed Susan	<i>Rudbeckia hirta</i>	No	No	Yes	No	No	No
Blackberry	<i>Rubus</i> spp.	No	No	No	Yes	No	No
Blackthorn	<i>Prunus spinosus</i>	No	No	No	Yes	No	No
Bleeding heart	<i>Dicentra spectabilis</i>	No	No	Yes	No	No	No
Borage	<i>Borago officinalis</i>	No	No	No	No	Yes	No
Bougainvillea	<i>Bougainvillea brasiliensis</i>	Yes	No	No	No	No	No
Brazil nut	<i>Bertholletia excelsa</i>	Yes	No	No	No	No	No
Brazilian pepper, Florida holly	<i>Schinus terebinthifolius</i>	No	No	Yes	No	No	No
Bur marigold	<i>Bidens tripartita</i>	No	No	No	Yes	No	No
Burdock	<i>Arctium lappa</i>	No	No	Yes	No	No	No
Burning bush, gas plant	<i>Dictamnus albus</i>	No	No	No	No	No	Yes
Buttercup	<i>Ranunculus bulbosus</i>	No	No	No	No	Yes	No
Cabbage	<i>Brassica oleracea</i>	Yes	No	No	No	No	No
Cactus	Cactaceae family	No	No	No	Yes	No	No
Caladium	<i>Caladium bicolor</i>	No	No	No	No	Yes	No
California glory	<i>Fremontodendron</i>	No	No	No	No	Yes	No
Calla lily	<i>Zantedeschia aethiopica</i>	No	No	No	No	Yes	No
Canola bean, rape seed	<i>Brassica napus</i>	Yes	No	No	No	No	No
Caraway	<i>Carum carvi</i>	Yes	No	Yes	No	No	No
Carnation, pink	<i>Dianthus carophyllus</i>	No	No	Yes	No	No	No
Carrot	<i>Daucus carota</i>	Yes	No	Yes	No	No	Yes
Carrot weed	<i>Parthenium hysterophorus</i>	No	No	Yes	No	No	No
Cassia	<i>Cinnamomum cassia</i>	Yes	No	Yes	No	No	No
Castor bean	<i>Ricinus communis</i>	No	No	Yes	No	No	No
Castor oil plant	<i>Ricinus communis</i>	Yes	No	No	No	Yes	No
Cauliflower	<i>Brassica oleracea botrytis</i>	Yes	No	Yes	No	Yes	No

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Cedar	<i>Cedrus</i> spp.	No	No	Yes	No	No	No
Celery	<i>Apium graveolens</i>	Yes	No	Yes	No	No	Yes
Century plant, agave	<i>Agave americana</i>	No	No	No	Yes	Yes	No
Chamomile, sweet	<i>Anthemis nobilis</i>	No	No	Yes	No	No	No
Chervil	<i>Anthriscus cerefolium</i>	No	No	No	No	No	Yes
Chestnut, horse	<i>Aesculus hippocastanum</i>	No	No	Yes	No	No	No
Chicory	<i>Chicorium intybus</i>	No	No	Yes	No	Yes	No
Chile pepper	<i>Capsicum annuum longum</i>	Yes	Yes	No	No	Yes	No
Chinese rice paper plant	<i>Tetrapanax papyriferus</i>	No	No	Yes	No	No	No
Chives	<i>Allium schoenoprasum</i>	Yes	No	Yes	No	No	No
Chrysanthemum	<i>Chrysanthemum</i> spp.	Yes	No	Yes	No	No	No
Chrysanthemum, florist	<i>Chrysanthemum indicum</i>	Yes	No	Yes	No	No	No
Chrysanthemum, florist	<i>Dendranthema grandiflora</i>	Yes	No	Yes	No	No	No
Cinnamon	<i>Cinnamomum zeylanicum</i>	Yes	No	Yes	No	No	No
Citron	<i>Citrus medica</i>	No	No	No	No	No	Yes
Citronella oil	<i>Cymbopogon nardus</i>	No	No	Yes	No	No	No
Clematis	<i>Clematis vitalba</i>	No	No	No	No	Yes	No
Cocklebur	<i>Xanthium strumarium</i>	No	No	No	Yes	No	No
Coffee bean	<i>Coffea arabica</i>	Yes	No	Yes	No	No	No
Coleus	<i>Coleus blumei</i> hybrids	No	No	Yes	No	No	No
Columbine	<i>Aquilegia</i> spp.	No	No	No	No	Yes	No
Comfrey	<i>Symphytum officinale</i>	No	No	No	Yes	No	No
Coriander	<i>Coriandrum sativum</i>	Yes	No	Yes	No	No	No
Corn	<i>Zea mays</i>	Yes	No	Yes	No	No	No
Cornflower	<i>Centaurea cyanus</i>	No	No	Yes	No	No	No
Cosmos	<i>Codiaeum variegatum</i>	No	No	Yes	No	No	No
Cotoneaster	<i>Cotoneaster</i> spp.	Yes	No	No	No	No	No
Cotton	<i>Gossypium</i> spp.	Yes	No	No	No	No	No
Cow parsley	<i>Heracleum sphondylium</i>	No	No	No	No	No	Yes
Cow parsnip	<i>Heracleum lanatum</i>	No	No	No	No	No	Yes

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Cowhage	<i>Mucuna pruriens</i>	No	Yes	No	No	Yes	No
Creosote bush	<i>Larrea tridentata</i>	No	No	Yes	No	No	Yes
Croton bush	<i>Croton tiglium</i>	No	No	No	No	Yes	No
Croton of florist's	<i>Codiaeum variegatum v. pictum</i>	No	No	Yes	No	No	No
Crown of thorns	<i>Euphorbia milii</i> or <i>E. splendens</i>	No	No	No	No	Yes	No
Cucumber	<i>Cucumis sativus</i>	Yes	No	No	No	Yes	No
Cyclomen	<i>Cyclomen persicum</i>	No	No	Yes	No	No	No
Daffodil	<i>Narcissus</i> spp.	No	No	Yes	No	No	No
Daffodil bulbs	<i>Narcissus</i> spp.	No	No	No	No	Yes	No
Daffodil, wild, Lent lily	<i>Narcissus pseudo-narcissus</i>	No	No	Yes	No	No	No
Dahlia	<i>Dahlia</i> spp.	No	No	Yes	No	No	No
Daisy	<i>Leucanthemum vulgare</i>	No	No	Yes	No	Yes	No
Dandelion	<i>Taraxacum officinale</i>	No	No	Yes	No	Yes	No
Desert heliotrope	<i>Phacelia</i> spp.	No	No	Yes	No	No	No
Devil's walkingstick	<i>Aralia spinosa</i>	No	No	No	Yes	No	No
Dieffenbachia	<i>Dieffenbachia picta</i> or <i>D. seguine</i>	No	No	No	No	Yes	No
Dill	<i>Anethum graveolens</i>	Yes	No	Yes	No	No	Yes
Dog's tooth violet	<i>Erythronium dens-canis</i>	No	No	Yes	No	No	No
Dogwood, American	<i>Cornus</i> spp.	No	No	No	Yes	No	No
Dogwood, bloodtwig	<i>Cornus sanguineus</i>	Yes	No	No	No	No	No
Echinacea, coneflower	<i>Echinacea purpurea</i>	No	No	Yes	No	No	No
Elephant ears	<i>Alocasia macrorhiza</i>	No	No	No	No	Yes	No
Endive	<i>Cichorium endivia</i>	Yes	No	Yes	No	No	No
Eucalyptus	<i>Eucalyptus</i> spp.	Yes	No	Yes	No	No	No
False ragweed	<i>Ambrosia acanthicarpa</i>	No	No	Yes	No	No	No
Fennel	<i>Foeniculum vulgare</i>	No	No	Yes	No	No	Yes
Fern, Boston or sword	<i>Nephrolepis exaltata</i>	No	No	Yes	No	No	No
Fern, leather leaf	<i>Arachniodes adiantiformis</i>	No	No	Yes	No	No	No
Feverfew, bachelor's buttons	<i>Tenacetum parthenium</i>	No	No	Yes	No	No	No
Feverfew, wild	<i>Parthenium hysterophorus</i>	No	No	Yes	No	No	No

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Fig	<i>Ficus carica</i>	No	No	No	No	No	Yes
Fir, Douglas	<i>Pseudotsuga menziesii</i>	No	No	Yes	No	No	No
Fireweed	<i>Epilobium latifolium</i>	No	No	Yes	No	No	No
Flax	<i>Linum usitatissimum</i>	Yes	No	No	No	No	No
Fleabane	<i>Erigeron</i> spp.	No	No	Yes	No	No	No
Foxglove	<i>Digitalis purpurea</i>	No	No	No	No	Yes	No
Foxtail barley, squirrel tail barley	<i>Hordeum jubatum</i>	No	No	No	Yes	No	No
Garbanzo beans	<i>Cicer arietinum</i>	Yes	No	No	No	No	No
Garlic	<i>Allium sativum</i>	Yes	No	Yes	No	Yes	No
Geranium	<i>Pelargonium pellatum</i>	No	No	Yes	No	No	No
Geranium	<i>Pelargonium zonale</i>	No	No	Yes	No	No	No
Giant hogweed	<i>Heracleum mantegazzianum</i>	No	No	No	No	No	Yes
Ginger	<i>Zingiber officinale</i>	No	No	No	No	Yes	No
Ginkgo tree (fruit), ginkgo	<i>Ginkgo biloba</i>	No	No	Yes	No	No	No
Goldenrod	<i>Solidago</i> spp.	No	No	Yes	No	No	No
Grape (stems)	<i>Vitis vinifera</i>	No	No	No	Yes	No	No
Grapefruit	<i>Citrus paradisi</i>	Yes	No	No	No	No	Yes
Green pepper	<i>Capsium annuum grossum</i>	Yes	No	No	No	No	No
Greenbrier	<i>Smilax rotundifolia</i>	No	No	No	Yes	No	No
Hawthorn	<i>Crataegus monogyna</i>	Yes	No	No	No	No	No
Hazel nut	<i>Corylus avellana</i>	Yes	No	No	No	No	No
Hellebore	<i>Helleborus</i> spp.	No	No	No	No	Yes	No
Hemp	<i>Cannabis indica</i>	Yes	No	No	No	No	No
Hibiscus	<i>Hibiscus</i> spp.	No	No	Yes	No	No	No
Hop	<i>Humulus lupulus</i>	Yes	No	No	No	Yes	No
Horseradish	<i>Armoracia rusticana</i> or A.	No	No	No	No	Yes	No
Horsetails	<i>Equisetum arvense</i>	Yes	No	No	No	No	No
Horseweed	<i>Conyza</i> spp..	No	No	Yes	No	No	No
Hyacinth bulbs	<i>Hyacinthus orientalis</i>	No	No	No	No	Yes	No
Hydrangea	<i>Hydrangea macrophylla</i>	No	No	Yes	No	No	No

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Iris (dried rhizome)	<i>Iris florentina</i>	No	No	No	No	Yes	No
Ivy, Algerian	<i>Hedera canariensis</i>	No	No	Yes	No	Yes	No
Ivy, English	<i>Hedera helix</i>	No	No	Yes	No	Yes	No
Jacaranda	<i>Machaerium scleroxylon</i>	No	No	Yes	No	No	No
Jack-in-the-pulpit	<i>Arisaema triphyllum</i>	No	No	No	No	Yes	No
Jasmine	<i>Jasminum officinale</i>	No	No	Yes	No	No	No
Jonquil	<i>Narcissus jonquilla</i>	No	No	Yes	No	No	No
Jonquil bulbs	<i>Narcissus</i> spp.	No	No	No	No	Yes	No
Juniper	<i>Juniperus</i> spp.	Yes	No	Yes	No	Yes	No
Kiwi	<i>Actinidia chinensis</i>	Yes	No	No	No	No	No
Knotweed	<i>Polygonum</i> spp..	No	No	No	No	Yes	No
Lady's slipper	<i>Cypripedium acaule</i>	No	No	Yes	No	Yes	No
Lady's slipper	<i>Paphiopedilum insigne</i>	No	No	No	No	Yes	No
Larch	<i>Latix decidua</i>	Yes	No	No	No	No	No
Larkspur	<i>Consolida ambigua</i>	No	No	No	No	Yes	No
Lavender	<i>Lavandula officinalis</i>	No	No	Yes	No	No	No
Leeks	<i>Allium porrum</i>	Yes	No	Yes	No	No	No
Lemon	<i>Citrus limon</i>	Yes	No	Yes	No	Yes	Yes
Lemon grass	<i>Cymbopogon citratus</i>	No	No	Yes	No	No	No
Lettuce	<i>Lactuca sativa</i>	Yes	Yes	Yes	No	Yes	No
Lettuce, curled	<i>Lactuca crispa</i>	No	No	Yes	No	No	No
Lettuce, Romaine	<i>Lactuca sativa longifolia</i>	No	No	Yes	No	No	No
Lichens	Lichens	No	No	Yes	No	No	No
Lilies	<i>Lilium</i> spp.	Yes	No	No	No	No	No
Lime	<i>Citrus aurantifolia</i>	Yes	No	No	No	No	Yes
Liverwort	<i>Frullania</i>	No	No	Yes	No	No	No
Lovage	<i>Levasticum officinale</i>	No	No	No	No	No	Yes
Magnolia tree	<i>Magnolia grandiflora</i>	No	No	Yes	No	No	No
Mahogany, American	<i>Swietenia macrophylla</i>	No	No	Yes	No	No	No
Mango	<i>Manifera indica</i>	Yes	No	No	No	No	No

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Mango peel	Manigera indica	No	No	Yes	No	No	No
Maple	Acer spp.	No	No	Yes	No	No	No
Marigold	Tagetes patula	No	No	Yes	No	No	No
May apple	Podophyllum peltatum	No	No	No	No	Yes	No
Mayweed, dog fennel	Anthemis cotula	No	No	Yes	No	Yes	No
Mesquite	Prosopis juliflora var. glandulosa	No	No	Yes	No	Yes	No
Millet	Pennisetum cereale	No	No	No	Yes	No	No
Mint, peppermint	Menth piperita	No	No	Yes	No	No	No
Mint, spearmint	Mentha spicata	No	No	Yes	No	No	No
Mole plant, caper spurge	Euphorbia lathyrus	No	No	No	No	Yes	No
Mustard, black	Brassica nigra	Yes	No	No	No	Yes	No
Mustard, white	Brassica hirta	No	No	No	No	Yes	No
Narcissus bulbs	Narcissus spp.	No	No	No	No	Yes	No
Narcissus, bunch flowered	Narcissus tazetta	No	No	Yes	No	No	No
Narcissus, florist	Narcissus poeticus	No	No	Yes	No	No	No
Noseburn vine	Tragia involucra	No	Yes	No	No	No	No
Nutmeg	Myristica fragrans	No	No	Yes	No	No	No
Oak	Quercus spp.	No	No	Yes	No	No	No
Oak, white	Quercus alba	No	No	Yes	No	No	No
Oat	Avena fatua	Yes	No	No	No	No	No
Okra	Hibiscus esculentus	No	No	Yes	Yes	Yes	No
Oleander	Nerium oleander	No	No	Yes	No	Yes	No
Onion	Allium cepa	Yes	No	Yes	No	Yes	No
Orange	Citrus sinensis	Yes	No	No	No	No	Yes
Ox-eye daisy, Marguerite	Chrysanthemum leucanthemum	No	No	Yes	No	No	No
Palmettos	Sabal spp.	No	No	No	Yes	No	No
Palm	Howea, Phoenix	No	No	No	Yes	No	No
Palm	Livistona, Chamaedorea	No	No	No	Yes	No	No
Palm	Chrysalidocarpus	No	No	No	Yes	No	No
Paprika	Capsicum anuum v. longum	No	No	No	No	No	No

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Plants and Skin Reactions

Safety & Health Assessment & Research for Prevention (SHARP) Program
 Washington State Department of Labor and Industries

PLANT	GENUS	ALLURT	NALLURT	ACD	MECH	IRR	PHOTO
Parlsey	Petroselinum sativum	No	No	Yes	No	No	Yes
Parsnip	Pastinaca sativa	No	No	Yes	No	No	Yes
Pasque flower	Pulsatilla vulgaris or P. patens	No	No	No	No	Yes	No
Pencil tree	Euphorbia tirucalli	No	No	No	No	Yes	No
Peony	Paeonia lactiflora	No	No	Yes	No	No	No
Peppergrass, pepperweed	Lepidium spp.	No	No	No	No	Yes	No
Periwinkle	Vinca spp.	No	No	Yes	No	No	No
Peruvian lily	Alstroemeria aurantiaca	No	No	Yes	No	Yes	No
Peruvian lily	Alstroemeria ligtu	No	No	No	No	Yes	No
Petty spurge	Euphorbia peplus	No	No	No	No	Yes	No
Philodendron	Philodendron scandens	No	No	Yes	No	Yes	No
Pine	Pinus radiata, P. sylvestris	No	No	Yes	No	No	No
Pine, red	Pinus resinosa	No	No	Yes	No	No	No
Pineapple	Ananas comosus	Yes	No	No	No	Yes	No
Poinsettia	Euphorbia pulcherrima	No	No	Yes	No	Yes	No
Poison ivy	Toxicodendron radicans	No	No	Yes	No	No	No
Poison oak	Toxicodendron diversilobum	No	No	Yes	No	No	No
Poison sumac	Toxicodendron vernix	No	No	Yes	No	No	No
Poplar	Populus spp.	No	No	Yes	No	No	No
Potatoes	Solanum tuberosum	Yes	No	No	No	No	No
Pothos	Epipremnum pinnatum	No	No	No	No	Yes	No
Prickly pear	Opuntia ficus-indica, O. vulgaris	No	No	No	Yes	No	No
Primula	Primula obconica	No	No	Yes	No	No	No
Prune	Prunus spp.	No	No	Yes	No	No	No
Queen Anne's lace	Daucus carota	No	No	No	No	No	Yes
Radish	Raphanus sativus	No	No	Yes	No	Yes	No
Ragweed	Ambrosia artemisiaefolia	No	No	Yes	No	No	No
Red clover	Trifolium pratensis	Yes	No	No	No	No	No
Rhubarb	Rheum rhaponticum	No	No	No	No	Yes	No
Rice	Oryza sativa	No	No	No	Yes	No	No

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Rice starch	<i>Oryza sativa</i>	No	No	Yes	No	No	No
Rose	<i>Rosa</i> spp.	No	No	No	Yes	No	No
Rubber tree	<i>Helea brasiliensis</i>	Yes	No	No	No	No	No
Rue	<i>Ruta graveolens</i>	No	No	No	No	No	Yes
Runner Bean	<i>Phaseolus coccineus</i>	Yes	No	No	No	No	No
Russian thistle	<i>Salsola kali</i>	No	No	No	Yes	No	No
Rye	<i>Secale cereale</i>	Yes	No	No	No	No	No
Safflower	<i>Carthamnus tinctorius</i>	No	No	Yes	No	No	No
Scurf pea	<i>Psoralea corylifolia</i>	No	No	No	No	No	Yes
Sesame oil	<i>Sesamum indicum</i>	No	No	Yes	No	No	No
Sesame Seeds	<i>Sesamum indicum</i>	Yes	No	No	No	No	No
Shallot	<i>Allium cepa ascalonicum</i>	Yes	No	No	No	No	No
Sheperd's purse	<i>Capsella bursa-pastoris</i>	No	No	No	No	Yes	No
Shiso	<i>Perilla frutescens</i>	No	No	Yes	No	No	No
Silk oak	<i>Grevillea robusta</i>	No	No	Yes	No	No	No
Skunk cabbage	<i>Symplocarpus foetidus</i>	No	No	No	No	Yes	No
Small head sneezeweed	<i>Helenium microcephalum</i>	No	No	Yes	No	No	No
Sneezeweed	<i>Helenium autumnale</i>	No	No	Yes	No	No	No
Spider flower	<i>Grivillea hybrid</i>	No	No	Yes	No	No	No
Spinach	<i>Spinacia oleracea</i>	Yes	No	No	No	No	No
Spruce, Norway	<i>Picea albies</i>	No	No	Yes	No	No	No
Spruce, white	<i>Picea glauca</i>	No	No	Yes	No	No	No
Spurge	<i>Euphorbia franckiana</i>	No	No	No	No	Yes	No
Spurge nettle, tread softly	<i>Cnidoscopus stimulosus</i>	No	Yes	No	No	No	No
Stinging nettle	<i>Urtica dioica</i>	No	Yes	No	No	Yes	No
Strawberry	<i>Fragaria ananassa</i>	Yes	No	No	No	No	No
Strawflower	<i>Helichrysum diosmifolium</i>	No	No	Yes	No	No	No
Sun spurge	<i>Euphorbia helioscopia</i>	No	No	No	No	Yes	No
Sunflower	<i>Helianthus annuus</i>	No	No	Yes	No	No	No
Sunflower seeds	<i>Helianthus annuus</i>	Yes	No	No	No	No	No

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Sweet bay	<i>Laurus nobilis</i>	No	No	Yes	No	No	No
Tansy	<i>Tenactemum vulgare</i>	No	No	Yes	No	No	No
Tarragon	<i>Artemisia dracunculus</i>	No	No	Yes	No	No	No
Tearthumb weed	<i>Polygonum arifolium</i>	No	No	No	Yes	No	No
Thistle	<i>Salsola kali</i>	No	No	Yes	No	No	No
Thyme	<i>Thymus vulgaris</i>	Yes	Yes	No	No	Yes	No
Timothy grass	<i>Phleum pratense</i>	Yes	No	No	No	No	No
Tobacco	<i>Nicotiana tobacum</i>	No	No	No	No	Yes	No
Tomato	<i>Lycopersicon esculentum</i>	Yes	No	Yes	No	Yes	No
Trumpet creeper vine, cow itch	<i>Campsis radicans</i>	No	No	Yes	No	No	No
Tulip bulbs	<i>Tulipa spp.</i>	No	No	No	No	Yes	No
Tulip tree	<i>Liriodendron tulipifera</i>	No	No	Yes	No	No	No
Tulips	<i>Tulipa spp.</i>	Yes	No	No	No	No	No
Tumbleweed	<i>Salsola kali</i>	Yes	Yes	No	Yes	No	No
Umbrella tree	<i>Schefflera actinophylla</i>	No	No	Yes	No	No	No
Vanilla	<i>Vanilla plantifolia</i>	No	No	Yes	No	No	No
Watercress	<i>Nasturtium officinale</i>	Yes	No	No	No	Yes	No
Western red cedar	<i>Thuja plicata</i>	Yes	No	Yes	No	No	No
Wheat	<i>Triticium vulgare</i>	Yes	No	No	No	No	No
Whitlow grass	<i>Draba verna</i> or <i>Erophila verna</i>	No	No	No	No	Yes	No
Wild chervil	<i>Anthriscus sylvestris</i>	No	No	No	No	No	Yes
Wild parsnip	<i>Pastinaca sativa</i>	No	No	No	No	No	Yes
Winged bean	<i>Psophocarpus tetragonolobus</i>	Yes	No	No	No	No	No
Wood nettle	<i>Laportea canadensis</i>	No	Yes	No	No	No	No
Wormwood	<i>Artemisia absinthum</i>	No	No	Yes	No	No	No
Yarrow	<i>Achillea millefolium</i>	No	No	Yes	No	Yes	No
Yucca	<i>Yucca spp.</i>	No	No	No	Yes	No	No
Zinnia	<i>Zinnia spp.</i>	No	No	Yes	No	No	No

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