

# Perennial Seed Germination Information

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Kootenay Local Agricultural Society

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**Acaena buchananii, caesiiglauca, fissistipula, inermis, magellanica, microphylla, myriophylla, novae-zelandiae, and saccaticupula** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) very slow germinator,

**Acantholimon acerosum, albanicum, armenum, bracteatum, dianthifolium, glumaceum, kotschyannum, and ulicinum** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks Acantholimon seeds germ. better after storage

**Acanthus hungaricus (balcanicus)** , Soak 1-2 days, Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for irregular germination

**Acanthus mollis, and spinosus**, Soak 1-2 days, Sow at Max. 5°C (41°F), germination irregular, often several months

**Achillea ageratifolia, and nana** , Sow at 20°C (68°F), if no germ. in 4 wks, move to -4 to +4°C (24-39°F) for 4 wks

**Achillea ageratum, clypeolata, filipendulina, millefolium, nobilis, ptarmica, pyrenaica, siberica, and tomentosa** , Sow at 20°C (68°F), germinates in less than two wks, thin cover, needs light, grow on at 10°C (50°F)

**Achillea erba-rotta** , Sow at Max. 5°C (41°F), germination irregular, often several months

**Achlys triphylla** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -6 to -7°C (19-21°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination

**Achnatherum calamagrostis** , Sow at 20°C (68°F), if no germ. in 4 wks, move to -4 to +4°C (24-39°F) for 4 wks

**Acinos alpinus** , Sow at 20°C (68°F), if no germ. in 4 wks, move to -4 to +4°C (24-39°F) for 4 wks

**Aciphylla aurea, congesta, dieffenbachii, monroi, simplex, spedenii, and subflabellata** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -6 to -7°C (19-21°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination

**Aconitum anthora, x arendsii, carmiichaelii, cammarum, lamarckii, napellus, septentrionale, variegatum, and vulparia** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -6 to -7°C (19-21°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination Short viable

**Acorus calamus** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -6 to -7°C (19-21°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination, or sow outdoors immediately after harvest.

**Actaea alba, erythrocarpa, pachypoda, rubra, and spicata** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination

**Adenophora bulleyana** , Sow at 20°C (68°F), if no germ. in 4 wks, move to -4 to +4°C (24-39°F) for 4 wks

**Adenophora coelestis, cymerhae, himalayana, liliifolia, nikoensis, pereskiifolia, polyantha, takedai, tashiroi, and triphylla** , Sow at Max. 5°C (41°F), germination irregular, often several months

**Adenostyles alpina** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks

**Adonis amurensis, brevistyla, pyrenaica, and vernalis** , Sow immediately outdoors. Short viability seed will germinate in the spring.

**Aethonema antitaurii, and coridifolium** , Sow at 20°C (68°F), germination slow

**Aethonema grandiflora, kotschyi, membranaceum, and schistosum** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks

**Agapanthus Headbourne-Hybriden, umbellatus, and umbellatus alba** , Sow at 22°C (72°F) in constant humidity for very slow germ. over a long period.

**Agastache aurantiaca, barberi, cana, cusickii, foeniculum, nepetoides, pringlei, and rugosum** , Sow at 20°C (68°F), germination slow

**Agastache pallidiflora, and rupestris** , Sow at 20°C (68°F), germinates in less than two wks

**Agastache scrophulariaefolia** , Sow at -4 to +4°C (24-39°F) for 8 wks, move to 20°C (68°F) for germination

**Agoseris cuspidata** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination

**Agrimonia eupatoria, and procera** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks

**Agropyron magellanicum** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks

**Agropyron trachycaulum** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination

**Agrostis hyemalis, and scabra** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination

**Ajuga genevensis, and reptans** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks

**Alcea ficifolia, and rosea** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks Often biennial

**Alcea pallida, and rugosa** , Sow at Max. 5°C (41°F), germination irregular, often several months

**Alchemilla alpina, epipsila, erythropoda, hoppeana, mollis, saxatilis, and xanthochlora** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -6 to -7°C (19-21°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination

**Aletris farinosa** , Sow at 20°C (68°F), germinates in less than two wks

**Alisma lanceolatum, parviflorum, and plantago-aquatica** , Sow at 22°C (72°F) in muddy compost for 2-4 wks, move to 0°C (32°F) for 4-6 wks, after which temperature should be raised gradually.

**Allium acuminatum, aflatunense, atropurpureum, carinatum ssp. pulchellum, cernuum, christophii (albopilosum), cyathophorum v. farreri, fistulosum, flavum, giganteum, insubricum, jesdianum, moly, narcissiflorum, nigrum, oreophilum (ostrowskianum), praecox, pulchellum, rosenbachianum, sphaerocephalum, stellatum, stipitatum, ursinum, and victorialis** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination

**Allium amethystinum, and hollandicum** , Sow at 4°C (39°F), germ. erratic

- Allium ampeloprasum , amphibolum, caeruleum, mairei, schoenoprasum, senescens, sikkimensis, and splendens**, Sow at 20°C (68°F), germinates in less than two wks
- Allium karataviense** , Sow outdoors in the fall for spring germ. , Short lived seed, sow at once.
- Allium neapolitanum, and ramosum (odorum)** , Sow at 22°C (72°F) under constant humidity
- Allium tanguticum, and tuberosum** , Sow at -4 to +4°C (24-39°F) for 6 wks, move to 20°C (68°F) for germination
- Alionopsis spatulata** , Sow on the surface at 20°C (68°F) in light, germinates in less than two wks
- Alonsoa meridionalis** , Sow at 20°C (68°F), germinates in less than two wks
- Alpinus alba** , Sow on the surface at 20°C (68°F) in light, germinates in less than two wks
- Alstroemeria aurantiaca, hookerii, ligtu, and pulchella** , Sow at Max. 5°C (41°F), germ. irregular, often several mos.
- Althaea officinalis** , Sow at Max. 5°C (41°F), germ. irregular, often several mos.
- Alyssoides utriculata** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Alyssum argenteum, montanum, repens, saxatile, serpyllifolium, spinosum, and wulfenianum** , Sow at 20°C (68°F), germinates in less than two wks
- Alyssum cuneifolium** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Alyssum petraeum** , Sow at 20°C (68°F), germination slow
- Ammophila arenaria** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Amorpha canescens** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Ampelodesmos mauritana** , Sow at 23°C (73°F), germinates in about 2 weeks
- Amsonia hubrichtii, illustris, orientalis, and tabernaemontana** , Sow at Max. 5°C (41°F) for 6 weeks, move to 20°C (68°F) for germ. in a few days. If no germ. in 3 wks, dig out seeds and give them 8 to 12 hr. soak.
- Anacyclus depressus, and maroccanus** , Sow at 20°C (68°F), germinates in less than two wks
- Anaphalis alpicola, margaritacea, and triplinervis** , Surface sow at 20°C (68°F), germinates in about two wks or so.
- Anarrhinum bellidifolium** , Sow at 20°C (68°F), germination slow
- Anchusa azurea, and officinalis** , Sow at 20°C (68°F) in light, germination slow
- Andropogon gerardi, scoparius, and virginicus** , Sow at 20°C (68°F), germination slow
- Androsace albana, armeriaca, barbulate, ciliata, halleri, hirtella, mathildae, pubescens, pyrenaica, sempervirens, sericea, and spinulifera** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Androsace alpina, carnea, chamaejasme, lanuginosa, and villosa** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for irregular germination
- Androsace darwascia, and vandellii** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) indefinitely.
- Andryala aghardii** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Anemone baicalensis, barbulate, drummondii, gernica, lyallii, obtusiloba, parviflora, rupicola, and sylvestris** , Sow at 20°C (68°F), germination slow
- Anemone canadensis, multifida, and rivularis** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for slow germination
- Anemone baldensis, caroliniana, cylindrica, hortensis, hupehensis, leveillei, magellanica, narcissiflora, tomentosa, and virginiana** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Anemone nemorosa** , Sow immediately outdoors. Short viability seed will germinate in the spring.
- Anemone ranunculoides** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -5°C (23°F) for 4-6 wks, move to 5-12°C (41-53°F) for slow germination
- Anemone vernalis** , Sow at 20°C (68°F), germinates in less than two wks
- Anemone x lesseri** , Sow immediately outdoors. Seed will germinate in the spring or sow at 20°C (68°F), slow germ.
- Anemonopsis macrophylla** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Angelica archangelica, and pachycarpa** , Sow at 20°C (68°F), germinates in less than two wks
- Angelica atropurpurea, and gigas** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Antennaria alpina, carpatica, dioica, friesiana, howellii, magellanica, neglecta, parvifolia, plantaginifolia, and rosea** , Sow at Max. 5°C (41°F), germination irregular, often several months ,
- Anthemis carpatica, nobilis, rudolphiana, sancti-johannis, and tinctoria** , Sow at 20°C (68°F), germinates in less than two wks
- Anthericum liliago, and ramosum** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Anthoxanthum odoratum** , Sow at 20°C (68°F), germinates in less than two wks
- Anthriscus sylvestris** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Anthyllis montana** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Anthyllis vulneraria** , Sow at 20°C (68°F), germinates in less than two wks

- Antirrhinum braun-blanquetii** , Sow at 20°C (68°F) in light, germinates in less than two wks
- Antirrhinum sempervirens** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Apocynum androsaemifolium** , Sow at 20°C (68°F), germinates in less than two wks
- Apocynum cannabinum** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Aquilegia alpina , buergeriana, canadensis, flabellata, formosa, glandulosa, nevadensis, saximontana, transylvanica, viridiflora, and vulgaris**, Sow at Max. 5°C (41°F), germination irregular, often several months
- Aquilegia atrata** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Aquilegia bertolonii, caerulea, clematiflora, laramiensis, longissima, rockii, scopulorum, and siberica** , Sow at 20°C (68°F), germination slow may take several months
- Aquilegia chrysantha** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Aquilegia olympica** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) indefinitely.
- Arabis alpina, aubrietoides, blepharophylla, caucasica, muralis, scopoliana, and stelleri** , Sow on the surface at 20°C (68°F) in light, germinates in less than two wks
- Arabis lyrata** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Arabis procurrens** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Aralia cachmeriana, and racemosa** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Arctium lappa** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Arctostaphylos uva-ursi** , Slow germinator - up to a year or more. Store seeds in layers of moist sand in the shade. Check seeds regularly in the spring, and sow them all as soon as radicles appear
- Arenaria balearica, gracilis, grandiflora, ledebouriana, pungens, purpurascens, and tmolea**, Sow at Max. 5°C (41°F), germination irregular, often several months
- Arenaria festucoides, montans, and rubella** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) indefinitely.
- Arenaria stricta** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Arisaema flavum** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Arisaema consanguineum, and triphyllum** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Aristolochia clematidis** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Armeria x 'Formosa', leucocephala, maritima**, Sow at 20°C (68°F), germinates in less than two wks
- Armeria juniperifolia** , Soak seed o/n, sow at 20°C (68°F), germinates in less than two wks
- Armeria plantaginea (syn. alliacea), pseudoarmera (syn. latifolia), rhodopensis, and tweedy** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Arnica chamissonis, frigida, and montana** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Artemisia absinthium, ludoviciana, and serrata** , Sow at 20°C (68°F), germinates in less than two wks
- Artemisia chamaemelifolia, dracunculus, genipi, laxa, stelleriana, and vulgaris** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Arum alpinum, creticum, dioscoridis, italicum, and maculatum** , Slow germinator - up to a year or more. Store seeds in layers of moist sand in the shade. Check seeds regularly in the spring, and sow them all as soon as radicles appear
- Aruncus aethusifolius** , Sow at -4 to +4°C (24-39°F) for 4-8 wks, move to 20°C (68°F) for germination
- Aruncus dioicus, kamschaticus, and sinensis** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Asarina procumbens** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Asarum canadense, and europaeum** , Sow at 22°C (71°F) for 6 wks or more. Move to -4 to +4°C (24-39°F) for 6-8 wks. Then raise the temperature to 10°C (50°F). If no germination in 4-6 wks, repeat the cycle from the beginning. If the warm/cold cycles were not long enough, a new warm/cold cycle is needed.
- Asclepias amplexicaulis, hirtella, purpurascens, sullivanti, verticillata, and viridiflora** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Asclepias exaltata, incarnata, and tuberosa**, Sow at -4 to +4°C (24-39°F) for 4 wks in moistened sand, move to 20°C (68°F) for germination
- Asclepias fascicularis, physocarpa, and syriaca** , Sow at 20°C (68°F), germination slow
- Asclepias speciosa** , Sow at 20°C (68°F), germinates in less than two wks
- Asperula odorata** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Asphodeline liburnica, and lutea**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Asphodelus albus, microcarpus, and ramosus** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) very slow germinator, often a year or two

**Aster alpinus, amellus, azureus, coloradoensis, cordifolius, delavayi (diplostephoides), farreri, laevis, lateriflorus v. horizontalis, linariifolius, novae-angliae, novi-belgii, oblongifolius, pilosus, sagittifolius v drummondii, sericeus, sibiricus, simplex, tongolensis, and x fricartii** , Sow at 20°C (68°F), germination slow

**Aster bigelovii, divaricatus, ericoides, linosyris, macrophyllus, ptarmicoides, puniceous, turbinellus, and umbellatus** , Sow at 20°C (68°F) in light, if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks

**Aster stracheyi** , Sow at 20°C (68°F), germinates in less than two wks

**Astilbe x arendsii, chinensis, and x japonica** , Sow on the surface at 20°C (68°F) in light, germ. in less than two wks

**Astilbe myriantha, and simplicifolia** , Sow at 20°C (68°F), germination slow

**Astilboides tabularis** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F)

**Astragalus alopecuroides** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) indefinitely.

**Astragalus canadensis, and centralpinus**, Impervious seed coats. Shake in dry sharp sand or nick carefully with a file. Sow at 20°C (68°F), germinates in less than 2 weeks, better with inoculation agent

**Astragalus glycyphyllos** , Sow at Max. 5°C (41°F), germination irregular, often several months

**Astragalus monspessulanus, and norvegicus** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germ.

**Astrantia carniolica, grandiflora, major, and maxima** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germ.

**Asyneuma canescens** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks

**Athamantia cretensis** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination

**Aubrieta deltoidea, and x cultorum** , Sow at 20°C (68°F), germinates in less than two wks

**Baccharis halimifolia** , Sow at Max. 5°C (41°F), germination irregular, often several months

**Baldellia ranunculoides** , Sow at 22°C (72°F) in muddy compost for 2-4 wks, move to 0°C (32°F) for 4-6 wks, after which temperature should be raised gradually.

**Balsamorhiza hookeri** , Sow at -4 to +4°C (24-39°F) for 4 wks, move to 20°C (68°F) for germination

**Balsamorhiza sagittata** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination

**Baptisia australis, leucantha, and leucophaea** , Pour hot water over seeds, let soak 1-3 days until swelling noticeable. Sow at 20°C (68°F) for germination in more than two weeks. Sensitive to damping-off

**Baptisia pendula** , Pour hot water over seeds, let soak 1-3 days until swelling noticeable. Sow at 20°C (68°F) for germination in more than two weeks.

**Bartsia alpina** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination

**Belamcanda chinensis** , Surface sow at 20°C (68°F) in light under constant humidity, germination slow

**Bellis perennis** , Sow at 20°C (68°F), germinates in less than two wks

**Berardia subcaulis** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks

**Berchemia racemosa** , Sow at 24°C (75°F), germinates in less than two wks

**Bergenia cordifolia, crassifolia, and purpurascens** , Sow at 22-24°C (72-75°F), germination in less than 2 weeks small seed - do not cover

**Berlandiera lyrata** , Sow at 20°C (68°F), germination slow

**Besoniella oregana** , Sow at 20°C (68°F), germinates in less than two wks

**Biarum carduchorum** , Surface sow at 20°C (68°F) in light under constant humidity, germination slow

**Blephilia ciliata** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination

**Bloomeria crocea** , Sow at 20°C (68°F), germination slow

**Boltonia asteroides** , Sow on the surface at 20°C (68°F) in light, germinates in less than two wks

**Boltonia latisquamia** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks

**Bouteloua curtipendula, and hirsuta** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination

**Bouteloua curtipendula, and gracilis** , Sow at 20°C (68°F), germinates in less than two wks

**Boykinia occidentalis, and rotundiflora** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks

**Brachypodium sylvaticum** , Sow at 20°C (68°F), germination slow

**Braya alpina** , Pour hot water over seeds, let soak 1-3 days until swelling noticeable. Sow at 20°C (68°F) for germination in less than two weeks.

**Briza media** , Sow at 20°C (68°F), germination slow

**Brodiaea coronaria, and douglasii** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks

**Bruckenthalia spiculifolia** , Surface sow at Max. 5°C (41°F), germination irregular, often several months

**Buddleia davidii** , Sow at 20°C (68°F), germinates in less than two wks

- Bulbinella angustifolia, gibbsii, and hookeri** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Buphthalmum salicifolium** , Sow at 20°C (68°F), germinates in less than two wks
- Bupleurum falcatum, longifolium, and ranunculoides** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Buchloe dactyloides** , Sow at 20°C (68°F), germinates in less than two wks
- Cacalia atriplicifolia, and tuberosa** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Cachrys alpina** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Calamagrostis arundinacea, brachytrichia, and epigejos** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Calamagrostis canadensis** , Sow immediately outdoors. Short viability seed will germinate in the spring.
- Calamintha grandiflora** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Calamintha nepeta, and sylvatica** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Calandrina grandiflora** , Sow at 20°C (68°F), germinates in less than two wks Treat as annual in cold areas
- Calandrina umbellata** , Sow at 20°C (68°F), germination slow
- Calceolaria alba, biflora, chelidonioides, falklandica, fiebrigiana, filthergillii, polyrrhiza, and mexicana** , Sow at 20°C (68°F), germinates in less than two wks small seed - do not cover
- Calla palustris** , Sow at 22°C (72°F) in muddy compost for 2-4 wks, move to 0°C (32°F) for 4-6 wks, after which temperature should be raised gradually.
- Callirhoe involucrata** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Callirhoe triangulata** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Calluna vulgaris** , Surface sow at +4°C (39°F), germ. erratic, often many months
- Caltha leptosepala, palustris, and polypetala** , Sow at 22°C (72°F) in muddy compost for 2-4 wks, move to -5°C (23°F) for 4-6 wks, after which temperature should be raised gradually. Sow seed immediately after harvest.
- Calochortus gunnisonii, and nuttallii**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Calylophus lavandulifolius** , Sow at 20°C (68°F), germinates in less than two wks
- Camassia cusickii, leichtlinii alba, and quamash** , Sow at +4°C (39°F), germ. erratic, often many months.
- Camassia scilloides** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Campanula alliarifolia, carpatica, cochlearifolia (bavaria series), collina, glomerata, lactiflora, lasiocarpa, ochroleuca, parryi, piperi, persicifolia, rapunculus, raddeana, rotundifolia, sarmatica, trachelium, and versicolor** , Sow at 20°C (68°F), germination slow small seed - do not cover
- Campanula bellidifolia, betulifolia, latifolia, patula ssp. abietina, pilosa, poscharskyana, punctata, pyramidalis, rapunculoides, speciosa, takesimana, thyrsoides, and tridentata** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Campanula fenestrellata, and garganica** , Sow at 22°C (71°F) for 6 wks or more. Move to -4 to +4°C (24-39°F) for 6-8 wks. Then raise the temperature to 10°C (50°F). If no germination in 4-6 wks, repeat the cycle from the beginning. If the warm/cold cycles were not long enough, a new warm/cold cycle is needed. small seed - do not cover
- Campanula aucherii, cochlearifolia, incurva, patula, portenschlagiana, pulla, pulsilla, punctata rubriflora, saxifraga, and waldsteiniana** , Sow at Max. 5°C (41°F), germination irregular, often several months small seed - do not cover
- Campanula allionii, barbata, carpatica v. turbinata, cenisia, latifolia alba, raineri, and tommasiniana**, Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Campanula medium, and siberica** , Sow at 20°C (68°F), germinates in less than two wks
- Campsis radicans, and x tagliabuana**, sow 8 wks @ 39°F, germ. @ 68°F , 10-15d , can be invasive
- Capparis spinosa v. inermis** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Cardamine bulbosa, pratensis, trifolia, and walsteinii** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Carex acuta, acutiformis, arenaria, atrata, aurea, bergrenii, buchananii, flacca, lurida, macrocephala, muskingumensis, paniculata, pendula, pseudocyperus, remota, secta, sylvatica, tenuiculmis, and vulpina** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks, recycle.
- Carex alba, comans, grayi, nigra, riparia, and testacea** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Carex flava, and umbrosa** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Cardiocrinum giganteum** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Carlina acanthifolia, acaulis, and vulgaris** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Cassia marilandica** , Scarify seed, then sow at 20°C (68°F), germinates in less than two wks



- Castilleja miniata** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Caryopteris bungei, and incana** , Sow on the surface at 20°C (68°F) in light, germinates in less than two wks short viable
- Catananche caerulea** , Sow at 20°C (68°F), germinates in less than two wks
- Ceanothus americanus** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Celmisia armstrongii, hookerii, semicordata, spectabilis, traversii, and walkeri** , Sow at Max. 5°C (41°F), germination irregular, often several months, best if sown immediately after harvest
- Celsia roripifolia** , Sow at 20°C (68°F), germinates in less than two wks
- Centaurea alpestris, alpina, bella, dealbata, jacea, macrocephala, montana, nigra, orientalis, phrygia, pulcherrima, rupestris, ruthenica, and uniflora** , Sow at 20°C (68°F), germination in 10 to 30 days
- Centaureum erythraea** , Sow at 20°C (68°F), germination slow
- Centranthus ruber** , Sow at 20°C (68°F), germinates in about two wks
- Cephalanthus occidentalis** , Sow at 20°C (68°F), germinates in less than two wks
- Cephalaria alpina** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Cephalaria gigantea , and leucantha** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Cerastium arvense, biebersteinii, and tomentosum** , Surface sow at 20°C (68°F) in light, germ. in less than two wks
- Cerastium alpinum, and candidissimum** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Cerastium grandiflorum** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Cerinthe glabra** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Chaenorrhinum organifolium** , Sow at 20°C (68°F), germinates in about two wks
- Chamaemelum nobile** , Sow at 20°C (68°F), germinates in less than two wks
- Chasmanthium latifolium** , Sow at 23°C (73°F), germinates in about two wks
- Chelidonium japonicum** , Sow at 20°C (68°F), germinates in less than two wks
- Chelidonium majus** , Sow at 22°C (71°F) for 6 wks or more. Move to -4 to +4°C (24-39°F) for 6-8 wks. Then raise the temperature to 10°C (50°F). If no germination in 4-6 wks, repeat the cycle from the beginning. If the warm/cold cycles were not long enough, a new warm/cold cycle is needed. small seed - do not cover
- Chelone glabra, lyonii, and obliqua** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Chiastophyllum oppositifolium** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination small seed - do not cover.
- Chionochloa conspicua, and pallida** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Chionochloa rubra** , Sow at 20°C (68°F), germinates in less than two wks
- Chrysanthemum cinerariifolium, coccineum, corymbosum, frutescens, indicum, leucanthemum, macrophyllum, maximum, and vulgare** , Sow at 20°C (68°F), germinates in less than two wks
- Chrysanthemum alpinum** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Chrysanthemum arcticum** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Chrysanthemum koreanum, and parthenium** , Sow at 20°C (68°F), germination slow
- Chrysopogon gryllus** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Chrysopsis villosa** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Cicerbita alpina** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Cichorium intybus** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Cicuta maculata** , Sow at 20°C (68°F), germinates in less than two wks
- Cimicifuga americana, racemosa, ramosa, and simplex** , Sow at 22°C (71°F) for 6 wks or more. Move to -4 to +4°C (24-39°F) for 6-8 wks. Then raise the temperature to 10°C (50°F). If no germination in 4-6 wks, repeat the cycle from the beginning. If the warm/cold cycles were not long enough, a new warm/cold cycle is needed.
- Circaea lutetiana** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Cirsium acaule, eriophorum, and heterophyllum** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Cirsium japonicum** , Sow at 20°C (68°F), germination slow
- Cirsium diacanthus** , Sow at 20°C (68°F), germinates in less than two wks
- Cistus incanus** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Cistus laurifolius** , Sow at 20°C (68°F), germination slow, often many months
- Cladium mariscus** , Sow at 22°C (72°F) in muddy compost for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, after which temperature should be raised gradually.
- Claytonia megarhiza** , Sow at 20°C (68°F), germination slow

**Clematis alpina, campaniflora, flammula, heracleifolia, integrifolia, macropetala, paniculata, potaninii, tangutica, and terniflora** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks

**Clematis columbiana**, Sow outdoors late fall for 91% germ. in May/June. Indoor sowing in light at 20°C (70°F) should result in 50% germ. over the period of 2 to 10 weeks.

**Clematis fremontii** , Sow outdoors immediately after seeds ripen in midsummer. Germination begins in late fall.

**Clematis occidentalis**, Sow at 4°C (39°F) for 8 wks, move to 19°C (65°F) oscillating with cooler temps. at night.

**Clematis mandschurica, recta, vitalba, and viticella** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination

**Clematis virginiana** , Sow at 20°C (68°F), germination slow

**Clinopodium vulgare** , Sow at 22-24°C (71-75°F), germination in less than 2 weeks

**Codonopsis bhtuonica, clematidea, lanceolata, mollis, ovata, pilosula, and tangshen** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks small seed - do not cover

**Colchicum autumnale, cilicicum, and macrophyllum** , Slow germinator - up to a year or more. Store seeds in layers of moist sand in the shade. Check seeds regularly in the spring, and sow them all as soon as radicles appear

**Commelina coelestis, and graminifolia** , Sow at 20°C (68°F) in light, germinates in less than two wks

**Convallaria majalis** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination in a year or more. Poisonous

**Convolvulus cantrabrica, and sabatius** , Sow at Max. 5°C (41°F), germination irregular, often several months

**Convolvulus sepium (syn. Calystegia sepium), and spithamaeus** , Sow immediately outdoors. Short viability seed will germinate in the spring. weedy

**Coreopsis grandiflora** , Sow at 20°C (68°F) in light, germinates in less than two wks

**Coreopsis lanceolata** , Sow at 20°C (68°F), germination slow

**Coreopsis palmata** , Sow at Max. 5°C (41°F) for 8 wks, move to 22°C (72°F) for germ. in about 8 days.

**Coreopsis rosea** , Sow at Max. 5°C (41°F), germination irregular, often several months

**Coreopsis tripteris** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks

**Cornus canadensis** , Slow germinator - up to a year or more. Store seeds in layers of moist sand in the shade. Check seeds regularly in the spring, and sow them all as soon as radicles appear

**Coronilla varia** , Scarify seed, then sow at 20°C (68°F), germination slow

**Cortaderia selloana** , Surface sow at 22-24°C (71-75°F), germination in less than 2 weeks

**Cortusa matthioli, and turkestanica** , Sow at 20°C (68°F), if no germ. in 4 wks, move to +4°C (39°F) for 4 wks

**Corydalis cava, cheilanthifolia, lutea, nobilis, ochroleuca, and solida** , Sow at 22°C (71°F) for 6 wks or more. Move to -4 to +4°C (24-39°F) for 6-8 wks. Then raise the temperature to 10°C (50°F). If no germination in 4-6 wks, repeat the cycle from the beginning. If the warm/cold cycles were not long enough, a new warm/cold cycle is needed. Short viable

**Corydalis curvisiliqua** , Sow immediately outdoors. Short viability seed will germinate in the spring. germinates in the fall, sow fresh only

**Corydalis racemosa, and sempervirens** , Sow at 20°C (68°F), germination slow Short viable. Germinates in 4-8 weeks

**Corynephorus canescens** , Sow at 20°C (68°F), germination slow

**Crambe cordifolia, maritima, and tatarica** , Sow at Max. 5°C (41°F), germination irregular, often several months

**Craspedia lanata** , Sow (immediately after harvest) at Max. 5°C (41°F), germination irregular, often several months

**Cremanthodium ellisii** , Sow at 20°C (68°F), germinates in less than two wks

**Crepis pyrenaica** , Sow at Max. 5°C (41°F), germination irregular, often several months

**Crithmum maritimum** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks

**Crocsmia 'Lucifer', and masonorum** , Sow at 20°C (68°F), germination slow

**Crocus abantensis, asumaniae, tommasinianus, and vernus** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination in a year or more.

**Crucianella stylosa (syn. Phuopsis stylosa)** , Sow at 20°C (68°F), germination slow

**Cryptantha paradoxa** , Sow at 20°C (68°F), germinates in less than two wks

**Cyanathus lobatus** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks

**Cyclamen cilicium, coum, hederifolium, mirabile, neapolitanum, pseudibericum, and repandum** , Sow at 18°C (64°F) in light, germination slow

**Cyclamen persicum giganteum** , Constant 80°F soak, sow @ 60°F in the dark, germinates in about 2 weeks

**Cyclamen purpurascens** , Sow at Max. 5°C (41°F), germination irregular, often several months

**Cymbalaria muralis** , Sow at 20°C (68°F), germinates in less than two wks

**Cymopterus planosus** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks

**Cynara cardunculus, and scolymus** , Sow at 23°C (73°F), germinates in about two wks



- Cynoglossum glochidatum, nervosum, and officinale** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Cyperus eragrostis** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination in a year or more.
- Cyperus glaber** , Sow at 20°C (68°F), germinates in less than two wks
- Cytisus purpureus** , Sow at 20°C (68°F), germinates in less than two wks shrub
- Danthonia spicata** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Daphne giraldii, mezereum, and sericea** , Slow germinator - up to a year or more. Store seeds in layers of moist sand in the shade. Check seeds regularly in the spring, and sow them all as soon as radicles appear
- Darmera peltata (syn. Peltiphyllum peltatum)** , Sow at 22°C (71°F) for 6 wks or more. Move to -4 to +4°C (24-39°F) for 6-8 wks. Then raise the temperature to 10°C (50°F). If no germination in 4-6 wks, repeat the cycle from the beginning. If the warm/cold cycles were not long enough, a new warm/cold cycle is needed.
- Datisca cannabina** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Degenia velebitica** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Delosperma cooperi, and sutherlandii** , Sow at 20°C (68°F), germinates in less than two wks
- Delphinium belladonna, cardinale, cashmirianum, chinense, elatum, glareosum, glaucum, grandiflorum, nudicaule, patens, requinni, and tatsienense** , Sow at 22-24°C (71-75°F), germination in less than 2 weeks
- Delphinium exaltatum, and zalil** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Dentaria enneaphyllos** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Deschampsia caespitosa, and flexuosa** , Sow at 20°C (68°F), germination slow
- Desmodium canadense, and sessilifolium** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germ.
- Desmodium illinoense** , Slow germinator - up to a year or more. Store seeds in layers of moist sand in the shade. Check seeds regularly in the spring, and sow them all as soon as radicles appear
- Dianthus allwoodii, amurensis, arenarius, x arvernensis, barbatus, carthusianorum, caryophyllus, cruentus, deltoides, gratianopolitanus, knappii, microlepis, monspessulanus, myrtinervius, nardiformis, nitidus, petraeus, pinifolius, plumarius, pontederiae, pyrenaicus, x roysii, sequieri, siberica, subacaulis, superbus, and sylvestris** , Sow at 20°C (68°F), germinates in less than two wks
- Dianthus alpinus, neglectus, and pavonius** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Dianthus glacialis** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Dianthus strictus v. bebius** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Diapensia lapponica** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Dicentra cucullaria, eximia, formosa, peregrina, and spectabilis** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination , short viable seed - sow immediately after harvest
- Dicentra scandens** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Dichelostemma pulchellum** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Dictamnus albus, fraxinella, and ruber** , Sow at 23°C (73°F) for 6-8 wks, move to +4°C (39°F) for 6-8 wks, raise temperatures slowly to 10°C (50°F) for germination, recycle, as germination may take a second year. Short viable
- Dierama pendulum, and pulcherrimum** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Digitalis ambigua, eriostachya, ferruginea, grandiflora, laevigata, lanata, lutea, x mertonensis, obscura, parviflora, purpurea, and thapsi** , Surface sow at 20°C (68°F) in light, germinates in less than two wks
- Dionysia aretioides, involucrata, and teucrioides** , Sow at 20°C (68°F), germination slow
- Dipsacus pilosus** , Slow germinator - up to a year or more. Store seeds in layers of moist sand in the shade. Check seeds regularly in the spring, and sow them all as soon as radicles appear
- Dipsacus sativus, and sylvestris** , Sow at 20°C (68°F), germination slow
- Dodecatheon conjugens, dentata, meadia, pulchellum, and redolens** , Sow at Max. 5°C (41°F), germination irregular, often several months moist
- Dodecatheon clevelandii, and tetrandrum** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Doronicum orientale** , Scarify seed, Sow at 20°C (68°F), germinates in less than two wks
- Doronicum austriacum, and pardalines** , Scarify seed, Sow at 20°C (68°F), germination slow
- Dorycnium hirsutum, and pentaphyllum** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Douglasia laevigata, and nivalis** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for irregular germination
- Draba aizoides, borealis, bruniifolia, cretica, hispanica, lasiocarpa, loiseleurii, parnassica, paysonii, ramosissima, rosularis, sakuraii, and setosa** , Sow at 20°C (68°F), germinates in less than two wks

- Dracocephalum argunense, canescens, grandiflorum, nutans, ruyschianum, and speciosum** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Dracocephalum botryoides** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Dracunculus vulgaris** , Sow under very thin cover at 20°C (68°F) in light and constant humidity, germinates in less than two wks if temperatures are held at or above that level.
- Drosera rotundifolia** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Dryas drummondii, integrifolia, octopetala, and x suendermanii** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Duchesnea indica** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Ecchymocarpus scaber** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Echinacea pallida, and purpurea** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Echinacea angustifolia, paradoxa, and tennesseensis** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to 4°C (40°F) for 9 wks, move to 10°C (50°F) for germination
- Echinops bannaticus, ritro, and sphaerocephalus** , Sow at 20°C (68°F), germinates in less than two wks
- Echium italicum, russicum, and vulgare** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Edraianthus graminifolius, and pumilio** , Sow at Max. 5°C (41°F), germination irregular, often several months small seed - do not cover
- Edraianthus serpyllifolius, and tenuifolius** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks small seed - do not cover
- Elsholtzia stauntonii** , Sow at 20°C (68°F), germination slow
- Eleocharis compressa, and elliptica** , Sow at 20°C (68°F), germinates in less than two wks
- Elymus arenarius, and canadensis** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Eminium spiculatum** , Sow under very thin cover at 20°C (68°F) in light and constant humidity, germinates in less than two wks if temperatures are held at or above that level.
- Empetrum nigrum** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Epilobium angustifolium, dodonaei, fleisheri, and hirsutum** , Surface sow at Max. 5°C (41°F), germination irregular, often several months
- Eragrostis curvula, and trichodes** , Sow at 20°C (68°F) in light, if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Eragrostis spectabilis** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Eranthis hiemalis** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Eremurus aitchisonii, altaicus v. fuscus, bungei, himalaicus, robustus, and stenophyllus** , Sow moist at 25-30°C (77-87°F) for 4-5 wks. Move to 2°C (35°F) in darkness for 11-12 wks. Slowly raise temperature and light levels.
- Erianthus contortus** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Erianthus ravennae, and strictus** , Sow at 20°C (68°F), germinates in less than two wks
- Erica arborea** , Surface sow at Max. 5°C (41°F), germination irregular, often several months
- Erigeron glaucus, hybridus, karvinskianus, and trifidus** , Sow at 20°C (68°F), germination slow
- Erigeron aurantiacus, and myosotis** , Sow at 20°C (68°F), germinates in less than two wks
- Erigeron speciosus** , Sow at 20°C (68°F), germination slow needs darkness to germinate
- Erinus alpinus** , Surface sow at 20°C (68°F), germinates in less than two wks
- Eriogonum fasciculatum, and umbellatum** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Eriophorum angustifolium, and vaginatum** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Eriophyllum lanatum** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Eritrichum caucasicum, kamschaticum, and terglouense** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks small seed - do not cover
- Eritrichium nanum** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Erodium acaule** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Erodium manescavii, and pelargonifolium** , Sow at 20°C (68°F), germination slow
- Eryngium agavifolium, maritimum, pandanifolium, planum, tripartitum, and yuccafolium** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Eryngium alpinum, bourgatii, giganteum, glaciale, palmatum, and spinalba** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination . Best if sown immediately after harvest.
- Eryngium amethystinum, and campestre** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Erysimum allionii, helveticum, hybridum, and pumilum** , Sow at 20°C (68°F), germination slow
- Erythronium dens-canis, grandiflorum, hendersonii, montanum, oregonum, and revolutum** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination

- Eupatorium ageratoides, and coelestinum** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Eupatorium altissimum** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Eupatorium cannabinum, perfoliatum, and rugosum**, Sow at 20°C (68°F), germination slow
- Eupatorium chinense v. simplicifolia, and greggii** , Sow on surface at 20°C (68°F) in light, if no germination in 4 wks, move to -4 to +4°C (24-39°F) for 4 wks, recycle
- Eupatorium maculatum, and sessilifolium** , Sow at 20°C (68°F), germinates in less than two wks
- Eupatorium purpureum** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Euphorbia amygdaloides, characias, corollata, longifolia, nicaeensis, rigida, seguieriana, and wallichii** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Euphorbia cyparissias, dulcis, and griffithii** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) very slow germinator,
- Euphorbia lathyris** , Sow at 20°C (68°F), if no germ. in 2 wks, move to -4 to +4°C (24-39°F) for irregular germination
- Euphorbia marginata** , Sow at 20°C (68°F), germinates in two wks sow in situ outdoors, will not transplant
- Euphorbia myrsinites** , Sow at 20°C (68°F), germinates in less than two wks thin cover, needs light
- Euphorbia palustris, and polychroma** , Sow at 20°C (68°F), germination slow
- Ferula assa-foetida, and communis** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Festuca amethystina, gigantea, glauca, and ovina** , Sow at 20°C (68°F), germinates in about two wks
- Festuca pulchella, scoparia, and valesiaca** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Fibigia clypeata** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Filipendula hexapetala** , Sow at Max. 5°C (41°F) for 6 wks, move to 20°C (68°F), germination slow
- Filipendula rubra, and ulmaria** , Sow at 18-22°C (64-71°F) for 12 wks, move to -4 to +4°C (24-39°F) for 12 wks, move to 5-12°C (41-53°F) for germination, sow immediately after harvest.
- Foeniculum vulgare** , Sow at 20°C (68°F), germinates in less than two wks
- Fragaria vesca** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Fragaria hybrida** , Sow at 20°C (68°F), germination slow
- Fragaria virginiana** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Francoa sochnifolia** , Sow at Max. 5°C (41°F), germination irregular
- Frasera speciosa** , Sow at 4°C (40°F) for 6 wks, move to 20°C (68°F) for germination
- Fritillaria imperialis, lanceolata, meleagris, michailovskyi, pallidiflora, persica, pontica, pudica, pyrenaica, raddeana, and tubiformis** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Fuchsia magellanica** , Surface sow at Max. 5°C (41°F), germination irregular, often several months
- Fumana procumbens** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Gaillardia aristata, grandiflora, lorenziana, pulchella** , Sow under thin cover at 20°C (68°F) in light, germinates in less than two wks
- Galanthus elwesii, graecus, nivalis, and plicatus** , Sow in moist sand at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for prolonged germination
- Galega officinalis** , Sow at 20°C (68°F), germinates in about two wks thin cover, needs light
- Galium boreale, mollugo, obtusum, and tinctorium** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Galium odoratum, and verum** , Sow at 20°C (68°F), germinates in about two wks
- Galtonia candicans** , Sow at 20°C (68°F), germination slow
- Galtonia viridiflora** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Gaultheria depressa, miqueliana, and procumbens** , Sow at Max. 5°C (41°F), germ. irregular, often several months
- Gaultheria shallon** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Gaura lindheimeri** , Sow at 20°C (68°F), germination slow
- Gazania linearis** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Genista carinalis, and sagittalis** , Scarify seed, Sow at 20°C (68°F), germinates in about two wks
- Genista tinctoria** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Gentiana acaulis, andrewsii, angustifolia, asclepiadea, bavarica, brachyphylla, calycosa, clusii, crinita, dinarica, freyniana, frigida, froelichii, x hexaferreri, kochiana, lutea, makinoi, nivalis, pannonica, paradoxa, parryi, pneumonanthe, punctata, puberula, purpurea, quinguefolia, septemfida, sino-ornata, triflora, and verna** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination cover thin
- Gentiana algida, cruciata, dahurica, divisa, flavida, gracilipes, kurroo, oliveri, saxosa, straminea, thianscanica, and tibetica** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks cover thin

- Geranium asphodeloides, caespitosum, himalayense, oxonianum, and palmatum**, Sow at 13°C (55°F), germinates in less than two wks
- Geranium endressii, macrorrhizum, and sylvaticum**, Sow at 20°C (68°F), germination slow
- Geranium pratense, and pyrenaicum**, Sow at 18-22°C (64-71°F), if no germination after 4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, then move to 5-12°C (41-53°F) for germination
- Geranium bohemicum, maculatum, nepalense, nodosum, palustre, phaeum, psilostemon, renardii, sanguineum, swatense, and viscosissimum**, Sow at Max. 5°C (41°F), germination irregular, often several months
- Gerardia aspera, gatterera, and tenuifolia**, Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Geum chilense, hybridum, and macrophyllum**, Sow at 20°C (68°F), germinates in less than two wks
- Geum coccineum, montanum, pyrenaicum, and reptans**, Sow at Max. 5°C (41°F), germ. irregular, often several mos.
- Geum bulgaricum, rivale, triflorum, and urbanum**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Gillenia stipulata, and trifoliata**, Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Gladiolus illyricus, imbricatus, italicus, and palustris**, Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Glauidium palmatum**, Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination 2 cold periods often required
- Glaucium corniculatum, and flavum**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Glaucium vitellianum**, Sow at 20°C (68°F), germinates in less than two wks
- Globularia cordifolia, nudicaulis, punctata, and trichosantha**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Glyceria maxima, and striata**, Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Glycyrrhiza echinata, and glabra**, Sow at 20°C (68°F), germination slow
- Goniolimon tataricum (syn. Limonium tatarica)**, Sow at 20°C (68°F), germinates in less than two wks
- Gratiola officinalis**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Grindelia integrifolia, and robusta**, Sow at 20°C (68°F), germination slow
- Gundelia tournefortii**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Gunnera manicata, scabra, and tinctoria**, Sow at 24-30°C (75-86°F), germination in about 2 weeks
- Gypsophila pacifica, paniculata, repens, and tenuifolia gracilipes**, Sow at 20°C (68°F), germination slow
- Gypsophila cerastioides**, Sow at Max. 5°C (41°F), germination irregular, often several months
- Haberlea rhodopensis**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks Small seed - do not cover
- Haastia pulvinaris, and sinclairii**, Sow at 20°C (68°F), germination slow Best if sown immediately after harvest
- Haberlea rhodopensis**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks Small seed - do not cover
- Hebe raoulii**, Sow at 20°C (68°F), germination slow
- Hedysarum alpinum, boreale, coronarium, and hedysaroides**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Helenium autumnale**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Helenium hoopesii**, Sow at 20°C (68°F), germination slow
- Helianthella quinquenervis**, Sow at Max. 5°C (41°F), germination irregular, often several months
- Helianthemum apenninum, nummularium, and oelandica**, Sow at Max. 5°C (41°F), germination irregular, often several months
- Helianthemum bicknellii, and canadense**, Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germ.
- Helianthemum nummularium mutabile**, Sow at 20°C (68°F), germinates in less than two wks
- Helianthus angustifolius, decapetalus, maximiliana, occidentalis, and rigidus**, Sow at Max. 5°C (41°F), germination irregular, often several months
- Helianthus grosseserratus, lactiflorus, mollis, and strumosus**, Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Helichrysum arenarium, bellidioides, italicum, plicatum, and thianshankum**, Sow at 20°C (68°F) in light, germinates in less than two wks
- Helictotrichon sempervirens**, Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination Best is sown right after harvest
- Heliopsis helianthoides (syn. H. scabra)**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Helleborus argutifolius, croaticus, dyclophyllus, dumetorum, foetidus, lividus, multifidus, niger, odor, orientalis, purpureus, vesicarius, viridis, and x sternii**, Pour hot water over seeds, let soak 1-3 days until swelling noticeable. Sow at 22°C (71°F) for 6 wks or more. Move to -4 to +4°C (24-39°F) for 6-8 wks. Then raise the temperature to 10°C (50°F). If no germination in 4-6 wks, repeat the cycle from the beginning. If the warm/cold cycles were not long enough, a new warm/cold cycle is needed. short viable.
- Hemerocallis hybrids, liliashodelus, middendorffii, and minor**, Sow under very thin cover at Max. 5°C (41°F) in light, germination irregular, often several months Not true to type

- Hepatica nobilis** , Sow immediately outdoors. Short viability seed will germinate in the spring.
- Hepatica triloba** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Heracleum lanatum, and mantegazzianum** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination 2 cold periods often required
- Herniaria glabra** , Surface sow at 20°C (68°F) in light, germinates in less than two wks
- Hesperis lutea, and matronalis** , Sow at 22-24°C (71-75°F), germination slow Cover thin. Needs light.
- Heuchera americana** , **x brizoides**, **nicratum**, **pulchella**, **versicola**, and **villosa v. macrorrhiza**, Surface sow at 20°C (68°F) in light, germination slow
- Heuchera cylindrica** , Surface sow at 20°C (68°F) in light, if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Heuchera micrantha, and sanguinea** , Surface sow at 20°C (68°F) in light, germinates in less than two wks
- Heuchera richardsonii (hispidia)** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Hibiscus coccineus, manihot, and moscheutos, and syriacus**, Sow at 22-24°C (71-75°F), germ. in less than 2 weeks
- Hieracium alpinum, aurantiacum, bombycinum, chondrillifolium, intybaceum, lanatum, pilocella, and umbellatum**, Sow at 20°C (68°F), germinates in less than two wks
- Hieracium longipilum, maculatum, and villosum**, Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Hierochloa odorata** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Horminum pyrenaicum** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Hosta elata, minor, montana, sieboldiana, and ventricosa** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks, recycle
- Houstonia caerulea** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Hugueninia tanacetifolia** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Humulus lupulus** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Hutchinsia alpina** , Sow at 20°C (68°F), germination slow
- Hylomecon japonicum** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Hymenoxys acaulis, and grandiflora** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Hymenoxys hoopesii** , Sow at 20°C (68°F) in light, germination slow
- Hypericum ascyron , calycinum, and reptans**, Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Hypericum androsaemum, cerastoides, coris, olympicum, orientale, patulum, perforatum, and tetrapterum**, Sow at 20°C (68°F), germination slow
- Hypericum hyssopifolium, polyphyllum, proliferum, and pulchrum** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Hypochoeris uniflora** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Hypoxis hirsuta** , Sow at 20°C (68°F), germinates in less than two wks
- Hyssopus officinalis** , Sow at 20°C (68°F), germinates in less than two wks
- Hystrix patula** , Sow at 20°C (68°F), germination slow
- Iberis gibraltarica, and sempervirens** , Sow at 20°C (68°F), germinates in less than two wks needs light. Cover thin.
- Iberis aurosica, and saxatilis** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Iliamna remota, and rivularis** , Sow at Max. 5°C (41°F), germination irregular, often several months, but if you have the patience to nick the small seed, sow at room temperature for germination in about 3 days.
- Incarvillea cheron, chinensis, delavayi, emodii, mairie, and olgae** , Sow at 20°C (68°F), germ. in less than two wks
- Inula acaulis, candida, ensifolia, helenium, hirta, magnifica, orientalis, racemosa, and rhizocephala** , Sow at 20°C (68°F), germination slow
- Iris barbata, bucharica, bulleyana, chamaeiris, chrysographes, foetidissima, forrestii, graminea, hollandica, illyrica, kamaonensis, kaempferi, lactea, laevigata, magnifica, missouriensis, orientalis, paradoxa, pseudacorus, pseudocaucasica, pumila, reichenbachii, sanguinea, sari, setosa, sibirica, sintenisii, spuria, tectorum, tenax, variegata, versicolor, virginica, and xiphioides** , Impervious seed coats. Shake in dry sharp sand or nick carefully with a file. Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Isatis glauca, and tinctoria** , Sow at 20°C (68°F), germination slow
- Isopyrum thalictroides** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination Best if sown immediately after harvest
- Jankaea heldreichii** , Surface sow at 20°C (68°F) in light, if no germ. in 3-4 wks, move to +4°C (39°F) for 2-4 wks
- Jasione laevis, and montana** , Sow at 20°C (68°F), germinates in about two wks
- Jovibarba heuffelii** , Sow at 20°C (68°F) in light, if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks



- Juncus effusus, and inflexus** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Juncus ensifolius, and filiformis** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to +4°C (39°F) for 2-4 wks
- Jurinea cyanoides, and mollis** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Kalimeris incisa** , Sow at 20°C (68°F), germinates in less than two wks
- Kirengeshoma palmata** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Kitabela vitifolia** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Knautia arvensis, and macedonica** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Kniphofia citrina, hybrids, and uvaria** , Sow at 20°C (68°F), if no germination in 2 wks, move to -4 to +4°C (24-39°F) indefinitely.
- Koeleria cristata, and glauca** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Kosteletzkya virginica** , Sow at 23°C (73°F), germinates in about two wks
- Krigia biflora, and virginica**, Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Kuhnia eupatorioides** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Lamiastrum galeobdolon** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 months, move to 5-12°C (41-53°F) for germination
- Lamium maculatum, and purpureum** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Lantana camara** , Sow under thin cover at 20°C (68°F) in light, germinates in about two wks
- Lapeirousia laxa (syn. Anomatheca laxa)** , Sow at 20°C (68°F), germinates in less than two wks
- Laserpitium gallicum, halleri, latifolium, and siler** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Lathyrus grandiflorus, laevigatus, latifolius, palustris, venosus, and vernus** , Pour hot water over seeds, let soak 1-3 days until swelling noticeable. Sow at 20°C (68°F) for germination in more than two weeks.
- Lathyrus gmelinii** , Scarify seed, sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Lathyrus niger** , Scarify seed, sow at Max. 5°C (41°F), germination irregular, often several months
- Lavandula angustifolia, laciniata, latifolia, and stoechas**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Lavandula lanata** , Sow at -4 to +4°C (24-39°F) for 6 wks, move to 18°C (65°F) for germ. in 1 to 3 months
- Lavatera arborea** , Sow at +4°C (39°F) for germ. in about 5 wks
- Lavatera cachemiriana, and thuringiaca** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Leibnitzia anandria, kunzeana, and nepalensis** , Sow at 20°C (68°F), germinates in less than two wks
- Leontodon crispum, and rigens** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Leontopodium alpinum, and palibinianum** , Surface sow at 20°C (68°F) in light, germinates in less than two wks
- Leontopodium souliei** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Leonurus cardiaca** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Leonurus marrubiastrum** , Sow at 20°C (68°F), germinates in less than two wks
- Lespedeza capitata, hirta, and leptostachya** , Slow germinator - up to a year or more. Store seeds in layers of moist sand in the shade. Check seeds regularly in the spring, and sow them all as soon as radicles appear
- Lespedeza thunbergii** , Impervious seed coats. Shake in dry sharp sand or nick carefully with a file. Sow at 20°C (68°F), germinates in less than 2 weeks
- Leucanthemum graminifolium, and x superbum** , Sow at 20°C (68°F) in light, germinates in less than two wks
- Leucogenes grandiceps** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Leucojum aestivum, and vernum** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Leuzea rhapontica** , Sow at 20°C (68°F), germination slow
- Levisticum officinalis** , Sow at 20°C (68°F), germinates in less than two wks
- Lewisia brachycalyx, columbiana, cotyledon, longipetala, nevadensis, oppositifolia, pygmaea, rediviva, sierrae, and tweedyi** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for irregular germination
- Leycesteria formosa** , Sow at 20°C (68°F), germination slow
- Liatris aspera, cylindracea, ligulistylis, punctata, pycnoshachya, scariola nieu** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination many empty seeds
- Liatris earlei, elegans, graminifolia, scariosa, spicata, and squarrosa** , Sow at 20°C (68°F), germination slow



- Liatris mucronata*** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to 4°C (40°F) for 12 wks, move to 5-12°C (41-53°F) for germination many empty seeds
- Libertia formosa, and ixioides*** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Libertia grandiflora*** , Sow at 23°C (73°F), germinates in about two wks
- Ligularia hybrids*** , Sow at 20°C (68°F), germination rapid if you get good seed, look for fat ones. poorly filled out seeds will not germinate
- Ligularia clivorum, dentata, fischeri, macrophylla, przewalskii, sibirica, stenocephala, veitchiana, and wilsoniana*** , Sow at 20°C (68°F), germination slow
- Lilium bulbiferum, candidum, carniolicum, columbianum, and wilmottiae*** , Sow at 20°C (68°F), germination slow
- Lilium formosanum, and pumilum*** , Sow at 10°C (50°F), germinates in less than two wks
- Lilium martagon, oxypetalum v. insigne, pyrenaicum, and regale*** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Lilium michiganense, and philadelphicum v. endinum*** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Lilium philippinense*** , Sow at 18-22°C (64-71°F) for 4 wks, move to -4 to +4°C (24-39°F) for 4 wks, move to 5-12°C (41-53°F) for germination, protect young bulbs from chipmunks
- Limonium gougetianum, latifolium, perezii, sinensis, and tataricum*** , Sow at 20°C (68°F), germ. in less than two wks
- Limonium bellidifolium*** , Sow at 20°C (68°F), germination slow
- Limonium gmelinii*** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 4 wks
- Linanthus nuttallii*** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Linaria aerugina, alpina, and purpurea*** , Sow at 20°C (68°F), germinates in less than two wks
- Linaria vulgaris***, Sow at Max. 5°C (41°F), germination irregular, often several months
- Linaria genistifolia, and supina*** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Lindelofia longiflora*** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Linum alpinum, flavum, and perenne*** , Sow at 20°C (68°F), germinates in less than two wks
- Linum capitatum, dolomiticum, and narbonense*** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Liriope muscari*** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Lithospermum canescens, croceum, and incisum*** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Lithospermum carolinense, and purpureo-caeruleum***, Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Loasa sp.*** , Sow at 20°C (68°F), germinates in less than two wks
- Lobelia cardinalis, fulgens, x gerardii, sessilifolia, speciosa, and siphilitica*** , Surface sow at 22-24°C (71-75°F) in light, germination in less than 2 weeks
- Lobelia spicata*** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Loiseleuria procumbens*** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Lopezia racemosa*** , Sow at 20°C (68°F), germinates in less than two wks needs winter protection
- Lotus corniculatus*** , Sow at 20°C (68°F), germinates in less than two wks
- Ludwigia alternatifolia, and hexapetala*** , Sow at 4°C (40°F) for 6 wks, move to 20°C (68°F) for germination
- Lunaria biennis*** , Sow at 20°C (68°F), germinates in less than two wks thin cover, needs light, biennial
- Lunaria rediviva*** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Lupinus arboreus, littoralis, podophyllus, polyphyllus, russel hybrids, sericeus, and texensis*** , Pour hot water over seeds, let soak 1-3 days until swelling noticeable. Sow at 20°C (68°F) for germination in more than two weeks.
- Lupinus lepidus, perennis*** , Pour hot water over seeds, let soak 1-3 days until swelling noticeable. Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 12 wks, then return to 20°C (68°F) for germination
- Luzula nivea, and sylvatica*** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 4 wks
- Luzula alpinopilosa*** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Luzula luzuloides, and ulophylla*** , Surface sow at 20°C (68°F), germination slow
- Lycene teunifolium*** , Sow at 20°C (68°F), germinates in less than two wks
- Lychnis alpina, x arkwrightii, chalconica, coronaria, flos-cuculi, flos-jovis, x haageana, migueliana, viscaria, and yunnanensis***, Sow at 20°C (68°F), germinates in less than two wks
- Lychnis sieboldii*** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 4 wks
- Lycopus virginicus*** , Sow at 4°C (40°F) for 6 wks, move to 20°C (68°F) for germination
- Lysimachia atropurpurea, and ciliata*** , Sow at Max. 5°C (41°F), germination irregular, often several months

- Lysimachia barystachys** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Lysimachia clethroides, ephemereum, and punctatum**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Lysimachia lanceolata, and quadriflora** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germ.
- Lysimachia lichiangensis, and minoricensis**, Sow at 20°C (68°F), germinates in about two wks
- Lythrum alatum, and anceps** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Lythrum salicaria** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks can be invasive. Illegal to sell in some states in the US
- Macleaya cordata** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Madia elegans** , Sow at 4°C (40°F) for 6 wks, move to 20°C (68°F) for germination
- Maianthemum bifolium** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Malva alcea, and moschata**, Sow at Max. 5°C (41°F), germination irregular, often several months
- Malva arborea, neglecta, and sylvestris**, Sow at 20°C (68°F) in light, germinates in less than two wks
- Mandragora autumnalis, and officinarum** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Marrubium cyllenium, friwaldskyanum, incanum, and suppinum**, Sow at 20°C (68°F), germ. in less than two wks
- Marrubium vulgare** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Marshallia trinervia** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Mazus reptans** , Surface sow at 20°C (68°F), germination slow
- Meconopsis aculeata, x beamishii, betonicifolia, cambrica, dhwojii, grandis, horridula, integrifolia, napaulensis, lancifolia, regia, x sheldonii, and villosa** , Germinates in low temperatures; 5 to 15°C (41 to 59°F) Meconopsis germ. quicker in a peat-based soilless compost
- Meconopsis punicea, and quintuliplinervia** , Sow immediately outdoors. Short viability seed will germinate in the spring. Short viable.
- Medicago sativa** , Sow at 20°C (68°F), germinates in less than two wks
- Megacarpaea polyandra** , Sow at 20°C (68°F), germinates in less than two wks
- Melica ciliata** , Dry store seeds for 6 months, then sow at 20°C (68°F), germinates in about two wks
- Melica altissima, nutans, transilvanica, and uniflora** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Melissa officianalis** , Sow at 20°C (68°F), germinates in less than two wks
- Melittis melissophyllum** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Mentha aquatica, and longifolia** , Sow at 20°C (68°F), germination slow
- Mertensia maritima** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Mertensia primuloides** , Sow at 20°C (68°F), germinates in less than two wks
- Meum athamanticum** , Sow immediately outdoors. Short viability seed will germinate in the spring.
- Micromeria thymifolia** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Milium effusum** , Sow at 20°C (68°F), germination slow
- Mimulus cardinalis, cupreus, guttatus, lewisii, luteus, minima, and tilingii**, Surface sow at 20°C (68°F) in light, germinates in less than two wks
- Mimulus ringens** , Surface sow at Max. 5°C (41°F), germination irregular, often several months
- Minuartia capilacea, laricifolia, and verna** , Surface sow at 20°C (68°F) in light, if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Mitella pentandra** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination do not cover
- Miscanthus sinensis, and transmorrisonensis** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Molinia arundinacea, and caerulea** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Moltkia petraea** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Monarda astromontana, bradburiana, didyma, x hybrida, and punctata** , Sow at 20°C (68°F), germ. in less than two wks thin cover, needs light
- Monarda citriodora, and fistulosa** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Monardella odoratissima** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Montia sibirica** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Morina longifolia** , Sow at 20°C (68°F), germinates in less than two wks
- Morina persica** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks

- Muhlenbergia axillaris, cuspidata, glomerata, and racemosa** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Muhlenbergia mexicana** , Sow at 20°C (68°F), germination slow
- Muscari comosum** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Mutisia ilicifolia, and latifolia** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to +4°C (39°F) for 12 wks, move to 10 to 12°C (50 - 53°F) for germination
- Myosotidium hortensia** , Sow at Max. 5°C (41°F), germ. irregular, often several months Best if sown right after harvest
- Myosotis alpestris, palustris, and sylvatica** , Sow at 20°C (68°F), germ. in less than two wks thin cover, needs light
- Myosotis australis** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Myosotis pulvinaris** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Myrrhis odorata** , Sow immediately outdoors. Short viability seed will germinate in the spring.
- Narcissus poeticus** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Narcissus serotinus** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Narthecium ossifragum** , Sow at 22°C (72°F) in muddy compost for 2-4 wks, move to 0°C (32°F) for 4-6 wks, after which temperature should be raised gradually.
- Nepeta cataria** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks cover, needs darkness
- Nepeta clarkei, dirphya, x faassenii, mussinii, nervosa, nuda, and teydea**, Sow at 20°C (68°F), germinates in less than two wks cover, needs darkness
- Nepeta sibirica, stewartiana, and subsessilis** , Sow at 20°C (68°F), germination slow
- Nerium oleander** , Sow at 23°C (73°F), germination in about two wks
- Nomocharis farreri, and saluenensis** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Nonea pulla** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Notothlaspi rosulatum** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Oenothera acaulis, argilicola, berlandierii, biennis, caespitosa, elata, fruticosa, kunthiana, laciniata, odorata, pallida, perennis, pilosella, rhombipetala, rosea, speciosa, tetragona, and versicolor, and aff. macroscler**, Sow at 20°C (68°F), germinates in about two wks
- Oenothera erythrosepala** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Oenothera macrocarpa, missouriensis, and syrticola** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Ononis rotundifolia, and spinosa** , Scarify seed, Sow at Max. 5°C (41°F), germination irregular, often several months
- Onopordum acanthium** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Onosma arenaria, rigida, and stellulata** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Opuntia fragilis, humifusa, phaeacantha, and polyacantha** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination , recycle
- Origanum vulgare** , Sow at 20°C (68°F), germinates in about two wks
- Ornithogalum pyrenaicum, and umbellatum** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Orobanche fasciculata** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Osteospermum jucundum** , Sow at 20°C (68°F), germinates in less than two wks
- Ourisia glandulosa** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Oxyria digyna** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Oxytropis campestris, lapponica, and purpurea** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Oxypolis rigidior** , Sow at 20°C (68°F), germinates in less than two wks
- Paeonia anomala, delavayi, lactiflora, lutea, mascula, mlkosewitschii, mollis, officinalis, peregrina, suffruticosa tenuifolia, veitchii, and wittmanniana** , Impervious seed coats. Shake in dry sharp sand or nick carefully with a file. Slow germinator - up to a year or more. Store seeds in layers of moist sand in the shade. Check seeds regularly in the spring, and sow them all as soon as radicles appear
- Panax ginseng** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Pancreatium maritimum** , Sow under thin cover at 20°C (68°F) in light, if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Panicum lanuginosum, leibergii, oligosanthos, perlongum, praecocius, and virgatum** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Papaver alpinum, atlanticum, kernerii, lateritium, nudicaule, orientale, pilosum, and rhaeticum**, Sow at 20°C (68°F), germinates in less than two wks do not cover
- Papaver alboroseum, and miyabeum**, Sow at 20°C (68°F), germination slow
- Papaver burseri, radicum, rupifragum, sendtneri, and triniifolium** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks do not cover

- Papaver spicatum** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Paradisea liliastrium, and lusitanica** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Pardancanda norrisii** , Sow under very thin cover at 20°C (68°F) in light, germination slow
- Paris quadrifolia** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Parnassia palustris** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Paronychia kapela** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Parthenium integrifolium** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 12 wks, then return to 20°C (68°F) for germination
- Patrinia gibbosa, and scabiosifolia** , Sow at -4 to +4°C (24-39°F) for 2-4 wks, then return to 20°C (68°F) for germination, short viable
- Patrinia triloba** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Pedicularis canadensis** , Sow at 20°C (68°F), germinates in less than two wks
- Pedicularis procera** , Sow at 20°C (68°F), germinates in less than two wks
- Pelargonium endlicherianum** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Peltiphyllum peltatum**, Sow at 22°C (71°F) for 6 wks or more. Move to -4 to +4°C (24-39°F) for 6-8 wks. Then raise the temperature to 10°C (50°F). If no germination in 4-6 wks, repeat the cycle from the beginning. If the warm/cold cycles were not long enough, a new warm/cold cycle is needed.
- Peltoboykinia tellimoides, and watanabei**, Sow at 22°C (71°F) for 6 wks or more. Move to -4 to +4°C (24-39°F) for 6-8 wks. Then raise the temperature to 10°C (50°F). If no germination in 4-6 wks, repeat the cycle from the beginning. If the warm/cold cycles were not long enough, a new warm/cold cycle is needed
- Pennisetum alopecuroides**, Sow at 22°C (72°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Pennisetum compressum, orientale, and setaceum** , Sow at 22-24°C (71-75°F), germination in less than 2 weeks , Note that P. setaceum rubra is not germinable.
- Penstemon species**, [see separate database](#)
- Periploca graeca** , Sow at 4°C (40°F) for 4-8 wks, move to 20°C (68°F) for germination
- Perovskia atriplicifolia** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Petalostemum candidum, purpureum, and villosum** , Sow at 20°C (68°F), germination slow
- Petasites albus, and hybridus** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Petrocoptis glaucifolia** , Sow at 20°C (68°F), germination slow
- Petrophytum caespitosum** , Sow at 20°C (68°F), germination slow
- Petrohragia saxifraga** , Sow at 20°C (68°F), germinates in less than two wks
- Peucedanum officinale, ostruthium, and verticillare** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Phacelia sericea** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Phalaris arundinacea** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Phlomis cashmeriana, fruticosa, russeliana, and samia** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Phlomis tuberosa** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Phlox glaberrima v. interior, and pilosa** , Sow immediately outdoors. Short viability seed will germinate in the spring.
- Phlox x arendsii, and paniculata** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Phragmites australis** , Sow at 22°C (72°F) in muddy compost
- Phuopsis stylosa** , Sow at 20°C (68°F), germination slow
- Phygelius aequalis, and capensis** , Sow at 22-24°C (71-75°F), germ. in less than 2 weeks
- Physalis franchetii** , Wash seeds several times, Sow at 22-24°C (71-75°F), germinates in less than two wks
- Physalis subglabrata, and virginiana** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 22°C (72°F) for germination
- Physochlaina orientalis** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Physoplexis comosa** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Physostegia virginiana** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination not true to type
- Phyteuma humile, orbiculare, sibiricum, and spicatum** , Surface sow at 20°C (68°F) in light, if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks, recycle
- Phyteuma hemisphaericum, nigrum, and scheuchzeri** , Surface sow at 20°C (68°F) in light, germination slow
- Phytolacca acinosa, and americana** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination

- Phytolacca octandra** , Sow at 20°C (68°F), germinates in less than two wks
- Pimpinella saxifraga** , Sow at 20°C (68°F), germinates in about two wks
- Plantago lanceolata, major, and nivalis** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Platycodon apoyama, and grandiflorus** , Sow at 20°C (68°F), germination slow
- Plumbago capensis** , Sow at 23°C (73°F), germinates in less about 2 wks
- Poa alpina, and chaixii** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Poa palustris** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Podophyllum hexandrum, and peltatum** , Pour hot water over seeds, let soak 1-2 days until swelling noticeable. Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination Short viable
- Polemonium carneum** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Polemonium boreale, caeruleum, cashmirianum, chartaceum, delicatum, foliosissimum, pauciflorum, reptans, x rickharsonii, and viscosum** , Sow at 20°C (68°F), germination slow
- Polygonatum canaliculatum, humile, latifolium, multiflorum, odoratum, and verticillatum** , Slow germinator - up to a year or more. Store seeds in layers of moist sand in the shade. Check seeds regularly in the spring, and sow them all as soon as radicles appear
- Polygonum aubertii** , Sow at +4°C (39°F) for germ. in about 7 weeks
- Polygonum bistorta** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Polygonum capitatum** , Sow at 20°C (68°F), germination slow
- Polygonum filiforme, viviparum, and weyrichii** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Polytaenia nuttallii** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Potentilla alba, argentea, argyrophylla, atosanguinea, calabra, concolor, crantzii, fragiformis, gracilis, megalantha, nepalensis, rupestris, and thurberi** , Sow at 20°C (68°F), germination slow
- Potentilla arguta, canadensis, caulescens, erecta, and fruticosa** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Potentilla hyparctica, neumanniana, palustris, speciosa, and tridentata** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Potentilla multifida, and pensylvanica** , Sow at 20°C (68°F), germinates in less than two wks
- Potentilla aurea, heptaphylla, and recta** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Pratia angulata** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Prenanthes alba, aspera, and racemosa** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Primula alpicola, beesiana, x bullesiana, bulleyana, candelabra hybrids, cockburniana, pubescens, pulverulenta, and waltonii** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Primula auricula, burmanica, chungensis, x chunglenta, elatior, hirsuta, integrifolia, japonica, juliae, pedemontana, poissonii, rosea, sieboldii, sinopurpurea, smithiana, veris, viscosa, and vulgaris** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination s
- Primula capitata, cortusoides, florindae, polyneura, x pubescens, saxatilis, sikkimensis, and sinopurpurea** , Surface sow at 20°C (68°F), germination slow
- Primula denticulata, farinosa, halleri, nutans, polyantha hybrids, and viallii** , Surface sow at 20°C (68°F), germinates in less than two wks
- Primula frondosa, luteola, secundiflora, scotica, and verticillata** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Primula juliae** , Sow at 22°C (71°F) for 6 wks or more. Move to -4 to +4°C (24-39°F) for 6-8 wks. Then raise the temperature to 10°C (50°F). If no germination in 4-6 wks, repeat the cycle from the beginning. If the warm/cold cycles were not long enough, a new warm/cold cycle is needed.
- Prunella grandiflora, laciniata, vulgaris, and webbiana** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Prunus prostrata** , Slow germinator - up to a year or more. Store seeds in layers of moist sand in the shade. Check seeds regularly in the spring, and sow them all as soon as radicles appear
- Psoralea argophylla, esculenta, and tenuiflora** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Pteroccephalus perennis** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Ptilotruchum pyrenaicum** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Ptilotruchum spinosum** , Sow at 20°C (68°F), germination slow
- Pulmonaria mollissima, officinalis, rubra, and saccarata** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Pulsatilla alba, albana, alpina, ambigua, dahurica, grandis, halleri, montana, occidentalis, patens, pratensis, serotina, and vernalis** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Pulsatilla vulgaris** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Punica granatum** , Sow at 23°C (73°F), germinates in about two wks



- Pycnanthemum incanum, and pilosum** , Sow at 20°C (68°F), germinates in about two wks
- Pycnanthemum tenuifolium, and virginianum** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F)
- Ramonda myconi, and nathaliae** , Surface sow at 20°C (68°F) in light, if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Ranunculus aconitifolius, amplexicaulis, buchananii, fascicularis, flammula, glacialis, gramineus, haastii, insignis, lyallii, nivicola, pachyrrhizus, parnassifolius, pyrenaeanus, romboides, sericophyllus, and thora**, Sow at 18-22°C (64-71°F) for 2-4 wks, move to 5°C (23°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination Short viable
- Raoulia australis, subserica, and tenuicaulis** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Ratibida columnaris, columnifera, and pinnata** , Sow at 20°C (68°F), germinates in less than two wks
- Rehmannia elata** , Sow at 23°C (73°F), germinates in about two wks
- Rheum australe, and palmatum** , Sow at 20°C (68°F), germinates in less than two wks
- Rhexia virginica** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Rhodiola rosea** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination do not cover
- Rhodiola rhodantha, and semenovii** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks do not cover
- Rhododendron camtschaticum, and ferrugineum**, Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Rodgersia henrici hybrids, and podophylla** , Sow at 20°C (68°F), germination slow do not cover
- Rodgersia aesculifolia, pinnata, sambucifolia, and tabularis**, Sow at 20°C (68°F), germ. in less than two wks do not cover
- Romneya coulteri, and trichocalyx**, Sow at Max. 5°C (41°F), germination irregular, often several months very difficult. Try GA3 or store seeds in layers of moist sand in the shade. Check seeds regularly every spring, and sow them all as soon as radicles appear.
- Roscoea alpina** , Impervious seed coats. Shake in dry sharp sand or nick carefully with a file. Sow at Max. 5°C (41°F), germination irregular, often several months
- Roscoea auriculata, cautleoides, purpurea, and scillifolia**, Sow at 22-24°C (71-75°F), germination in about 2 weeks
- Rosmarinus officinalis** , Sow at 20°C (68°F), germinates in less than two wks thin cover, needs light
- Rudbeckia fulgida, hirta, and maxima** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Rudbeckia laciniata, nitida, occidentalis, and purpurea** , Sow at 20°C (68°F), germination slow
- Rudbeckia subtomentosa, and triloba** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Ruellia humilis** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Rumex acetosella, and sanguineus** , Sow at 20°C (68°F), germinates in less than two wks
- Rumex flexuosus** , Sow at 20°C (68°F), germination slow
- Rumex hydrolapathum** , Sow at 22°C (72°F) in muddy compost
- Ruscus aculeatus** , Impervious seed coats. Shake in dry sharp sand or nick carefully with a file. Slow germinator - up to a year or more. Store seeds in layers of moist sand in the shade. Check seeds regularly in the spring, and sow them all as soon as radicles appear
- Ruta graveolens** , Sow at 20°C (68°F), germinates in less than two wks
- Sabatia angularis** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Saccharum ravennae** , Extract seeds from pods, then sow at 20°C (68°F), germinates in less than two wks
- Sagina subulata** , Surface sow at 20°C (68°F) in light, germinates in less than two wks
- Sagittaria sagittifolia** , Sow at 22°C (72°F) in muddy compost
- Salvia farinacea , forskaohlei, miltiorrhiza, officinalis, sclarea, and x superba** , Sow at 20°C (68°F), germinates in less than two wks
- Salvia amplexicaulis, argentea, glutinosa, hians, juriscii, lavandulifolia, lyrata, nemorosa, pratensis, przewalskii, recognita, transylvanica, and verticillata**, Sow at 20°C (68°F), germination slow
- Salvia ringens** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Sanguinaria canadensis** , Slow germinator - up to a year or more. Store seeds in layers of moist sand in the shade. Check seeds regularly in the spring, and sow them all as soon as radicles appear short viable
- Sanguisorba canadensis, hakusanensis, obtusa, officinalis, parviflora, and tenuifolia**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Sanguisorba minor** , Sow at 20°C (68°F), germinates in less than two wks thin cover, needs light
- Sanicula europaea** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Santolinia chamaecyparissus, and rosmarinifolius** , Sow at Max. 5°C (41°F), germ. irregular, often several months
- Saponaria ocymoides** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Saponaria caespitosa, lutea, officinalis, and pumila** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination



- Sarcococca ruscifolia** , Slow germinator - up to a year or more. Store seeds in layers of moist sand in the shade. Check seeds regularly in the spring, and sow them all as soon as radicles appear short viable
- Satureja montana** , Sow at 20°C (68°F), germination slow
- Saxifraga aizoides, aspera, biflora, burseriana, cochlearis, cotyledon, cuneifolia, diapensioides, exarata, ferdinandi-coburgi rhodopea, granulata, grisebachii, hostii, longifolia, manshuriensis, marginata, oppositifolia, paniculata, sachalinensis, sedoides, sempervivum, spathularis, stellaris, stribrnyi, umbrosa, and x urbium**, Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination do not cover
- Saxifraga pennsylvanica** , Surface sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Saxifraga x arendsii, mutata, and rotundifolia**, Sow at 20°C (68°F), germination slow do not cover
- Scabiosa caucasica** , Sow at 22-24°C (71-75°F), germination in about 2 weeks
- Scabiosa columbaria, graminifolia, japonica, lucida, and ochroleuca**, Sow at Max. 5°C (41°F), germination irregular, often several months
- Schivereckia doerfleri** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Schivereckia podolica** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Schizachyrium scoparium** , Sow at 20°C (68°F), germinates in less than two wks
- Scilla bifolia** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Scirpus holoschoenus, lacustris, and tabernaemontani** , Sow at 22°C (72°F) in muddy compost
- Scirpus mucronatus, and sylvaticus**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Scleranthus uniflorus** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Scopolia carniolica** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Scrophularia grandiflora** , Sow at 20°C (68°F), germination slow
- Scrophularia nodosa** , Sow at Max. 5°C (41°F), germ. irregular, often several months
- Scutellaria alpina, baicalensis, indica, orientalis, parvula, pontica, and velenovskyi**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Scutellaria galericulata** , Wash seeds several times, Sow at +4°C (39°F) for 6 wks, move to 16°C (60°F) for germ.
- Scutellaria incana** , Sow at Max. 5°C (41°F), germ. irregular, often several months
- Scutellaria altissima** , Sow at 20°C (68°F), germination slow
- Sedum acre, aizoon, forsterianum, rupestre, and spurium**, Sow at 20°C (68°F), germinates in less than two wks do not cover
- Sedum anacampseros, floriferum, kamtschaticum, lanceolatum, oreganum, pulchellum, and reflexum**, Sow at 20°C (68°F), germination slow do not cover
- Sedum album, ewersii, spathulifolium, and ternatum**, Sow at Max. 5°C (41°F), germination irregular, often several months do not cover
- Sedum populifolium, and telephium** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination do not cover
- Selinum carvifolia** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Semiaquilegia adoxiodes, and ecalcarata**, Sow at Max. 5°C (41°F), germination irregular, often several months
- Sempervivum arachnoideum, calcareum, grandiflorum, montanum, and tectorum**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks do not cover
- Senecio aureus, incanus, integrifolius, nemorensis, pauperculus, and plattensis**, Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germ.
- Senecio cineraria** , Sow at 20°C (68°F), germinates in less than two wks
- Senecio doronicum**, Sow at -4 to +4°C (24-39°F) for erratic germination
- Senna hebecarpa** , Sow at 20°C (68°F), germinates in less than two wks
- Serratula tinctoria** , Sow at 20°C (68°F), germination slow
- Seseli elatum, gracilis, montanum, and rigida**, Sow at 20°C (68°F), germination irregular
- Seseli gummiferum**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Sesleria caerulea, heuffleriana, nitida, and sadlerana**, Sow at -4 to +4°C (24-39°F) for erratic germination
- Sidalcea candida, hybrida, malvaflora, and neomexicana**, Sow at 20°C (68°F), if no germination in 2 wks, move to -4 to +4°C (24-39°F) indefinitely. .
- Sideritis syriaca** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Silene alpestris, apetalum, bellidoides, fimbriata, orientalis, and schafta**, Sow at 20°C (68°F), germinates in less than two wks
- Silene acaulis, asterias, californica, caroliniana, coeli-rosea, maritima, pusilla, regia, waldsteinii, and zawadskii**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Silene alba, caryophylloides, dioica, hookerii, nutans, saxifraga, scouleri, uniflora, vallesia, and vulgaris**, Sow at 20°C (68°F), germination slow

**Silene elisabethae, and vallesia**, Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination

**Silphium dentata, integrifolium, laciniatum, and perfoliatum**, Sow at 4°C (40°F) for 12 wks, move to 20°C (68°F) for germination

**Silphium terebinthinaceum**, Sow at 20°C (68°F), germination slow

**Silybum marianum**, Sow at 20°C (68°F), germinates in less than two wks

**Sisyrinchium albidum, angustifolium, bellum, californicum, campestre, douglasii, montanum, and striatum**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks

**Smilacina racemosa**, Slow germinator - up to a year or more. Store seeds in layers of moist sand in the shade. Check seeds regularly in the spring, and sow them all as soon as radicles appear

**Smilacina stellata**, Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination

**Smyrniium perfoliatum**, Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination

**Solanum dulcamara**, Sow at Max. 5°C (41°F), germination irregular, often several months

**Soldanella alpina, carpatica, montana, and pusilla**, Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for slow germination very slow-growing the first 2-3 years

**Solidago altissima, caesia, canadensis, cutleri, gigantea, glomerata, graminifolia, juncea, missouriensis, multiradiata, nemoralis, pinetorum, puberula, remota, riddellii, rigida, roanensis, sempervirens, speciosa, sphacelata, uliginosa, and virgaurea**, Sow at 20°C (68°F), germinates in less than two wks

**Solidaster luteus (Aster x Solidago)**, Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination Very poor germination

**Sorghastrum nutans**, Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination

**Sparganium erectum**, Sow at 22°C (72°F) in muddy compost for 6 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, then allow temperatures to raise gradually.

**Spartina pectinata**, Sow at 22°C (72°F) in muddy compost for 6 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, then allow temperatures to raise gradually.

**Spergularia rubra**, Sow at 20°C (68°F), germination slow

**Sphaeralcea coccinea**, Sow at Max. 5°C (41°F), germination irregular, often several months

**Sphenopholis intermedia**, Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination

**Spiranthes cernua**, Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination

**Spodiopogon sibiricus**, Sow at 20°C (68°F) in light, germinates in about two wks

**Sporobolus asper, cryptandrus, and heterolepsis**, Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination

**Stachys byzantina, coccinea, lanata, and olympica**, Sow at 20°C (68°F), germinates in less than two wks

**Stachys grandiflora, monnieri, and officinalis**, Sow at Max. 5°C (41°F), germination irregular, often several months

**Stachys palustris**, Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination

**Stellaria holostea**, Sow at Max. 5°C (41°F), germination irregular, often several months

**Sternbergia candida, clusiana, and fischeriana**, Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination

**Stipa barbata, calamagrostis, grandis, pennata, spartea, tenuissima, and viridula**, Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination

**Stipa extremiorientalis, pulcherrima, tenuissima, and ucrainica**, Sow at Max. 5°C (41°F), germination irregular, often several months

**Stipa capillata, and gigantea**, Sow at 20°C (68°F), germination slow

**Stokesia laevis**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) indefinitely.

**Stylophorum diphyllum, and lasiocarpum**, Sow at Max. 5°C (41°F), germination irregular, often several months

**Succisa pratensis**, Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination

**Swertia kingii, and perennis**, Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination

**Symphandra armena, hofmanii, pendula, wanneri, and zanzegur**, Sow at 20°C (68°F) in light, germinates in less than two wks

**Symphytum officinale, and tuberosum**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks

**Talinum okanoganense**, Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination

**Talinum rugospermum**, Sow at Max. 5°C (41°F), germination irregular, often several months

**Tanacetum balsamita, cinerariifolium, coccineum, corymbosum, demetrii, huronense, niveum, parthenium, and vulgare**, Sow at 20°C (68°F) in light, if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks thin cover

**Taraxacum officinale**, Sow at 20°C (68°F), germination slow

- Telekia speciosa** , Sow at 20°C (68°F), germinates in less than two wks
- Tellima grandiflora** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Tephrosia virginiana** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Tetragonolobus maritimus** , Sow at 20°C (68°F), if no germ. in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Teucrium canadense, flavum, and nassilense** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Teucrium chamaedrys, and montanum**, Sow at Max. 5°C (41°F), germination irregular, often several months
- Teucrium hyrcanicum** , Sow at +4°C (39°F) for 8 wks, then move to coldframe for oscillating temps
- Teucrium polium, and scorodonia** , Sow at 20°C (68°F), germinates in about two wks
- Thalictrum aquilegifolium, chelidonii, dasycarpum, diptercarpum, flavum, foetidum, lucidum, minus, revoltum, and rochebrunianum** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Thamnocalamus spathaceus** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Thaspium trifoliatum** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Themeda triandra japonica** , Sow at 20°C (68°F), germination slow
- Thermopsis caroliniana, lanceolata, and montana** , Impervious seed coats. Shake in dry sharp sand or nick carefully with a file. Soak for 1-2 days. Sow at 20°C (68°F), germinates in about 2 weeks Short viable
- Thlaspi rotundifolium** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Thymus pulegioides, serpyllum, and vulgaris**, Sow at 20°C (68°F), germinates in about two wks
- Tiarella polyphylla, and wherryi** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Tofieldia calyculata** , Sow at 20°C (68°F), germination slow
- Tofieldia glutinosa** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Tolmiea menziesii** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Townsendia florifera, grandiflora, and incana**, Sow at 20°C (68°F), germinates in about two wks
- Trachelium caeruleum** , Sow at 20°C (68°F), germinates in less than two wks
- Tradescantia x andersoniana, ohiensis, and virginiana**, Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Trichostema dichotoma** , Sow at 20°C (68°F), germinates in less than two wks
- Tricyrtis hirta, latifolia, and maculata**, Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Tricyrtis macropoda** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Trifolium alpinum** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Trifolium ochroleucum, and rubens** , Sow at 20°C (68°F), germination slow
- Trillium cernuum, cumeatum, erectum, grandiflorum, luteum, sessile, and undulatum**, Sow immediately outdoors. Short viability seed will germinate in the spring or in the spring of subsequent years. Very short viable. Store seed cold and moist. Sow fresh.
- Tripterospemum marianum** , Sow at 20°C (68°F), germinates in less than two wks
- Trisetum flavescens** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Trollius acaulis, altaicus, asiaticus, chinensis, x cultorum, europaeus, laxus, pumilus, and yunnanensis**, Sow at 18-22°C (64-71°F) for 2-4 wks, move to -6 to -7°C (19-21°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Tropaeolum ciliatum, and speciosum**, Impervious seed coats. Shake in dry sharp sand or nick carefully with a file. Soak seeds 1-2 days or until swelling noticeable. Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination Short viable
- Tulipa kaufmanniana, pulchella, sprengeri, sylvestris, tarda, turkestanica, and urumiensis** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Typha angustifolia, latifolia, laxmannii, and shuttleworthii**, Sow in muddy compost at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) gradually, for germination
- Unicinia rubra** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Vaccinium macrocarpon, and myrtillus**, Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Vaccinium vitis-idaea** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Valeriana ciliata, and officinalis**, Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Vania campylophylla** , Sow at 20°C (68°F), germinates in less than two wks grow on in 10-15°C (50-59°F) in good light
- Veratrum album, californicum, nigrum, and viride**, Sow at 18-22°C (64-71°F) for 2-4 wks, move to -6 to -7°C (19-21°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination

- Verbascum blattaria, bombyciferum, chaixii, densiflorum, hybridum, longifolium, olympicum, phoeniceum, roripifolium, and thapsus**, Sow at 20°C (68°F), germinates in less than two wks cover thin
- Verbascum nigrum** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Verbena bonariensis, rigida, and stricta**, Sow at -4 to +4°C (24-39°F) for 4 wks, move to 20°C (68°F) for germination
- Verbena hastata** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Verbena tenuisecta** , Sow at 20°C (68°F), germination slow
- Verbesina alternifolia, virginica** , Sow at 20°C (68°F), if no germ. in 4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Vernonia altissima, baldwinii, crinita, fasciculata, missurica, noveboracensis, and novaborensis**, Sow at 4°C (40°F) for 12 wks, move gradually to 20°C (75°F) for germination
- Veronica austriaca, fruticans, fruticulosa, gentianoides, gutheriana, officinalis, prostrata, saturoioides, schmidtiana, and virginica**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks thin cover, needs light
- Veronica incana, longifolia, spicata, subsessilis, teucrium, and urticifolia**, Sow at 20°C (68°F), germinates in less than two wks thin cover, needs light
- Veronica repens** , Sow at 20°C (68°F), germination slow
- Veronicastrum sibiricum, virginica, and virginicum** , Sow at 20°C (68°F) in light, if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks Do not cover
- Vicis americana** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Viguiera dentata** , Sow at 20°C (68°F), germination slow
- Viguiera multiflora** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Vincetoxicum forrestii, and hirundinaria** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Viola cornuta**, Sow at 20°C (68°F), germinates in less than two wks
- Viola coreana, mirabilis, nigra, and pedatifida** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Viola elatior, jooi, labradorica, obliqua, pumila, reichenbachiana, rupestris, and triloba**, Sow at Max. 5°C (41°F), germination irregular, often several months
- Viola lanceolata, papilionacea, and sagittata**, Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Viola odorata, pedata, and sororia**, Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Vitaliana primuliflora** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Vitex agnus-castus** , Sow at 22-24°C (71-75°F), germination in less than 2 weeks
- Vitis vulpina** , Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Vulpia octoflora**, Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination
- Wahlenbergia akaroa, albomarginata, and congesta** , Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks
- Wyethia helianthoides** , Sow at Max. 5°C (41°F), germination irregular, often several months
- Wulfenia bullii, and carinthiaca**, Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 6-12 wks , move to 5-12°C (41-53°F) for germination do not cover
- Xerophyllum tenax** , Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination
- Yucca baccata, filamentosa, and glauca**, Sow at 22-24°C (71-75°F), germination in less than 2 weeks
- Zigadenus elegans, nuttallii, and venosus**, Sow at 20°C (68°F), germination slow
- Zizia aptera, and aurea**, Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination