

draft revised 3rd March 2014		Germination & dormancy data being added in 2014								
Split Seeding Guide The Bottom Line, a Guide to the Timing and Placement of Native Seeds for Field Establishment										
Or, A Planting Not Divided Against Itself Cannot Stand, Or Your Truax Drill Won't Get You Into Heaven Anymore, or Bury Seed Not In The Lone Prairie										
For far too long, native seeding specifications have used the scapegoat verbiage "seed shall be scarified and stratified for other than a fall planting". In almost all instances, cold moist stratified seed is not being used as specified. The native seed industry has been and is still based on dry stratified seed. Cold moist stratified seed was not, is not, will not, and should not be used in spring or summer seedings and never in fall. It is no longer a recommended practice to use moist stratified seed unless the site can be realistically irrigated (not hand watered, as one acre inch of water equals 27,154 gallons of water; example a 5 acre site using two 1000 gallon hydroseeder loads of water per hour would require 8.4 work days to apply 1 inch of water). It is time to acknowledge reality and write seeding specifications according to how the seedings should be done, not as how someone 25 years ago wished them to be done.										
Native restorations and native seeding projects are planted with diverse mixes of dry stored seed at times that are convenient to boards of directors, general contractors, excavators, erosion control regulators, resident engineers, and other pundits of horticultural wisdom. We are not planting at times that are horticulturally correct. Native plant species have a number of mechanisms that prevent their seed from germinating at a time not advantageous to the new plant. These dormancy mechanisms are easily dealt with by dormant seeding, or with recalcitrant seeds, planting fresh or properly held seed. We have collectively ignored the consequences of planting native seeds in the wrong season, comforting ourselves saying 'oh, the seed will lay there until the right time'. But how much seed truly does persist? Many species have a short soil 'shelf-life'.										
Since the Dust Bowl and the Nesbit, rangeland grass drills have been used to plant native grasses and wildflowers. A properly calibrated and properly operated drill will guarantee uniform horizontal placement of seed. It can not guarantee optimum vertical placement of a diverse seed mix in or on the soil. The drill is not the <i>sine qua non</i> of restoration. Progressive restorationists have moved to split-seeding, drilling part of the mix and broadcasting the other part, with consistently successful results. Split-seeding is now being written into job specifications, but with little basis in horticultural fact, often as basic as drilling grasses and broadcasting forbs, which is better than a stick in the eye, but sometimes not by much. We can do better!										
Many millions of dollars of native seeds are being planted at inopportune times and by inefficient methods, with mediocre results. This has cast aspersions upon our entire industry. The native restoration industry has an obligation to plant seed at an appropriate time and by the proper method to accommodate the horticultural requirements of the specified seed species. Those designing projects have an obligation to know the facts about the species they are using. The following list is the first guide to properly dividing a seed list into plantable units for the given time of year. The list may also be used to design seasonally appropriate mixes. The data listed below has been gleaned from propagation literature, greenhouse, and field experience at Genesis Nursery, plus 4700+ seed tests from registered seed laboratories.										
The following is a reference for field establishment of native plants. It will be adapted to a reference for greenhouse or garden production of native plants.										
Depth						Dormancy rates				
Surface	surface sow					0-10%	no to slight	Mean is the arithmetic average. Median		
Facul	surface sow dormant and early spring, drill late spring					10% - 20%	modest	is the middle value of the range. Mode		
Bury	open land use rangeland drill, emergent rake in.					20% - 50%	significant	in the most frequently occurring value.		
Bury*	woodland hand plant, lightly rake	Bury (Submerge)	wetland			over 50%	strong	Range is given as absolute and arithmetic values.		
Season plus						Seeding methods & times				
Leg	legume, successful inoculation?					frost	Nov-Mar	"Anything reduced to algebra or numbers is not very interesting" Edward		
Dor	dormant seed best					spr	Mar-April 15	Abbey		
Dorv	dormant needed > 50% years, spring OK some years					lt spr	April 15 on			
Spr	spring plant, dormant almost always works also.					B	broadcast			
Sprv	spring plant works > 50% years, dormant often required					D	Drill			
Succ	Successional			Fresh	plant fresh seeds only	HR	hand rake under existing overstory			
Rec	recalcitrant seeds/bulbils, do not dry seeds/bulbils			Hemipar	hemiparasitic, needs a host		Data To Be Updated Soon!			
Dor/Spr?	it's a toss up			W	wetland construction factor, trumps all seasons or reasons					
L	seeds need light, surface sow or shallow cover			MMMR	Mean, Median, Mode, Range for germination & dormant seeds and length of seed test					
Species		depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
				Frost	spr	lt spr				
<i>Achillea millefolium</i> White Yarrow	Surface	Spr, Dor	B	B	B		This seed is nondormant & can seeded spring or dormant.	Germ 87.8, 93, 93, r70-97.8 (27.8)%. Dorm 1.25, 0.0, 0.0, r0-5.0 (5.0)%. test 13, 12.5, na, r12-13 day.	2,800,000	Compositae
<i>Acorus americanus</i> Sweet Flag	Facul	Spr, Dorv	B	B	D		Field sow spring or dormant. Some years the seed may have 20-22% dormant seed, but some lots are non-dormant. Our experience has shown good greenhouse crops can be produced with no pretreatments, but 30-60 days cold moist stratification will benefit most years.	Germ 66.9, 72.5, 73, r9-94 (85)%. Dorm 18.1, 8.0, 0.0, 0.0-88 (88)%. Test 32, 28, na 21-46 days.	111,000	Acoraceae
<i>Agalinis purpurea</i> Purple False Foxglove	Surface	Dor, Hemipar	B	B	B		Seed are hemiparasitic & require dormant seeding with seeds of or near a host species. Rake the soil around the host plants briskly then scatter the seed. Gently firm.	Germ 21%. Dorm 75%. Test 29 days.	8,100,000	Orobanchaceae
<i>Agalinis tenuifolia</i> Slender False Foxglove	Surface	Dor, Hemipar	B	B	B		Seed are hemiparasitic & require dormant seeding with seeds of or near a host species. Rake the soil around the host plants briskly then scatter the seed. Gently firm.	Germ 9.4, 7.0, na, r 2-21 (19)%. Dorm 82.4, 83, na, r74-90 (16)%. Test 34, 34, r27-44 days.	10,000,000	Orobanchaceae
<i>Agastache foeniculum</i> Anise Hyssop	Surface	Dor	B	B	B		Most lots are nondormant or nearly so. 25% may be significantly dormant. Probable wild strains & known commercial strains are sold.	Germ 86, 93.5, na, r 58-99 (41)%. Dorm 7.8, 0.5, 0.0, r0.0-30 (30)%. Test 21, 23, na, r16-24 days.	1,500,000	Labiatae

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Agastache nepetoides</i> Yellow Hyssop	Surface	Spr, Dorv	B	B	B	This species is successful by spring seeding most years, but 1 in 5 lots may be strongly dormant.	Germ 52.7, 58, 58, r6.0-94 (88)%. Dorm 26.2 10, 0.0, r 0.0-88 (88)%. Test 23, 22, 21, r18-28 days.	1,250,000	Labiatae
<i>Agastache scrophulariaefolia</i> Purple Hyssop	Surface	Spr, Dor	B	B	B	Genesis seed tests indicate dormant seed/cold moist treatment may not be necessary. Plant spring or dormant.	Germ 72.4, 73, na, r42-92 (50)%. Dorm 11.4, 0.0, 0.0, r0.0-52 (52)%. Test 27, 27, na, r19-33 days.	1,200,000	Labiatae
<i>Ageratina altissima</i> (<i>Eupatorium rugosum</i>) White Snake Root*	Surface, L	Spr	B	B	B	Seed spring or dormant, test data show little or no dormancy.	Germ 81.9, 84, 84, r71-91 (20)%. Dorm 4.7, 0.0, 0.0, r0.0-20 (20)%. Test 27, 26, 28, r23-31 days.	3,500,000	Compositae
<i>Agrostis gigantea</i> (<i>A alba</i>) Red Top Grass*	Surface	Spr, Dor	B	B	B	As a nurse crop, plant anytime.		5,000,000	Poaceae
<i>Agrostis hyemalis</i> Winter Bentgrass	Surface	Spr, Dor	B	B	B	Preliminary data indicate this seed is nondormant 67% of lots. 1 of 3 lots benefits significantly from dormant seeding. Plant spring or dormant seed.	Germ 63.7, 62, na, r31-98 (67)%. Dorm 11, 0.0, 0.0, r0.0-33 (33)%. Test 40, 42, na, r27-50 days.	9,600,000	Poaceae
<i>Agrostis perennans</i> Autumn Bentgrass	Surface	Spr, Dor	B	B	B	This seed is nondormant. Plant spring or dormant seed as a nurse crop.	Germ 82.4, 87, na, r60-94 (34)%. Dorm 0.0, 0.0, 0.0 (0.0)%. Test 25, 25 na, r13-38 days.	8,000,000	Poaceae
<i>Agrostis stolonifera</i> (<i>A alba palustris</i>) Bent Grass*	Surface	Spr, Dor	B	B	B	As a nurse crop, plant anytime.		6,400,000	Poaceae
<i>Alisma subcordatum</i> Common Water Plantain	Surface	Dor, W	B	B	B	This seed is strongly dormant & should be fall planted. But, constructed basins should be seeded when ground conditions allow.	Germ 5.3, 2.0, 1.0, r0.0-20 (20)%. Dorm 84.7, 86, 86, r69-95 (26)%. Test 36, 30, 29, r29-49 days.	1,300,000	Alismataceae
<i>Alisma triviale</i> Large Flowered Water Plantain	Surface	Dor, W	B	B	B	This seed is strongly dormant & should be fall planted. But, constructed basins should be seeded when ground conditions allow.	Germ 3.7, 1.0, 1.0, r1-9 (8.0)%. Dorm 87.3, 91, 91, r80-90 m(11)%. Test 33, 30, na, r29-39 days.	960,000	Alismataceae
<i>Allium canadense</i> Wild Onion	Bury	Fresh, Dor, Rec	D	D	D	Limited test data indicate a significant percent of the bulbils are dormant. Plant fresh or dormant.	Germ 18.3, 20, na, r4-31 (27)%. Dorm 47, 41, na, r15-85 (70)%. Test 39, 35, na, r26-55 days.	9,000	Liliaceae
<i>Allium cernuum</i> Nodding Wild Onion	Facul	Dorv	B	B	D	Genesis test data indicate this species has a strong requirement for dormant seeding.	Germ 19.9, 14.5, 26, r7-52 (45)%. Dorm 70.7, 72, 78, r33-90 (57)%, Test 32, 31, 22, r18-59 days.	128,000	Liliaceae
<i>Allium schoenoprasum</i> Chives	Bury	Spr	B	B	D	Limited test data indicate little or no dormancy. Green roof seedlings only.	Germ 91%. Dorm zero%.		Liliaceae
<i>Allium tricoccum</i> Wild Leek	Bury*	Dor	R	R	R	Preliminary data indicates this seed requires dormant seeding.	Germ 1, 1, 1, r1-1 (0)%. Dorm 90.5, 90.5, na, r87-94 (7.0)%. Test 35, 35, na, r28-42 days.	250,000	Liliaceae
<i>Ammannia robusta</i> Scarlet Loosestrife	Surface	Dor	B	B	B	Preliminary data indicate this seed has a strong requirement for dormant seeding.	Germ 5%. Dorm 83%. Test 26 days.	27,500,000	Lythraceae
<i>Amorpha canescens</i> Leadplant	Facul	Spr, Dorv	B/D	D	D	Genesis test data indicate hulled seed is successful by spring or dormant seeding. Scarify & inoculate for spring planting, dormant plant with inoculated, unscarified seed.	Germ 63.1, 63, 63, r 6-96.5 (90.5)%. Hard 15.7, 10, 4, r0.0-60 (60)%. Test 18, 15, 12 r12-43 days.	310,000	Leguminosae

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Amorpha fruticosa</i> Indigo Bush	Bury	Dorv, Spr	B	D	D	Genesis test data indicate seed is successful by spring or dormant seeding. Some lots may benefit from dormant seeding. Scarify & inoculate for spring planting, dormant plant with inoculated, unscarified seed.	Germ 70.4, 75, na, 52-79 (27)%. Hard 13.4, 7.0, na, 4-38 (34)%. Test 25, 27 27, r, 17-27 (10) days.	60,000	<i>Leguminosae</i>
<i>Andropogon gerardii</i> Big Bluestem	Facul	Spr, Dorv*	B	D	D	Plant spring or dormant, but spring plantings develop more readily due to less weed pressure.		150,000	<i>Poaceae</i>
<i>Andropogon virginicus</i> Broomsedge	Bury//Surface	Dorv	D	D	D	Limited data shows dormant seeding is strongly required in most lots. Fluffy seed must be incorporated or it will blow away. Surface sow debarbed seed.	Germ 50, 53, na, r6-88 (82)%. Dorm 43.3, 42.5, na, r6-82 (76)%. Test 37 days.	250,000	<i>Poaceae</i>
<i>Anemone canadensis</i> Meadow Anemone	Bury	Dor, Rec	D	D	D	Our data consistently show high percentages of dormant seed; dormant seed with properly cold-stored, moist seed.	Germ 7.2, 4.0, 2.0, r 0-34.5 (34.5)%. Dorm 60.6, 59.5, 43, r30-87 (57)%. Test 32, 32, 32, 28-35 (7) days.	150,000	<i>Ranunculaceae</i>
<i>Anemone cylindrica</i> Thimbleweed	Surface	Dorv	B	B	B	Test data show that dormancy varies from year to year, & dormant seeding is required to insure germination.	Germ 67.6, 80.0, 80, 3-96.5 (93.5)%. Dorm 16.5, 2.0, 0.0, 0-89 (89)%. Test 35, 32, 41, 29-43 H55days.	500,000	<i>Ranunculaceae</i>
<i>Anemone virginiana</i> Tall Anemone	Surface	Dorv	B	B	B	Test data show that dormancy varies from year to year, & dormant seeding is required to insure germination.	Germ 58, 70, na, r1.0-98 (97)%. Dorm 30.1, 26, 4, r0.0-81 (81)%. Test 35, 37, 39, r25-42 days.	400,000	<i>Ranunculaceae</i>
<i>Angelica atropurpurea</i> Angelica	Bury	Dor, Rec	D	D	D	Plant fresh seed or dormant plant properly stored seed. Semi-hydrophilic.	Germ 3.8, 2.0, 2.0, r0.0-14 (14)%. Dorm 79.1, 82, 90, 65-90 (25)%. Test 34, 33, na r28-43 days.	92,000	<i>Umbelliferae</i>
<i>Antennaria neglecta</i> Field Pussytoes	Surface	Fresh, Rec	B	B	B	Recalcitrant. Seed should be minimally dried (1 week), cleaned & immediately sown or stored in ziplock bag in a refrigerator. Seeds die quickly in conventional dry storage.	Germ 2.0%. Dorm 95%. Test 39 days.	4,400,000	<i>Compositae</i>
<i>Antennaria plantaginifolia</i> Pussy toes	Surface	Fresh, Rec	B	B	B	Recalcitrant. Seed should be minimally dried (1 week), cleaned & immediately sown or stored in ziplock bag in a refrigerator. Seeds die quickly in conventional dry storage Total viability after 1 year dry storage was 11%..		4,400,000	<i>Compositae</i>
<i>Apocynum cannabinum</i> Indian Hemp	Surface	Spr, Dorv	B	B	B	Dormancy varies from year to year. Spring may be reasonably successful half the time, but dormant seed to increase germination & establishment. Debeard.	Germ 76.1, 84.8, na, r41-94 (53)%. Dorm 16.4, 6.8, na, r0.0-52 (52)%. Test 34, 34, na r29-38 days.	590,000	<i>Apocynaceae</i>
<i>Aquilegia canadensis</i> Columbine	Surface	Dorv, Rec	B	B	B	Successionally plant fresh seed or dormant plant properly stored seed. Semi-hydrophilic.	Germ 30.9, 19, 19, r3.0-98 (95)%. Dorm 49.8, 52, 74, r0.0-92 (92)%. Test 35, 35, 38 r23-47 days.	530,000	<i>Ranunculaceae</i>
<i>Arisaema triphyllum</i> Jack in the Green	Bury*	Dor, Rec	R	R	R	Hand rake fresh, properly stored seed under an existing overstory.	Germ 1, 1, 1, r1.0-1.0 (0.0)%. Dorm 55.7, 80, na, r80-83 (3.0)%. Test 30, 28, na, r26-36 days.	7,500	<i>Araceae</i>
<i>Arnoglossum atriplicifolium</i> (<i>Cacalia atriplicifolia</i>) Pale Indian Plantain*	Facul	Dor	B	B	D	Limited test data indicate dormant seeding will significantly increase germination in 1/3 of lots.	Germ 63.3, 72, na, r26-92 (66)%. Dorm 26.7, 25, na, r4-51 (47)%. Test 26, 26, na, r11-40 days.	100,000	<i>Compositae</i>

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Arnoglossum plantagineum</i> (<i>Cacalia plantaginea</i>) Prairie Indian Plantain*	Facul	Dor	B	B	D	Dormant seeding is required.	Germ 4.8, 3, na, r1-12 (11)%. Dorm 85.5, 90, na, r70-92 (22)%. Test 45, 38, na, r28-83 days.	100,000	Compositae
<i>Arnoglossum reniforme</i> (<i>Cacalia muhlenbergii</i>) Great Indian Plantain	Facul	Spr	B	B	D	Initial datum indicates dormant seeding is not always needed.	Germ 66%. Dorm 13%. Test 34 days.	100,000	Compositae
<i>Aronia</i> (<i>Pyrus</i> , <i>Photina</i>) <i>melanocarpa</i> Black Chokeberry	Bury (Surface)	Dor	B	B	B	Natural area seedings must be dormant seeded. Drill dried 'berries' or surface sow cleaned seed.	Germ 4%. Dorm 58%. Test 46 days.	200,000	Rosaceae
<i>Artemisia campestris</i> (<i>Artemisia caudata</i>) Beach Wormwood*	Surface	Dor	B	B	B	Genesis test data indicate 75% of lots require dormant seeding.	Germ 19.3, 14, na, r8.0-41 (33)%. Dorm 57.8, 72, na, r2.0-85 (83)%. Test 36, 36, na r35-38 days.	480,000	Compositae
<i>Artemisia ludoviciana</i> Prairie Sage	Surface	Dor	B	B	B	Genesis test data indicate some lots are only slightly dormant.	Germ 86.5, 86.5, na, r84-89 (5)%. Dorm 6.5, 6.5, na, r4.0-9.0 (5.0)%. Test 20 days.	4,203,000	Compositae
<i>Asarum canadense</i> Wild Ginger	Bury*	Dor	R	R	R	Plant fresh-picked seed, or dormant seed with seed that has been stored in a ziplock in a refrigerator. Extant overstory only!	Germ 0.0%. Dorm 97%. Test 29 days.	98,600	Aristolochiaceae
<i>Asclepias amplexicaulis</i> Sand Milkweed	Facul	Dorv	B	D	D	Limited seed test data indicate dormant seeding is strongly required.	Germ 14%. Dorm 84%. Test 35 days.	39,000	Asclepiadaceae
<i>Asclepias incarnata</i> Swamp Milkweed	Facul	Dorv, Spr	B	D	D	Dormancy varies from year to year. Spring may be reasonably successful 1 out of 3 years, but dormant seed to increase germination & establishment.	Germ 55.6, 59, 33, r12-92.5 (80.5)%. Dorm 29.9, 22, 50, r1.0-76 (75)%. Test 33, 32, 25 r21-58 days.	100,000	Asclepiadaceae
<i>Asclepias sullivantii</i> Sullivant's Milkweed	Facul	Dorv	B	D	D	Genesis test data indicate most lots require dormant seeding.	Germ 39.5, 28, na, r12-85 (73)%. Dorm 51.6, 64, na, r9.0-85 (76)%. Test 30, 28, 28 r25-40 (15) days.	84,000	Asclepiadaceae
<i>Asclepias syriaca</i> Common Milkweed	Facul	Dorv, Spr	B	D	D	Dormancy varies from year to year. Spring may be reasonably successful half the time, but dormant seed to increase germination & establishment.	Germ 51.2, 61, 20, r10-89 (79)%. Dorm 33.8, 29.5, 33, r7.0-75 (68)%. Test 31, 28, 28, r22-52 days.	75,000	Asclepiadaceae
<i>Asclepias tuberosa</i> Butterflyweed	Facul	Spr, Dorv	B	D	D	Genesis test data indicate most lots can be successfully established from spring planting. Nondormant lots are common.	Germ 74.6, 83, 87, r28-98 (70)%. Dorm 8.4, 3.0, 0.0, r0.0-65 (65)%. Test 23, 31, 14, r12-37 days.	90,000	Asclepiadaceae
<i>Asclepias verticillata</i> Whorled milkweed	Facul	Spr, Dorv	B	B	D	Dormancy varies from year to year. Spring may be reasonably successful 2 out of 3 years, but dormant seed to increase germination & establishment.	Germ 63.1, 75, 75, r3.0-97 (94)%. Dorm 23.3, 5.0, 3.0, r0.0-90 (90)%. Test 34, 33, 37, r14-31 (17) days.	210,000	Asclepiadaceae
<i>Astragalus canadensis</i> Canada Milkvetch	Facul	Dor, Leg	B	D	D	Genesis seed tests indicate this seed typically has a high percentage of hard seed & may strongly benefit or require dormant seeding to establish a good st&, but spring planting inoculated scarified seed is necessary for rhizobia establishment. Dormant seed with inoculated, unscarified seed.	Germ 14.5, 8, 4, r2-44 (42)%. Dorm 77.8, 85, 93, r48-95 (47)%. Test 21, 22, 16, r14-31 days.	270,000	Leguminosae

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Baptisia australis</i> Blue Wild Indigo	Bury/Facul	Dor, Leg	B/D	D	D	Genesis seed tests indicate this seed typically has a significant percentage of hard seed & may strongly benefit or require dormant seeding to establish a good st&, but spring planting inoculated scarified seed is necessary for rhizobia establishment. Dormant sow with inoculated, unscarified seed.	Germ 30.9, 38, na, r3-74 (71)%. Hard 49.1, 40, na, r11-91 (80)%. Test 33, 33, na, r15-51 days.	26,000	Leguminosae
<i>Baptisia bracteata</i> (<i>B leucophaea</i>) Cream Indigo*	Bury/Facul	Dor, Leg	B/D	D	D	Genesis seed tests indicate this seed often has high percentage of hard seed & may strongly benefit or require dormant seeding to establish a good st&, but spring planting inoculated scarified seed is necessary for rhizobia establishment. Dormant seed with inoculated, unscarified seed.	Germ 19.3, 11, na, r3-61 (58)%. Hard 70.7, 80, 82, r24-94 (67)%. Test 33, 31, na, 21-49 days.	27,000	Leguminosae
<i>Baptisia lactea</i> (<i>B alba macrophylla</i>) White Indigo	Bury/Facul	Dor, Leg	B/D	D	D	Genesis seed tests indicate this seed typically has a high percentage of hard seed & may strongly benefit or require dormant seeding to establish a good st&, but spring planting inoculated scarified seed is necessary for rhizobia establishment. Dormant seed with inoculated, unscarified seed.	Germ 12.5, 10, 14, r2-44 (42)%. Hard 70.4, 76, 78, r26-90 (64)%. Test 34, 33, 49, r18-49 days.	29,000	Leguminosae
<i>Baptisia tinctoria</i> Yellow Indigo	Bury/Facul	Dor, Leg	B/D	D	D	Genesis seed test data indicate this seed often has a high percentage of hard seed & may strongly benefit or require dormant seeding to establish a good st&, but spring planting inoculated scarified seed is necessary for rhizobia establishment. Dormant sow with inoculated, unscarified seed.	Germ 6%. Hard 50%, Test 29 days.	80,000	Leguminosae
<i>Beckmannia syzigachne</i> American Slough Grass	Surface	Spr	B	B	B	Test data show only slight to modest dormancy. Plant spring or dormant.	Germ 54, 54, na, r41-67 (26)%. Dorm 9.0, 9.0, na r4-14 (10)%. Test 29 days.	788,879	Poaceae
<i>Bidens aristosa</i> Showy Tickseed Sunflower	Surface	Dor	B	B	B	Requires stratification & should be sown on top of the ground November to March for germination the following spring. Bidens may be photodormant, sow on top of soil.	Germ 32, 24, na, r10-62 (52)%. Dorm 54.3, 69, na, r18-76 (58)%. Test 34, 39, 39, r25-39 days.	185,000	Compositae
<i>Bidens cernua</i> Nodding Bur Marigold	Surface	Dor	B	B	B	Test data shows a significant percentage of dormant seed requiring late fall seeding. Bidens may be photodormant, sow on top of soil.	Germ 33.4, 11.7, r3.0-90 (87)%. Dorm 53.5, 77, 77, r0.0-87 (87)%. Test 32, 29.5, 29, r23-48 days.	330,000	Compositae
<i>Bidens connata</i> Purple Stemmed Tickseed	Surface	Dor	B	B	B	Test data shows a high percentage of dormant seed requiring late fall seeding. Bidens may be photodormant, sow on top of bare soil late fall.	Germ 8, 7, na, r4-12%. Dorm 81, 81, na, r74-88%. Test 36, 35.5, na r29-42 days.	226,773	Compositae
<i>Bidens frondosa</i> Common Beggar's Tick	Surface	Dor	B	B	B	Test data shows a high percentage of dormant seed requiring late fall seeding. Bidens may be photodormant, sow on top of bare soil late fall.	Germ 29.4, 24, na, r8.5-53 (42.5)%. Dorm 60.7, 70, na, r28-86 (58)%. Test 32, 30, 29, r 26-45 days.	100,000	Compositae
<i>Bidens trichosperma</i> (<i>B coronata</i>) Tall Swamp Marigold	Surface	Dor	B	B	B	Initial test data shows a high percentage of seed requiring dormant seeding. A nondormant lot is known. Bidens may also be photodormant, sow on top of bare soil late fall.	Germ 35.2, 4.5, na, r4-97 (93)%. Dorm 55.3, 77, na, r0.0-88 (88)%. Test 42, 41.5, na, r34-49 days.	190,000	Compositae
<i>Blephilia ciliata</i> Downy Wood Mint	Surface	Spr, Dor	B	B	B	For field establishment, spring or dormant seed on top of the ground.	Germ 63, 63, na, r44-82 (38)%. Dorm 30, 30, na, r7.0-52 (45)%. Test 34, 34, na, r 30-37 days.	5,000,000	Labiatae

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Blephilia hirsuta</i> Hairy Wood Mint	Surface	Dor	B	B	B	For field establishment, dormant seed on top of the ground.	Germ 21, 18, na, r2.0-44 (42)%. Dorm 49, 49, na, r33-64 (31)%. Test 34, 34, na, r26-43 days.	3,750,000	Labiatae
<i>Boehmeria cylindrica</i> False Nettle	Surface	Spr, Dorv	B	B	B	For field establishment, dormant seed is best. Preliminary test data indicate some lots are non-dormant, but lots with 50- 83% dormancy are known.	Germ 59, 69, na, r12-90 (78)%. Dorm 32, 22, 0.0, r0.0-83 (83)%. Test 32, 32, 37, r27-35 days. H89	2,900,000	Urticaceae
<i>Bolboschoenus fluviatilis</i> (<i>Scirpus</i> f.) River Bulrush*	Bury	Dor	D	D	D	Dormant seed. River bulrush has very low germination rates (5% or less) without dormant seeding.	Germ 1.0, 1.0, 0.0, r0.0-5 (5.0)%. Dorm 75, 83, 90, r67-94 (27)%. Test 33, 32, na, r22-48 days.	67,000	Cyperaceae
<i>Boltonia asteroides</i> False Aster	Surface	Spr, Dorv	B	B	B	This species may be spring or dormant seeded. Some lots are non dormant while others are moderately improved by dormant seeding.	Germ 60, 73, na, r6.0-86 (80)%. Dorm 27, 10, 0.0, r 0.0-83 (83)%. Test 33, 31, 39, r25-39 days.	4,500,000	Compositae
<i>Bouteloua curtipendula</i> Side Oats Gramma	Bury	Spr, Dorv	D	D	D	Plant spring or dormant, but spring plantings have less weed pressure & develop more readily.		115,000	Poaceae
<i>Bouteloua gracilis</i> Blue Gramma	Facul	Spr, Dorv	B	D	D	Plant spring or dormant, but spring plantings have less weed pressure & develop more readily. Some lots are significantly dormant.		760,000	Poaceae
<i>Brickellia eupatorioides corymbulosa</i> (<i>Kuhnia e. c.</i>) False Boneset*	Surface	Spr, Dor	B	B	B	Field sow spring or dormant. Seed test data indicates little or no dormancy.	Germ 81.3, 84, 84, r47-97 (50)%. Dorm 1.4, 0.0, 0.0, r0.0-9.0 (9.0)%. Test 27, 26, 21, r20-44 days.	500,000	Compositae
<i>Bromus ciliatus</i> Downy Brome	Bury	Dorv	D	D	D	Plant spring or dormant, but spring plantings have less weed pressure & develop more readily. 40% of lots are significantly dormant.	Germ 48, 60, 64, r1.0-90 (89)%. Dorm 16, 8, 0.0, r0.0-55 (55)%. Test 32, 33, na, r18-40 days.	105,000	Poaceae
<i>Bromus inermis</i> Smooth Brome	Bury	Spr	*	*	*	Just say no.		*	Poaceae
<i>Bromus Kalmii</i> Kalm's Brome	Bury	Sprv, Dorv	D	D	D	Test data indicate most lots can be seeded spring or dormant, but occasional lots strongly require dormant seeding for effective establishment.	Germ 62, 73, 73, r3.0-90 (87)%. Dorm 25, 18, 0.0, r0.0-81 (81)%. Test 27, 28, 29, r14-35 days.	180,000	Poaceae
<i>Bromus latiglumis</i> (<i>altissimus</i>) Ear-Leafed Brome	Bury	Dorv	D	D	D	Best dormant seeded, almost half of all lots significantly need cold moist stratification, but non-dormant lots are known.	Germ 75, 85, 98, r23-98%. Dorm 10, 3, 0.0, r0.0-36%. Test 29, 27, 34, r22-41 days.	110,000	Poaceae
<i>Bromus pubescens</i> Woodland Brome	Bury	Sprv, Dorv	D	D	D	Best dormant seeded, occasional lots strongly require cold moist stratification, early spring plantings work also.	Germ 64, 81, na, r9.0-98 (89)%. Dorm 21, 3, 0, r0.0-80 (80)%. Test 32, 30, 29 r20-38 days.	120,000	Poaceae
<i>Buchloe dactyloides</i> Buffalo Grass	Bury	Spr	*	*	D	Seed mid-late spring only.	Germ 68.8, 73, na, r20-95 (75)%. Dorm 20.2, 17, 43, r0.0-62 (62)%. Test 21, 21, na, r14-27 days.	53,000	Poaceae
<i>Calamagrostis canadensis</i> Blue Joint Grass	Surface	Spr, Dorv	B	B	B	Seed early spring or dormant, most lots have low percentage dormant seeds.	Germ 64.6, 56, 52, r37-96 (59)%. Dorm 14.1, 10, 0.0, r0.0-44 (44)%. Test 30, 28, 27, r22-40 days.	3,500,000	Poaceae
<i>Calamagrostis stricta</i> (<i>Calamagrostis inexpansa</i>) Bog Reed Grass*	Surface	Spr, Dor	B	B	B	Seed can be sown spring or dormant, but stand establishment best from plugs (2010, due to availability).	Germ 87.5, 86.8, na, r77-98 (22)%. Dorm 3.5, 3.5, na, r0.0-7.0 (7.0)%. Test 28 days.	3,500,000	Poaceae

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Calamovilfa longifolia magna</i> Sand Reed Grass	Facul	Dor	B	B	D	Variety <i>magna</i> germinates well in the greenhouse after dry stratification, but Genesis limited test data indicates that some lots benefit greatly from cold moist stratification (23% to 71.5% dormant seed).	Germ 24.8, 21.5, na, r5.0-48 (43)%. Dorm 47.8, 49, na, r23-71.5 (48.5)%. Test 22, 21.5, na, r17-26 days.	160,000	Poaceae
<i>Caltha palustris</i> Marsh Marigold	Bury*	Fresh, Rec, Succ	R	R	R	Plant fresh seed or dormant seed using properly stored moist seed.	Germ 2.8, 2.0, 2.0, r0.0-7.0 (7.0)%. Dorm 62.2, 70, 70, r35-84 (49)%. Test 39, 35, 35, r28-59 days.	700,000	Ranunculaceae
<i>Camassia scilloides</i> Wild Hyacinth	Bury*	Dor, Fresh?	BR	BR	BR	Genesis seed tests confirm a strong requirement for dormant seeding.	Germ 3.0, 2.0, 2.0, r1.0-6.0 (6.0)%. Dorm 89, 91, na, r71-97 (26)%. Test 29, 29, na, r15-37 days.	67,000	Liliaceae
<i>Campanula rotundifolia</i> Harebell	Surface	Dor	B	B	B	Dormant seed is best.		1,400,000	Campanulaceae
<i>Campanulastrum americana</i> (<i>Campanula americana</i>) Tall Bellflower*	Surface	Spr, Dorv	B	B	B	Plant dormant or spring. Seed tests indicate many lots have little to no dormant seed, & are capable of germination soon after harvesting. 42% of lots have 64-85% dormant seed, requiring dormant seeding - light..	Germ 18, 18, na, r4.0-32 (28)%. Dorm 75.5, 75.5, na, r64-87 (23)%. Test 28, 28, na, 25-31 days.	2,900,000	Campanulaceae
<i>Carex annectens</i> Yellow-fruited Sedge	Surface	Dorv	B	B	B	Small seeds should be surface sown dormant, but nondormant lots are known.	Germ 58, 69, 8.0, r8.0-97 (89)%. Dorm 31.4, 21.5, 0.0, r0.0-86 (86)%. Test 32, 31.5, 26, r26-41 days.	1,600,000	Cyperaceae
<i>Carex annectens xanthocarpa</i> Yellow-fruited Sedge	Surface	Dorv	B	B	B	Small seeds are best surface sown dormant, but spring seeding has success < 40% of lots.	Germ 40.4, 28, na, r6.0-94 (88)%. Dorm 38, 27, na, r0.0-87 (87)%. Test 34, 31, na, r28-43 days.	1,500,000	Cyperaceae
<i>Carex aquatilis altior</i> Lake Sedge	Surface	Dor	B	B	B	Small seeds must be dormant seeded on open soil.	Germ 23.3, 8.0, 6.0, r0.0-64 (64)%. Dorm 44.6, 50, 0.0, r0.0-91 (91)%. Test 31, 32.5, 34, r21-36 days.	1,200,000	Cyperaceae
<i>Carex bebbii</i> Bebb's Sedge	Surface	Dor, Spr	B	B	B	Small seeds are best surface sown dormant, but spring seeding has success in 50% of lots.	Germ 52, 42.5, 94, r4.0-94 (94)%. Dorm 39.2, 52, 0.0, r0.0-84 (84)%. Test 33, 34, na, r20-43 days.	1,300,000	Cyperaceae
<i>Carex bicknellii</i> Bicknell's Oval Sedge	Surface	Sprv, Dorv	B	B	B	Most lots require or benefit from dormant seeding for field establishment.	Germ 45.3, 46, na, r1.0-88 (87)%. Dorm 42, 42.8, 0.0, r0.0-89 (89)%. Test 34, 34, 34, 22-49 days.	420,000	Cyperaceae
<i>Carex blanda</i> Common Wood Sedge	Surface	Fresh, Rec	R	R	R	Using plants is best. Sow fresh seed quickly after harvesting, or properly cold moist stored seed as dormant. H& seed & rake in to establish seed soil contact. Seed rarely available. Recalcitrant & smut!	Germ 6.0, 4.0, 2.0, r2.0-14 (12)%. Dorm 89.3, 89, na, r84-95 (11)%. Test 32, 32, na, r25-37 days.	325,000	Cyperaceae
<i>Carex brevior</i> "Shorter" Sedge	Surface	Sprv, Dor	B	B	B	Spring seeding works most years, with zero to slight dormancy; one in six being significantly to strongly dormant.	Germ 62.4, 90, 93, r2.0-93 (91)%. Dorm 23.8, 5.0, 0.0, r0.0-78 (91)%. Test 35, 34, 27, r27-49 days.	410,000	Cyperaceae
<i>Carex bromoides</i> Brome Sedge	Surface	Spr, Dor	B	B	B	Plant dormant or spring. Limited data shows nondormant seed.	Germ 92%. Dorm 0.0%. Test 43 days.	1,400,000	Cyperaceae
<i>Carex buxbaumii</i> Andes Mint Sedge	Surface	Dor	B	B	B	Dormant seeding absolutely necessary for field establishment.		340,000	Cyperaceae

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Carex cephaloidea</i> Thinleaf Sedge	Surface	Spr, Dor	B	B	B	Sow dormant or spring. Limited data suggest this seed is non-dormant.	Germ 89, 89, na, r89-90 (1.0%). Dorm 2.0, 2.0, na, r0.0-4.0 (4.0)%. Test 20, 20, na, r7-33 days.	650,000	Cyperaceae
<i>Carex cephalophora</i> Short-headed Bracted Sedge	Surface	Spr, Dor	B	B	B	Field establishment best from dormant seeding; seed is significantly dormant.	Germ 67%. Dorm 22%. Test 38 days.	460,000	Cyperaceae
<i>Carex comosa</i> Bottlebrush Sedge	Surface	Sprv, Dorv	B	B	B	Spring seeding works most of the time, but 1/3 of lots tested are modestly to significantly dormant.	Germ 66.4, 74.5, 66, r15-96 (81)%. Doem 20.8, 14.5, 3.0, r0.0-77 (77)%. Test 36, 37.5, 38, r26-46 days.	480,000	Cyperaceae
<i>Carex conoidea</i> Openfield Sedge	Surface	Dor	B	B	B	Field establishment must be from dormant seeding. Seeds are highly dormant (≈90%).	Germ 3.5, 3.5, na, r3.0-4.0 (1.0)%. Dorm 90, 90, 90, r90 (0.0)%. Test 35 days.	460,000	Cyperaceae
<i>Carex crawfordii</i> Crawford's Sedge	Surface	Spr, Dorv	B	B	B	Field sow spring, but dormant planting may significantly increase germination. Germination tests indicate this species ranges from 2-22% dormant seed.	Germ 78.5, 78.5, na, r63-94%. Dorm 12, 12, 2.0, r2.0-22%. Test	2,200,000	Cyperaceae
<i>Carex crinita</i> Fringed Sedge	Surface	Sprv, Dorv	B	B	B	Field establishment is best by dormant seeding; greenhouse crops by cold moist stratification.	Germ 53.5, 61.5, na, r1.0-91 (90)%. Dorm 27.1, 10, 2.0, r0.0-95 (95)%. Test 34, 36, 27, r27-40 days.	460,000	Cyperaceae
<i>Carex cristatella</i> Crested Sedge	Surface	Spr, Dorv	B	B	B	Spring field sowing works well 8 out of 9 years, but 74% dorm will get you if you don't look out.	Germ 68.3, 73, 73, r22-97 (75)%. Dorm 14.9, 12, 0.0, r0.0-74 (74)%. Test 34, 35, 27, r27-44 days.	1,600,000	Cyperaceae
<i>Carex crus-corvi</i> Raven's Foot Sedge	Surface	Sprv, Dorv	B	B	B	Dormant seeding is best for field establishment & cold moist stratification is best for a good green house crop. Germinatin & dormancy very variable. Germ 2-92, ave 45.2%. Dorm 2-82, ave 38.6%. Test 29-47, ave 37 days	Germ 45.2, 57, na, r2.0-94 (92)%. Dorm 38.6, 23, na, r2.0-81 (79)%. Test 37, 36, na, r29-47 days.	325,000	Cyperaceae
<i>Carex davisii</i> Davis' Sedge	Surface	Dor	B	B	B	Dormant seeding is necessary for field establishment. Easy in greenhouse with long, cold moist stratification. Unstratified seed germinates 0-8%.	Germ 4.6, 4.0, 4.0, r0.0-8.0 (80.0)%. Dorm 88.1, 89, 85, r81-98 (17)%. Test 40, 37, 39, r24-68 days.	190,000	Cyperaceae
<i>Carex emoryi</i> Emory's Sedge	Surface	*	B	B	B	Cloning, self-sterile (?).		2,500,000	Cyperaceae
<i>Carex Frankii</i> Frank's Sedge	Surface	Dorv	B	B	B	Dormant seed for field establishment. One rare nondormant lot.	Germ 21.8, 7.0, 2.0, r2.0-90 (88)%. Dorm 67.9, 82.5, na, r0.0-89 (89)%. Test 32, 33, na, r23-41 days.	410,000	Cyperaceae
<i>Carex gracilescens</i> Slender Wood Sedge	Surface	Dor, Rec?	B	B	B	Dormant seeding is necessary for field establishment. Initial data shows 5-9% germinable & 87-89% dormant seed..	Germ 7.0, 7.0, na, r5.0-9.0 (4.0)%. Dorm 88, 88, na, r87-89 (2.0)%. Test 28, 28, na, r25-30 days.	764,353	Cyperaceae
<i>Carex gracillima</i> Purple-Sheathed Graceful Sedge	Surface	Dor	B	B	B	Dormant seeding is necessary for field establishment.	Germ 22.5, 8.0, 2.0, r2.0-66 (64)%. Dorm 61.5, 72, na, r16-86 (70)%. Test 31, 33, 33, r22-36 days.	450,000	Cyperaceae

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Carex granularis</i> Meadow Sedge	Surface	Dor	B	B	B	Dormant seeding is a strong necessity for field establishment.	Germ 5.1, 4.0, 2.0, r1.0-11.5 (10.5)% Dorm 81, 79, 88, r68-95 (27)% Test 39, 36, 39, r29-48 days.	330,000	Cyperaceae
<i>Carex gravida</i> Long Awned Bracted Sedge	Surface	Spr, Dorv	B	B	B	Field sow dormant or spring, some lots modestly dormant. Green house germination will be enhanced by cold moist stratification.	Germ 65.2, 68, na r32-87 (55)% Dorm 11.7, 11, na, r0.0-25 (25)% Test 34, 37, 42, r23-42 days.	280,000	Cyperaceae
<i>Carex grayi</i> Gray's Sedge	Facul	Dor	B	D	D	Dormant seed only for field establishment.	Germ 6.3, 4.0, 4.0, r1.0-24 (23)% Dorm 75.9, 76, na, r55-95 (40)% Test 37, 34, na, r26-46 days.	19,500	Cyperaceae
<i>Carex grisea</i> Wood Gray Sedge	Surface	Dor	B	B	B	Field sow dormant only.	Germ 3.9, 2.5, 0.0, r0.0-11 (11)% Dorm 79.3, 84.5, na, r77-97 (20)+H132% Test 34, 36, 38, r24-48 days.	125,000	Cyperaceae
<i>Carex hirsutella</i> Fuzzy Wuzzy Sedge	Surface	Dor	B	B	B	Field sow dormant only.	Germ 18.6, 17.5, na, r4.0-33 (29)% Dorm 64.8, 61, 50, r50-93 (43)% Test 35, 35, 35, r34-35 days.	400,000	Cyperaceae
<i>Carex houghtoniana</i> Houghton's Sedge	Facul	Dor/Spr	B	B	D	Dormant seed in permanent location may work or 90-120 days moist cold stratification for greenhouse work. Disturbance dependent, plants are short-lived.		73,000	Cyperaceae
<i>Carex hystericina</i> Porcupine Sedge	Surface	Sprv, Dorv	B	B	B	Dormant seeding is best, 50% of lots are significantly to strongly dormant. Nondormant lots & 90% dormant lots are known.	Germ 63.6, 73.3, na, r9.0-98 (89)% Dorm 25.3, 12.3, 0.0, r0.0-90.5 (90.5)% Test 36, 34, 34, r27-48 days.	460,000	Cyperaceae
<i>Carex intumescens</i> Swollen Sedge	Bury*	Dor	D	D	D	Remove perigynia for seed soil contact & quicker hydration & dormant seed only.	Germ 3.0, 4.0, 4.0, r1.0-4.0 (3.0)% Dorm 63.3, 87, na, r15-88 (73)% Test 36, 36, na, r35-36 days.	37,000	Cyperaceae
<i>Carex lacustris</i> Common Lake Sedge	Facul	Dor	B	B	D	Field establish from dormant seeding only. Considering dormancy, seed cost, & availability, plugging is better than seeding.	Germ 7.3, 5.0, 12, r0.0-17 (17)% Dorm 79.9, 80, na, r68-90 (22)% Test 39, 40, na, r22-59 days.	245,000	Cyperaceae
<i>Carex lupuliformis</i> Knobbed Hop Sedge	Facul	Dorv	B	B	D	Dormant seeding is best for field establishment, good results are possible some springs. Most lots are significantly to strongly benefited from dormant seeding.	Germ 24.3, 12.3, 1.0, r1.0-67 (66)% Dorm 61.3, 71.5, na, r11-91 (80)% Test 34, 35, 35 r25-41 days.	78,000	Cyperaceae
<i>Carex lupulina</i> Hop Sedge	Facul	Dorv	B	B	D	Dormant seeding is best for field establishment, good results are possible some springs. Most lots are significantly to strongly benefited from dormant seeding.	Germ 30.3, 16, 2.0, r2.0-78 (76)% Dorm 56.6, 68, na, r11-94 (83)% Test 33, 34, 35 days.	75,000	Cyperaceae
<i>Carex molesta</i> Troublesome Sedge	Surface	Dor/Spr?	B	B	B	Field establishment best by dormant seeding. Dormancy mechanisms vary widely (wildly) from year to year.	Germ 45.4, 50, 11, r2.0-84 (82)% Dorm 40.5, 23.5, 90, r8.0-9 (92)0% Days 37, 41, 41, r19-48 days.	600,000	Cyperaceae

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Carex muehlenbergia</i> Sand Sedge	Surface	Dor	B	B	B	Field establish by dormant seeding only. Adequate results are possible with 50% of lots 57-69% germ.	Germ 35.8, 33.5, na, r5.0-69 (64)%. Dorm 57.3, 59, na, r18-90 (72)%. Test 35, 35, na, r29-38 days.	240,000	Cyperaceae
<i>Carex muskingumensis</i> Muskingum Sedge	Surface	Dor	B	B	B	Field establishment best by dormant seeding; seed is significantly to strongly dormant.	Germ 24.5, 22.3, na, r16-37.5 (21.5)%. Dorm 60.8, 58.8, na, r44.5-81 (37.5)%. Test 33, 33, 33, r30-35 days.	650,000	Cyperaceae
<i>Carex nebraskensis</i> Nebraska Sedge	Surface	Dor	B	B	B	Seeds are strongly dormant, field establish by dormant seeding only.	Germ 18.3, 12, na, r4.0-39 (35)%. Dorm 73, 81, na, r49-89 (50)%. Test 29, 30, 30, r27-30 days.	480,000	Cyperaceae
<i>Carex normalis</i> Normal Sedge	Surface	Dor	B	B	B	Moderate stands can be established by spring seeding, but best by dormant seeding. > 70% of lots are > 50% dorm.	Germ 25.4, 25, na, r1.0-54 (53)%. Dorm 61.8, 62, na, r18-93 (75)%. Test 33, 34, na, r20-41 days.	770,000	Cyperaceae
<i>Carex pellita</i> Woolly Sedge	Surface	Dor	B	B	B	Mediocre establishment possible by spring seeding some years, but dormant seeding is best; dormancy ranges from 33 - 88%.	Germ 21.7, 16, na, r4.0-62 (58)%. Dorm 63.6, 69, na, r33-88 (55)%. Test 41, 42, na, r28-50 days.	290,000	Cyperaceae
<i>Carex pennsylvania</i> Pennsylvania Sedge	Surface	Fresh, Rec	B	B	B	H plant fresh or dormant with seed that has been properly stored. Fresh seed should be dried briefly (one week maximum), cleaned, stored in air-tight zip-lock bag in the refrigerator until sown (Cullina 2008).		480,000	Cyperaceae
<i>Carex praegracilis</i> Meadow Sedge	Surface	Dor	B	B	B	Seed is strongly dormant, 86%.	Germ 11%. Dorm 86. test 22 days.	618,529	Cyperaceae
<i>Carex projecta</i> Loose Headed Oval Sedge	Surface	Spr	B	B	B	Seed anytime, dormant or spring.	Germ 76.3, 80, na, r11-84 (73)%. Dorm 15.7, 13, na, r2.0-32 (30)%. Test 36, 34, 34, r34-09 days.	1,800,000	Cyperaceae
<i>Carex radiata</i> Straight-styled Wood Sedge	Surface	Fresh, Dor, Rec	B	B	B	H plant fresh or dormant with seed that has been properly stored. Fresh seed should be dried briefly (one week maximum), cleaned, stored in air-tight zip-lock bag in the refrigerator until sown (Cullina 2008).	Germ 1.0%, Dorm 91%. Test 29 days.	720,000	Cyperaceae
<i>Carex retrorsa</i> Retorse Sedge	Surface	Dor	B	B	B	Limited test data indicates dormant seeding is strongly necessary.	Germ 5.3, 6.0, na, r3.0-7.0 (4.0)%. Dorm 86, 85, na, r82-90 (9.0)%. Test 32, 30, 30, r30-32 days.	200,000	Cyperaceae
<i>Carex rosea</i> Curly-styled Wood Sedge	Surface	Fresh, Dor, Rec	B	B	B	Hand plant fresh or dormant with seed that has been properly stored. Fresh seed should be dried briefly (one week maximum), cleaned, & stored in air-tight zip-lock bag in the refrigerator until sown (Cullina 2008).	Germ 3.0, 4.0, 4.0, r1.0-4.0 (3.0)%. Dorm 83.7, 84, na, r75-92 (17)%. Test 31, 31, na, r30-32 days.	730,000	Cyperaceae
<i>Carex sartwellii</i> Running Marsh Sedge	Surface	Dorv	B	B	B	Dormant seeding is necessary, with 50% of lots significantly to strongly dormant.	Germ 59.3, 69.5, na, r14-84 (70)%. Dorm 30, 24, na, r1.0-71 (70)%. Test 31, 31, na, r29-32 days.	880,000	Cyperaceae
<i>Carex scoparia</i> Pointed Broom Sedge	Surface	Sprv, Dorv	B	B	B	Spring seeding works most years, but 20-30% of the time, you will be doomed to mediocrity. Alas.	Germ 71.7, 84.8, 41, r21-97 (76)%. Dorm 21.1, 7.8, 0.0, r0.0-70 (70)%. Test 37, 36, 32, r23-64 days.	1,400,000	Cyperaceae

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Carex shortiana</i> Short's Sedge	Surface	Dorv	B	B	B	Field establishment is best by dormant seeding. Occasional (12%) lots will work by spring seeding	Germ 17.9, 8.0, 8.0, r3.0-84 (81)%. Dorm 65.5, 74.3, 88 r1.0-92 (90)%. Test 35, 35, 40 r21-50 days.	300,000	Cyperaceae
<i>Carex sparganoides</i> Burr Reed Sedge	Surface	Spr, Dor	B	B	B	Sow anytime, limited data indicates little to no dormancy.	Germ 65, 66, na, r39-90 (51)%. Dorm 18.7, 27, na, r0.0-29 (29)%. Test 31, 39, na r7-46 days.	500,000	Cyperaceae
<i>Carex sprengei</i> Sprengel's sedge	Surface	Dor	B	B	B	Dormant seeding is absolutely necessary for field establishment.	Germ 10.2, 8.0, 8.0, r0.0-35 (35)%. Dorm 64.4, 69, 88, r10-88 (78)%. Test 44, 39, na, r22-53 days.	220,000	Cyperaceae
<i>Carex squarrosa</i> Narrow Leaved Cattail Sedge	Surface	Sprv, Dorv	B	B	B	Dormant seeding is the safest method for field establishment. % of lots are strongly dormant.	Germ 50.3, 56.5, na, r7.0-92 (85)%. Dorm 42, 34, na, r0.0-88 (88)%. Test 36, 36, 35, r28-46 days.	270,000	Cyperaceae
<i>Carex stipata</i> Awn-fruited Sedge	Surface	Dorv, Sprv	B	B	B	Dormant seeding is best for field establishment. Spring seeding can fail. Fresh seed may also work.	Germ 49.9, 44, 18, r3.0-92 (89)%. Dorm 26.4, 5.0, 0.0, r0.0-91 (91)%. Test 39, 35, 34, r30-74 days.	550,000	Cyperaceae
<i>Carex straminea</i> Straw Sedge	Surface	Dorv, Hull	B	B	B	Dormant seed unhulled seed, spring plant hulled seed.	Germ 29.8, 12.5, na, r0.0-94 (94)%. Dorm 62.8, 80.5, na, r0.0-90 (90)%. Test 27, 36, na, r19-37 days.	1,600,000	Cyperaceae
<i>Carex stricta</i> Strict Sedge	Surface	Dor	B	B	B	Field establishment from dormant seeding only. Rare lots may grow from spring seedings.	Germ 24, 20.5, na, r3.0-88 (85)%. Dorm 45.2, 46, na, r3.0-84 (81)%. Test 35, 34, 39, r28-46 days.	1,000,000	Cyperaceae
<i>Carex Swanii</i>	Surface	Dor	B	B	B	Limited datum indicates field establishment from dormant seeding only. Germ 12%. Dorm 76%.	Germ 12%. Dorm 76%. Test 34 days.	217,017	Cyperaceae
<i>Carex tenera</i> Narrow Leaved Oval Sedge	Surface	Dor	B	B	B	Dormant seed only, seed is significantly dormant.	Germ 19.7, 12, na, r0.0-47 (47)%. Dorm 44, 42, 42 r42-48 (6.0)%. Test 36, 35, na r23-42 days.	880,000	Cyperaceae
<i>Carex torta</i> Twisted Sedge	Surface	Dor	B	B	B	Limited data shows dormant seeding is significantly necessary.	Germ 19%. Dorm 59%. Test 42 days.	815,000	Cyperaceae
<i>Carex tribuloides</i> Awn-fruited Sedge	Surface	Dorv, Spr	B	B	B	Dormant seeding is best; dormancy mechanisms highly variable, ranging from almost totally dormant to non dormant lots. Spring works well some years.	Germ 46.9, 44, na, r2.0-93 (91)%. Dorm 38.2, 31, 0.0, r0.0-92 (93)%. Test 39, 40, na r28-47 days.	1,600,000	Cyperaceae
<i>Carex trichocarpa</i> Hairy Fruit Sedge	Facul	Dor, Clone	B	B	D	Dormant seeding is mandatory, but plugging one flat per acre is most cost effective.	Germ 4.7, 3.0, 3.0 r3.0-8.0 (5.0)%. Dorm 64, 82, na, r19-91 (72)%. Test 26, 27, na, r23-28 days.	310,000	Cyperaceae
<i>Carex typhina</i> Cattail Sedge	Surface	Dorv	B	B	B	Preliminary test data indicate mixed dormancy mechanisms, field sow dormant for insurance.	Germ 50.5, 50.5, na, r9.0-92 (83)%. Dorm 41, 41, na, r2.0-80 (78)%. Test 31, 31, na r28-33 days.	245,000	Cyperaceae
<i>Carex utriculata</i> Bladder Sedge	Surface	Dor	B	B	B	Preliminary data suggests dormant seeding is necessary.	Germ 4.0%. Dorm 82%. Test 42 days.	200,000	Cyperaceae

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Carex vesicaria</i> Blister Sedge	Facul	Dor	B	B	B	Field establishment by dormant seeding only, typically >80% dormant seed.	Germ 9.0, 9.0, na, r8.0-10 (2.0)%. Dorm 82, 82, na, r80-84 (4.0)%. Test 42 days.	180,000	Cyperaceae
<i>Carex vulpinoidea</i> Fox Sedge	Surface	Sprv, Dorv	B	B	B	70% of lots have no to slight or modest amounts of dormant seed & can be planted dormant or spring. Germination of 30% of lots are significantly to strongly enhance by dormant seeding. 10% of lots have less than 10% germ.	Germ 53.4, 62.5, na, r6.0-95 (89)%. Dorm 26.3, 14, 0.0, r0.0-88 (88)%. Test 35, 35, 34 r17-50 days.	1,450,000	Cyperaceae
<i>Castilleja coccinea</i> Indian Paintbrush	Surface	Dor, Hemipar	B	B	B	Species is hemiparasitic & require dormant seeding with seeds of a host species. Or, in late fall, rake the soil around existing host plants briskly then scatter the seed. Gently firm.		9,900,000	Scrophulariaceae
<i>Ceanothus americanus</i> New Jersey Tea	Facul	Dor	B	B	D	Dormant seed for field establishment, scarification may be necessary.	Germ 12.1, 5.8, 2.0, r2.0-66 (64)%. Dorm 73.4, 81, na, r29-88 (59)%. Hard 43.2, 35, 30 r25-69 (44)%. Test 34, 34, na r21-49 days	130,000	Rhamnaceae
<i>Celastrus scandens</i> Bittersweet	Bury	Dor, Rec	D	D	D	Macerated seed must be kept cool but not dried until dormant seeded.	Germ 1.0, 1.0, 2.0 r0.0-2.0 (2.0)%. Dorm 69.5, 77.5, 91, r32-91 (59)%. Test 35, 36, na, r29-40 days.	28,800	Celastraceae
<i>Cephalanthus occidentalis</i> Button Bush	Bury, L	Sprv, Dorv	D	D	D	Spring seeding works most years, but 30% of lots are significantly to strongly dormant.	Germ 70.1, 80, na, r18.5-93 (74.5)%. Dorm 12.2, 0.5, 0.0, r0.0-65.5 (65.5)%. Test 32, 33, 24, r21-42 days.	130,000	Rubiaceae
<i>Chamaecrista fasciculata</i> (Cassia fasciculata) Partridge Pea*	Bury/Facul	Dor, Leg	B/D	D	D	Genesis seed tests indicate this seed typically has a high percentage of hard seed & may strongly benefit or require dormant seeding to establish a good st&, but early spring planting inoculated scarified seed is necessary for rhizobia establishment. Dormant seed with inoculated, unscarified seed.	Germ 25.8, 23, 16, r4.0-64 (60)%. Hard 49.3, 48, 28, r17-84 (67)%. Test 21, 20, 21, r14-30 days.	58,000	Leguminosae
<i>Chasmanthium latifolium</i> Northern Sea Oats	Bury	Dorv, Spr	D	D	D	Dormant seeding is best for field establishment, with 60% of lots significant to strongly dormant., but essentially non-dormant are known.	Germ 49.7, 44.8, na, r10-89 (79)%. Dorm 37.9, 45.8, 0.0, r0.0-82 (82)%. Test 36, 37, 37, r28-42 days.	100,000	Poaceae
<i>Chelone glabra</i> Turtlehead	Surface	Dorv	B	B	B	Field establishment is best dormant seeded, although nondormant lots are known to us.	Germ 21.8, 17, 17, r8.0-64 (56)%. Dorm 60.8, 64.5, na, r1.0-88 (87)%. Test 32, 35, 35 r21-39 days.	1,200,000	Scrophulariaceae
<i>Cicuta maculata</i> Water Hemlock	Facul	Dor	B	B	D	We advise against planting this sp in commercial restoration, especially in areas that children frequent. If you do plant it, check your liability insurance, & consider the quality of your new life in a non-extraditionary country. If you must, dormant seed only!!	Germ 13, 9.0, na, r4.0-26 (22)%. Dorm 73.7, 70, na r61-90 (29)%. Test 37, 37, na, r33-41 days.	210,000	Umbelliferae
<i>Cinna arundinacea</i> Wood Reed	Facul	Sprv	B	B	D	Spring planting works well, with many lots non dormant, however 12% of lots benefit significantly from dormant seeding.	Germ 58.2, 64, 60 r14-88 (74)%. Dorm 15.4, 0.0, 0.0, r0.0-83 (83)%. Test 35, 37, na, r24-44 days.	1,000,000	Poaceae
<i>Cirsium discolor</i> Old Field thistle	Bury	Dor	D	D	D	Preliminary test data indicate dormant seeding is of significant benefit (20% dormant).	Germ 35%, Dorm 20%. TZ 70%. Test 38 days.	100,000	Compositae

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Cirsium muticum</i> Swamp Thistle	Bury	Dor	D	D	D	Preliminary test data indicate dormant seeding is strongly necessary.	Germ 9.0%. Dorm 70%. Test 27 days.	250,000	Compositae
<i>Clematis virginiana</i> Virgins Bower	Facul	Spr, Dorv	B	B	D	Spring or dormant seed for field establishment. Occasional lots are strongly dormant.	Germ 64.9, 79.5, 90, r7.0-96 (89)%. Dorm 22.5, 1.0, 0.0 r0.0-87 (870)%. Test 31, 30, 29, r26-38 days.	300,000	Ranunculaceae
<i>Conoclinium coelestinum</i> (<i>Eupatorium coelestinum</i>) Blue Mistflower*	Surface, L	Dorv	B	B	B	Seed test data indicates dormancy is variable, ranging from 2% to 44% dormant seed.	Germ 64, 64, na, r42-86 (44)%. Dorm 23, 23, na, r2.0-44 (42)%. Test 28, 28, na, r18-37 days.	7,316,129	Compositae
<i>Coreopsis lanceolata</i> Sand Coreopsis	Facul	Spr, Dorv	B	B	D	Field sow spring or dormant. Seeds need light to germinate, surface sow or light cover.	Germ 71.9, 77.5, 58, r31-92 (61)%. Dorm 13.8, 4.0, 0.0, r0.0-62 (62)%. Test 24, 24, 23, r14-35 days.	190,000	Compositae
<i>Coreopsis palmata</i> Prairie Coreopsis	Facul	Dor	B	B	D	Seed test data indicate >80% of lots receive significant to strong benefit from dormant seeding.	Germ 44.4, 44, na, r11-81 (70)%. Dorm 38.5, 36, 75, r3.0-75 (72)%. Test 29, 29, 27, r22-34 days.	200,000	Compositae
<i>Coreopsis tinctoria</i> Plains Coreopsis	Facul	Spr, Dor	B	B	D	Field sow spring or dormant; seed has little or no dormancy.		1,500,000	Compositae
<i>Coreopsis tripteris</i> Tall Coreopsis	Facul	Dorv, Spr	B	B	D	Genesis seed test data indicates 60% of lots require dormant seeding, but dormancy mechanisms are variable with < 10% dormancy known.	Germ 61.1, 68, 84, r22-90 (68)%. Dorm 26.5, 21.5, 7.0, r0.0-60 (60)%. Test 30, 27, 27, r23-42 days.	250,000	Compositae
<i>Cosmos bipinnatus</i> Common Cosmos	Facul	Spr, Dor	B	B	D	Non dormant. Plant spring or dormant.		65,000	Compositae
<i>Cosmos sulphureus</i> Yellow Cosmos	Facul	Spr, Dor	B	B	D	Non dormant. Plant spring or dormant.		52,000	Compositae
<i>Crotalaria sagittalis</i> Rattlebox	Bury/Facul	Spr, Dor, Leg	B/D	D	D	Limited test data indicates plant dormant or spring. The seed does have a modest percentage hard seed that will benefit from dormant seeding. Scarify & inoculate for spring planting. Dormant seed with unstratified seed.	Germ 42.8, 42.8, na, r36-49.5 (13.5)%. Hard 19.3, 19.3, na, r18.5-20 (1.5)%. Test 26 days.	68,000	Leguminosae
<i>Cryptotaenia canadensis</i> Honewort	Facul	Dor	B	B	D	Dormant seed only.	Germ 3.3, 3.0, na, r2.0-5.0 (3.0)%. Dorm 83, 84, na, r80-85 (5.0)%. Test 37, 39, na, r24-48 days.	135,000	Umbelliferae
<i>Cyperus erythrorhizos</i> Red rooted Nut sedge	Surface	Dorv	B	B	B	60% of lots have a significant to strong requirement for dormant seeding, but sow when wetland is available. 40% of lots are essentially nondormant, <5%. Small seeds must be surface sown.	Germ 49.5, 44.5, na, r6.0-90.5 (84.5)%. Dorm 40.2, 45.5, 84, r0.0-84 (84)%. Test 31, 30, na, r24-39 days.	9,000,000	Cyperaceae
<i>Cyperus esculentus</i> Chufa	Bury	Spr	D	D	D	Drill or hand rake tubers dormant or spring.	Germ 85.6, 90, 90, r52-96 (44)%. Dorm 8.3, 5.3, na, r0.0-30 (30)%. Test 22, 13, na, r9-43 days.	1,100	Cyperaceae
<i>Dalea candida</i> (<i>Petalostemum candidum</i>) White Prairie Clover*	Bury/Facul	Dor, Leg	B/D	D	D	Genesis seed tests indicate this seed usually has a high percentage of hard seed & may strongly benefit or require dormant seeding to establish a good st&, but early spring planting inoculated scarified seed is necessary for rhizobia establishment. Dormant seed with inoculated unscarified seed.	Germ 66.2, 77, na, r10-93 (83)%. Hard 24.3, 11.5, 2.0, r1.5-75 (74.5)%. Test 20, 19, 13, r11-32 days,	387,000	Leguminosae

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Dalea pururea</i> (<i>Petalostemum purpureum</i>) Purple Prairie Clover*	Bury/Facul	Dor, Leg	B/D	D	D	Genesis seed tests indicate this seed typically has a high percentage of hard seed & may strongly benefit or require dormant seeding to establish a good st&, but early spring planting inoculated scarified seed is necessary for rhizobia establishment. Dormant seed with inoculated unscarified seed.	Germ 73.6, 75, 74, r29-97 (68)%. Hard 17.3, 13, 1.0, r1.0-65 (64)%. Test 18, 20, 20, r11-30 days.	300,000	Leguminosae
<i>Danthonia spicata</i> Poverty Oats	Facul	Spr	B	B	D	Seed early spring or dormant, most lots have low percentage dormant seeds (2.0%), or are non-dormant. This species should be spot-seeded in likely microhabitats & not included as a component in general seed mixes.	Germ 89.7, 88, na, 87-94, (7.0)%. Dorm 1.3, 2.0, 2.0 r0.0-2.0 (2.0)%. Test 29, 29, na, 27-31 days.	530,000	Poaceae
<i>Decodon verticillatus</i> Swamp Loosestrife	Facul	Dor?	B	B	D	Clone, cuttings. Dormant seeding may work	Germ 3.0%. Dorm 44%. Test 49 days.	650,000	Lythraceae
<i>Delphinium ajacis</i> Rocket Larkspur	Surface	Spr	B	B	B	Dormant seed or spring plant.			Ranunculaceae
<i>Deschampsia caespitosa</i> Tufted Hair Grass	Surface	Spr	B	B	B	Seed early spring or dormant, most lots have low percentage dormant seeds (0-2.0%), or are non-dormant.	Germ 87.8, 89, 92, r81-92 (11)%. Dorm 0.6, 0.0, 0.0, r0.0-2.0 (2.0)%. Test 36, 36, na, 28-44 days.	1,800,000	Poaceae
<i>Desmanthus illinoensis</i> Illinois Bundlesflower	Bury/Facul	Dor, Leg	B/D	D	D	Genesis seed tests indicate this seed typically has a high percentage of hard seed & may strongly benefit or require dormant seeding to establish a good st&, but early spring planting inoculated scarified seed is necessary for rhizobia establishment. Dormant seed with inoculated, unscarified seed.	Germ 38.6, 41, 42, r10-87 (77)%. Hard 44.2, 40, 83, r7.0-83 (76)%. Test 19, 18, 15, r10-30 days.	74,000	Leguminosae
<i>Desmodium canadense</i> Showy Tick trefoil	Bury/Facul	Dor, Leg	B/D	D	D	Genesis seed tests indicate over 50% of lots have a high percentage of hard seed & may strongly benefit or require dormant seeding to establish a good st&, but early spring planting inoculated scarified seed is necessary for rhizobia establishment. Dormant seed with inoculated, unscarified seed.	Germ 53, 62.5, 38, r8.0-94 (86)%. Hard 30.1, 17.5, 2.0, r0.0-91 (91)%. Test 23, 20, 19, r9.0-43 days.	110,000	Leguminosae
<i>Desmodium illinoense</i> Illinois Ticktrefoil	Bury/Facul	Dor, Leg	B/D	D	D	Genesis seed tests indicate this seed typically has a high percentage of hard seed & may strongly benefit or require dormant seeding to establish a good st&, but early spring planting inoculated scarified seed is necessary for rhizobia establishment. Dormant seed with inoculated, unscarified seed.	Germ 47.1, 45, 21, r15-99 (84)%. Hard 48.1, 49.5, na, r0.0-84 (84)%. Test 22, 21, 19, r18-33 days.	70,000	Leguminosae
<i>Desmodium sessilifolium</i> Sessile-leaf Ticktrefoil	Bury/Facul	Dor, Leg	B/D	D	D	Genesis seed tests indicate this seed typically has a high percentage of hard seed & may strongly benefit or require dormant seeding to establish a good st&, but early spring planting inoculated scarified seed is necessary for rhizobia establishment. Dormant seed with inoculated, unscarified seed.	Germ 37.5, 37.5, na, r22-53 (31)%. Hard 58, 58, na, r42-74 (32)%. Test 15, 15, na, r11-19 days.	80,000	Leguminosae
<i>Diarrhena americana</i> Beak Grass	Bury*	Dor	R	R	R	Seed test data indicates dormant seeding is absolutely necessary, dormancy from 38% to 96%.	Germ 10.9, 4.0, 4.0, r0.0-54 (54)%. Dorm 76.2, 85, 90, r38-96 (58)%. Test 34, 34, 32, r27-42 days.	51,000	Poaceae
<i>Dicanthelium implicatum</i> { <i>Panicum implicatum</i> } Woolly Panic Grass*	Facul	Dor	B	B	D	Initial seed test datum indicates dormant seeding is strongly required.		426,316	Poaceae
<i>Dicanthelium oligosanthos scribnerianum</i> { <i>Panicum scribnerianum</i> } Scribner's Panic Grass*	Bury	Dor	D	D	D	Limited seed test data indicate dormant seeding is strongly required.		170,000	Poaceae
<i>Dioscorea villosa</i> Wild Yam	Bury*	Dor	R	R	R	Preliminary data suggests dormant seeding is strongly required.	Germ 16, 16, na, r15-17 (2.0)%. Dorm 67.5, 67.5, na, r53-82 (29)%. Test 38, 38, na, r37-38 day.	45,000	Dioscoreaceae

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Doellingeria umbellata</i> (Aster <i>umbellatus</i>) Flat-topped Aster*	Surface	Dor	B	B	B	Dormant seeding is required for field establishment. Moist cold stratify or fall plant is required for a good greenhouse crop.	Germ 23.5, 15, na, r6.0-52 (46)%. Dorm 57, 57.5, na, r22-87 (22)%. Test 30, 29, 34, r22-39 days.	900,000	Compositae
<i>Drymocallis arguta</i> [<i>Potentilla arguta</i>] Prairie Cinquefoil*	Surface	Dorv, Spr	B	B	B	Dormant seeding is best. Dormancy varies from year to year, results are possible from spring seeding, but 50+% of lots are significantly to strongly dormant. For good field results dormant seed or cold moist stratify for greenhouse crops.	Germ 47.4, 48, 49, r9.0-88 (79)%. Dorm 36.5, 27.5, 12, r0.0-88 (88)%. Test 34, 34, 30 r28-43 days.	3,200,000	Rosaceae
<i>Echinacea pallida</i> Pale Purple Coneflower	Facul	Dor	B	B	D	Dormant seeding of local genetic material is required for field establishment. Commercial stock from ornamental growers may have <10% dormant seed.	Germ 27.2, 15, 8.0, r2.0-84 (82)%. Dorm 52.5, 61.5, 0.0, r0.0-85 (85)%. Test 30, 30, 32, r14-51 days.	110,000	Compositae
<i>Echinacea purpurea</i> Purple Coneflower	Facul	Spr	B	B	D	Plant spring or dormant. Commercial stock is essentially non dormant.	Germ 90.3, 92, 92, r82-97 (15)%. Dorm 1.6, 0.0, 0.0, r0.0-9.0 (9.0)%. Test 23, 23, 29, r13-34 days.	115,000	Compositae
<i>Echinochloa crusgalli</i> Barnyard Grass	Facul, L	Spr, Dor	B	B	D	Seed needs no treatment, dormant seed or spring plant. Seed acts as if photodormant, surface sow or shallow cover	Germ 88.3, 94, 95, r49-98 (49)%. Dorm 1.3, 0.0, 0.0, r0.0-13 (13)%. Test 17, 16, na, r6-32 days.	120,000	Poaceae
<i>Echinochloa walteri</i> Walter's Millet	Surface, L	Dor	B	B	B	Initial test datum indicates field sown seed is significantly benefited by dormant seeding or cold moist stratification for greenhouse production.	Germ 61%. Dorm 25%. Test 34 days.	460,760	Poaceae
<i>Eleocharis acicularis</i> Needle Spike Rush	Surface	Dor, W	B	B	B	For field establishment, the small seeds are best surface sown dormant, but plant when wetland is accessible.	Germ 6.1, 5.0, 3.0, r0.0-22 (22)%. Dorm 79.9, 85, 91, r58-91 (33)%. Test 34, 35, 34, r22-42 days.	1,150,000	Cyperaceae
<i>Eleocharis erythropoda</i> (<i>calva</i>) Red-rooted Spike Rush	Surface	Dor	B	B	B	For field establishment, the small seeds are best surface sown dormant, but plant when wetland is accessible.	Germ 19.1, 5.0, 5.0, r0.0-59 (59)%. Dorm 64.8, 64, na, r34-91.5 (57.5)%. Test 38, 37, 37, r30-49 days.	1,200,000	Cyperaceae
<i>Eleocharis obtusa</i> Blunt Spike Rush	Surface	Dor	B	B	B	For field establishment, the small seeds are best surface sown dormant, but plant when wetland is accessible.	Germ 3.5, 2.0, 1.0, r0.0-12, (12)%. Dorm 79.8, 82, 82, r57-94 (37)%. Test 35, 37, 37, r26-42 days.	1,700,000	Cyperaceae
<i>Eleocharis palustris</i> Spike Rush	Surface	Dor	B	B	B	For field establishment, the small seeds are best surface sown dormant, but plant when wetland is accessible.	Germ 5.5, 4.0, 4.0, r1.0-15 (14)%. Dorm 85.9, 86, 86, r75-93 (18)%. Test 34, 31, 31, r26-44 days.	1,400,000	Cyperaceae
<i>Elymus canadensis</i> Canada Wild Rye	Bury	Sprv, Dorv	D	D	D	Seed spring or dormant. One lot in ten may significantly benefit from dormant seeding.		120,000	Poaceae
<i>Elymus hystrix</i> (<i>Hystrix patula</i>) Bottlebrush Grass*	Bury*	Sprv	B	R	R	Dormancy mechanisms are variable. Spring seeding works most years, with most lots <10% dormant, but 1/3 of all lots are >50% dormant.	Germ 61.5, 77.5, 85, r8.5-99 (90.5)%. Dorm 27.5, 8.8, 0.0 r0.0-87.5 (87.5)%. Test 29, 28, 23, r21-44 days.	83,000	Poaceae

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Elymus riparius</i> Riverbank Wild Rye	Bury(*)	Spr, Dorv	D or R	D or R	D or R	Plant spring or dormant seed. Genesis seed test data indicate modest to slight dormancy rates, with nondormant lots common.	Germ 85.6, 88.3, 90, r62-98.5 (36.5)%. Dorm 3.5, 0.0, 0.0, r0.0-19.5 (19.5)%. Test 28, 28, na, r19-36 days.	86,000	Poaceae
<i>Elymus trachycaulus</i> (<i>Agropyron trachycaulum</i>) Slender Wheatgrass*	Bury	Spr, Dorv*	D	D	D	This seed can be planted spring or dormant. Rare lots, 1 out of 20, significantly benefit from dormant seeding.	Germ 84.7, 92.5, 95, r22-98 (76)%. Dorm 8.8, 0.0, 0.0, r0.0-65 (65)%. Test 23, 23, 28 r14-47 days.	150,000	Poaceae
<i>Elymus villosus</i> Silky Wild Rye	Bury*	Dor	R	R	R	Seed spring or dormant, many lots are nondormant or less than 10% dormant seed. Our seed test data indicate dormant seeding or cold moist treatment is strongly needed in 2 out of 20 lots.	Germ 79.9, 88.5, 94, r8.0-98.5 (90.5)%. Dorm 11.7, 3.0, 0.0, r0.0-88 (88)%. Test 27, 26, 24, r20-38 days.	100,000	Poaceae
<i>Elymus virginicus</i> Virginia Wild Rye	Bury(*)	Sprv, Dorv	D or R	D or R	D or R	Plant spring or dormant. About 25% of lots benefit from dormant seeding, having dormancy 20% or greater.	Germ 79.5, 88, 94, r30-98 (68)%. Dorm 12.7, 2.0, 0.0, r0.0-65 (65)%. Test 29, 29, 24, r22-40 days.	90,200	Poaceae
<i>Epilobium angustifolium</i> Fireweed	Surface	Spr, Dor, L	B	B	B	Plant spring or dormant. Initial datum shows nondormant seed.	Germ 90%. Dorm 0.0%. Test 21 days.	5,437,000	Onagraceae
<i>Epilobium coloratum</i> Cinnamon Willowherb	Surface	Spr, Dor, L	B	B	B	Genesis seed tests show zero to slight dormancy, field sow dormant or spring.	Germ 74.4, 90, na, r9.0-98 (89)%. Dorm 14.2, 0.0, 0.0, r0.0-65 (65)%. Test 26, 29, na r20-30 days.	5,250,000	Onagraceae
<i>Eragrostis spectabilis</i> Purple Love Grass	Surface	Sprv	B	B	B	Seed spring or dormant. 2/3 of lots are largely nondormant, but 1/3 of lots are 32-81% dormant and benefit from dormant seeding. With the high seed count, even poor germination has the illusion of a good crop.	Germ 66.2, 73, na, r12-95 (83)%. Dorm 21.4, 0.0, 0.0, r0.0-95 (95)%. Test 28, 26, 26, r20-38 days.	5,000,000	Poaceae
<i>Eragrostis trichoides</i> Sand Lovegrass	Surface	Spr	B	B	B	Limited data suggest this seed can be seeded spring or dormant.		1,300,000	Poaceae
<i>Eryngium yuccifolium</i> Rattlesnake Master	Facul	Dorv	B	B	D	Dormant seeding is best, all lots are significant to strongly dormant. Spring planted seed, on occasion, may germinate or may carry over and germinate the following spring. I may also win the lottery.		140,000	Umbelliferae
<i>Eschscholzia californica</i> California Poppy	Surface	Spr	B	B	B	As an annual accent flower plant dormant or early-mid spring.		295,000	Papaveraceae
<i>Eupatorium altissimum</i> Tall Boneset	Surface, L	Dorv	B	B	B	Limited seed test data indicate dormant seed is needed for good field establishment, but spring works 1 year in 3.		900,000	Compositae
<i>Eupatorium perfoliatum</i> Boneset	Surface, L	Dorv	B	B	B	Genesis seed tests indicate most lots require dormant seeding for field establishment or cold moist treatment for greenhouse crops, in 50+% of lots, dormancy is 25% to 72%.		3,100,000	Compositae
<i>Eupatorium sessifolium</i> Upland Boneset	Surface, L	Dor	B	B	B	Initial test data indicate the seed strongly benefits from dormant seeding.		1,040,000	Compositae
<i>Euphorbia corollata</i> Flowering Spurge	Facul	Dor	B	B	D	Dormant seeding is best for field establishment.		145,000	Euphorbiaceae
<i>Eurybia divaricata</i> (<i>Aster d</i>) White Wood Aster*	Surface	Dor	B	B	B	Preliminary datum indicates dormant seeding is strongly beneficial, with over 63% dormant seed.		1,200,000	Compositae
<i>Eurybia macrophylla</i> (<i>Aster m</i>) Big-leaved Aster*	Surface	Dor	B	B	B	Genesis seed test data indicates dormant seeding (or cold moist stratification for greenhouse crops) is required, the seed may be 30% to 80% dormant.		600,000	Compositae
<i>Euthamia graminifolia</i> (<i>Solidago g</i>) Grass-leaved Goldenrod*	Surface	Spr	B	B	B	Field sow dormant or spring. Seed test data indicate zero to slight dormancy rates.		9,000,000	Compositae
<i>Euthamia gymnospermoides</i> (<i>Solidago g</i>) Viscid Grass-leaved Goldenrod*	Surface	Spr	B	B	B	Field sow dormant or spring. Seed test data indicate zero to slight dormancy rates.		9,000,000	Compositae

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Eutrochium fistulosum</i> (<i>Eupatorium fistulosum</i>) Hollow Joe Pye Weed*	Surface	Dor	B	B	B	Genesis seed test datum indicates a strong requirement for dormant seeding.		1,200,000	Compositae
<i>Eutrochium maculatum</i> (<i>Eupatorium m</i>) Spotted Joe Pye Weed*	Surface, L	Spr, Dorv	B	B	B	Dormancy mechanisms vary, with spring planting working with over 60% of lots, but dormancy may be as high as 41% to 68%.		1,700,000	Compositae
<i>Eutrochium purpureum</i> (<i>Eupatorium p</i>) Purple Joe Pye Weed*	Surface, L	Sprv	B	B	B	Seed tests indicate 1/3 rd of lots have a strong requirement for dormant seeding for field establishment or cold moist treatment for greenhouse crops.		810,000	Compositae
<i>Festuca subverticillata</i> (<i>F obtusa</i>) Nodding Fescue*	Surface	Dorv	B	B	B	Most lots require dormant seeding. Our seed tests show 60% of lots highly dormant and 40 % of lots nondormant, with no lots intermediate.		400,000	Poaceae
<i>Filipendula rubra</i> Queen of the Prairie	Surface	Spr	B	B	B	Preliminary test datum indicates seed can be nondormant. Plant dormant or spring.		150,000	Rosaceae
<i>Gaillardia aristata</i> Perennial Blanket Flower	Facul	Spr	B	B	D	Seed spring or dormant.		145,000	Compositae
<i>Gaillardia pulchella</i> Annual Indian Blanket	Facul	Spr	B	B	D	Seed spring or dormant.		222,000	Compositae
<i>Galium boreale</i> Northern Bedstraw	Surface	Dor	B	B	B	Limited test data indicate significant to strong dormancy rates (39-60%); field establishment by dormant seeding is best. Germ 3-24%. Ave 19%. Dorm 39-70%. Ave 57.2%. Test 26 days.		1,250,000	Rubiaceae
<i>Galium concinnum</i> Shining Bedstraw	Surface	Dor	B	B	B	Limited test data indicate a strong dormancy rate (50%); field establishment by dormant seeding is best. Germ 42%. Dorm 50%. Test 25 days.		831,502	Rubiaceae
<i>Gentiana alba</i> (<i>Gentiana f</i>) Yellowish Gentian*	Surface	Dor	B	B	B	Seed is strongly dormant (84.5-92%); field establish by dormant seeding only, successionaly or into previously mycorrhizally inoculated soils.		4,000,000	Gentianaceae
<i>Gentiana andrewsii</i> Bottle Gentian	Surface	Dor	B	B	B	Seed is significantly to strongly dormant (48-90%); field establish by dormant seeding only, successionaly or into previously mycorrhizally inoculated soils.		9,000,000	Gentianaceae
<i>Gentiana puberulenta</i> Prairie Gentian	Surface	Dor	B	B	B	Seed is significantly to strongly dormant (88%); field establish by dormant seeding only, successionaly or into previously mycorrhizally inoculated soils.		10,800,000	Gentianaceae
<i>Gentianella quinquefolia</i> (<i>Gentiana q</i>) Stiff Gentian*	Surface	Dor	B	B	B	Dormant seed successionaly.		2,880,000	Gentianaceae
<i>Gentianopsis crinita</i> Fringed Gentian	Surface	Dor	B	B	B	Seed is significantly to strongly dormant (85%); field establish by dormant seeding only, successionaly or into previously mycorrhizally inoculated soils.		3,831,224	Gentianaceae
<i>Geranium maculatum</i> Wild Geranium	Facul, Bury*	Dor	B	B	R	Dormant seed only. Seeds have a significant to strong requirement for dormant seeding.		85,000	Geraniaceae
<i>Geum allepicum</i> Yellow Avens	Facul	Spr, Dor	B	B	D	Genesis initial datum suggests seeds are nondormant. Plant dormant or spring.		320,000	Rosaceae
<i>Geum canadense</i> White Avens	Facul	Spr	B	B	D	Plant spring or dormant. Genesis test data indicate modest to zero dormancy.		360,000	Rosaceae
<i>Geum laciniatum</i> Rough Avens	Facul	Spr	B	B	D	Plant spring or dormant. Genesis test data indicate modest to zero dormancy.		480,000	Rosaceae
<i>Geum triflorum</i> Prairie Smoke	Facul	Spr	B	B	D	Best from plugs. Hand seed in gravelly or sandy soils and lightly rake in a dedicated area where no grass or heavy forb matrix has been sown.		600,000	Rosaceae
<i>Glyceria canadensis</i> Rattle Snake Grass	Surface	Dor	B	B	B	Genesis limited test data indicate dormant seeding for field establishment or cold moist stratification for greenhouse production is required.		1,160,000	Poaceae
<i>Glyceria grandis</i> Reed Manna Grass	Surface	Dor	B	B	B	Field establishment best dormant seeded. Genesis test data indicates some lots are non-dormant, but the most lots benefit from cold moist treatment.		1,300,000	Poaceae
<i>Glyceria striata</i> Fowl Manna Grass	Surface	Dor	B	B	B	Genesis seed test data shows an some lots with zero or low dormancy, but most lots require dormant seeding for field establishment or cold moist stratification for greenhouse crops.		2,500,000	Poaceae

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Hasteola suaveolens</i> (<i>Cacalia suaveolens</i>) Sweet Indian Plantain*	Surface	Dor	B	B	B	Limited seed test data indicate dormant seeding has a significant to strong benefit on most lots, but >10% dormancy is known.		240,000	Compositae
<i>Helenium autumnale</i> Sneeze Weed	Surface	Sprv	B	B	B	Spring plant most years. Genesis seed test data indicate about 25% of lots will require dormant seeding for field establishment or cold moist stratification.		2,100,000	Compositae
<i>Helianthus divaricatus</i> Woodland Sunflower	Facul, Bury*	Dor	B	B	R	Initial test datum indicates a strong requirement for dormant seeding.		115,000	Compositae
<i>Helianthus grosseserratus</i> Sunflower from Hell	Facul	Dorv, Spr	B	B	D	Field establishment from spring seeding is possible most years, but germination is significantly enhanced by dormant seeding.		270,000	Compositae
<i>Helianthus laetiflorus</i> Showy Sunflower	Facul	Dor	B	B	D	Limited test data indicate dormant seeding is needed for field establishment.		70,000	Compositae
<i>Helianthus maximiliani</i> Maximilian's Sunflower	Facul	Spr	B	B	D	Initial datum indicates dormant seeding is not needed.		220,000	Compositae
<i>Helianthus mollis</i> Downy Sunflower	Facul	Dor	B	B	D	For field establishment dormant seed only. Dormant seed may be over 80%.		150,000	Compositae
<i>Helianthus occidentalis</i> Western Sunflower	Facul	Dor	B	B	D	Dormant seeding is best.		230,000	Compositae
<i>Helianthus pauciflorus</i> (<i>Helianthus rigidus</i>) Stiff Sunflower*	Facul	Dor	B	B	D	Dormant seed only.		73,000	Compositae
<i>Helianthus strumosus</i> Pale Woodland Sunflower	Facul, Bury*	Dor	B	B	R	Dormant seed only, dormant seed ranges from 42% to 70%. In favorable environments, a clone may grow to 1600 square feet in a decade. Do not plant near your back door.		95,000	Compositae
<i>Heliopsis helianthoides</i> False Sunflower	Facul	Spr, Dorv	B	B	D	Field establishment is good from spring or dormant seeding, but rare lots may have very high percent dormant seed.		110,000	Compositae
<i>Heracleum maximum</i> Cow Parsnip	Bury	Dor, Rec	D	D	D	Dormant seed properly stored and refrigerated seed. Seed tests indicate viability drops quickly with dry storage in this species. Seeds should be treated as hydrophilic.		60,000	Umbelliferae
<i>Hesperis matronalis</i> *Dames Rocket	Surface	Dor	B	B	B	Just say no!		246,000	Cruciferae
<i>Heterostipa spartea</i> [<i>Stipa spartea</i>] Porcupine Grass trimmed/untrimmed	Hand Bury	Dor	hand	hand	hand	Dormant planting by hand is absolutely required.		24,000	Poaceae
<i>Heuchera richardsonii</i> Prairie Alumroot	Surface	Dorv	B	B	B	Dormant seeding is best for field establishment. Dormancy mechanisms are variable, spring works some years.		8,500,000	Saxifragaceae
<i>Hibiscus laevis</i> (<i>H. militaris</i>) Halberd Leafed Rose Mallow	Bury	Dorv	D	D	D	Dormant seeding is best for field establishment. Dormancy mechanisms are variable, much hard seed, spring works some years.		39,000	Malvaceae
<i>Hibiscus moscheutos</i> (<i>H. palustris</i>) Swamp Rose Mallow*	Bury	Dor	D	D	D	Dormant seeding is best for field establishment. Dormancy mechanisms are variable, much hard seed, spring works some years.		54,000	Malvaceae
<i>Hordeum jubatum</i> Squirrel Tail Barley	Bury	Spr	D	D	D	Plant spring or dormant. Genesis limited seed test data indicates little or no dormancy.		270,000	Poaceae
<i>Hydrophyllum virginianum</i> Virginia Waterleaf	Bury*	Dor, Rec	BR	BR	BR	Dormant seeding is best (86% dormant seed).		69,000	Hydrophyllaceae
<i>Hypericum ascyron</i> (<i>H. pyramidatum</i>) Great St. John'swort*	Surface	Dorv	B	B	B	Dormant seeding is best for field establishment. Spring works some years, and some lots are non- to slightly dormant.		3,150,000	Hypericaceae
<i>Hypericum prolificum</i> Shrubby St. John'swort	Surface	Dor	B	B	B	Dormant seeding is best for field establishment.		3,844,067	Hypericaceae
<i>Impatiens capensis</i> Orange Jewelweed	Bury	Dor	D	D	D	Field establish by dormant seeding only.		67,000	Balsaminaceae
<i>Iris brevicaulis</i> Leafy Iris	Bury	Fresh, Rec	D	D	D	Plant fresh seed or dormant seed properly stored, slightly moist seed. Dried seed may be of low viability. Species is best from plugs or divisions.		9,265	Iridaceae
<i>Iris pseudacorus</i> Yellow Flag	just say no	*	*	*	*	But what about that JF New photo?			Iridaceae
<i>Iris versicolor</i> Northern Blue Flag Iris	Bury	Dor, Rec	D	D	D	Dormant seed properly stored, slightly moist seed. Dried seed may be of low viability or deeply dormant.		24,000	Iridaceae
<i>Iris virginica shrevei</i> Blue Flag	Bury	Dor, Rec	D	D	D	Dormant seed properly stored, slightly moist seed. Dried seed may be of low viability or deeply dormant.		16,000	Iridaceae

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Juncus arcticus balticus</i> (<i>J. balticus littoralis</i>) Lake Shore Rush*	Surface	Dorv, W	B	B	B	Most lots have a significant to strong requirement for dormant seeding, but the extreme seed count gives even slight germination the appearance of a good crop. Best planted when the wetland is available.		9,500,000	<i>Juncaceae</i>
<i>Juncus canadensis</i> Canadian Rush	Surface	Dor	B	B	B	Limited data shows a strong requirement for dormant seeding, but the extreme seed count gives even slight germination the appearance of a good crop. Best planted when the wetland is available.		30,000,000	<i>Juncaceae</i>
<i>Juncus dudleyi</i> Dudley's Rush	Surface	Dor	B	B	B	Most lots have a significant to strong requirement for dormant seeding, but the extreme seed count gives even slight germination the appearance of a good crop. Best planted dormant in wet meadows, or when the wetland is available.		65,000,000	<i>Juncaceae</i>
<i>Juncus effusus</i> Soft Rush	Surface	Dor, W	B	B	B	Most lots have a significant to strong requirement for dormant seeding, but the extreme seed count gives even slight germination the appearance of a good crop. Best planted when the wetland is available.		41,000,000	<i>Juncaceae</i>
<i>Juncus nodosus</i> Knotted Rush	Surface	Spr, Dor	B	B	B	Limited test data indicate seed can be field sown dormant or spring; non-dormant lots are known.		26,000,000	<i>Juncaceae</i>
<i>Juncus tenuis</i> Slender Rush	Surface	Dor	B	B	B	Genesis seed test data indicates most lots greatly benefit from cold moist stratification, but the extreme seed count gives even slight germination the appearance of a good results.		41,000,000	<i>Juncaceae</i>
<i>Juncus torreyi</i> Torrey's Rush	Surface	Dor	B	B	B	Most lots have a significant to strong requirement for dormant seeding, with some totally dormant lots known, but the extreme seed count gives even miniscule germination the appearance of a good crop. Best planted dormant in wet meadows, or when the wetland basin is available.		40,000,000	<i>Juncaceae</i>
<i>Koeleria macrantha</i> (<i>K cristata</i>) June Grass*	Surface	Sprv	B	B	B	Our seed test data show 30% of lots northern Illinois genetic material will significantly benefit from cold moist stratification.		2,800,000	<i>Poaceae</i>
<i>Leersia oryzoides</i> Rice Cut Grass	Facul	Dor	B	B	D	Rice Cut Grass seed is strongly dormant and requires dormant seeding for field establishment.		400,000	<i>Poaceae</i>
<i>Lespedeza capitata</i> Roundhead Bush Clover	Bury/Facul	Dor, Leg	B/D	D	D	Genesis seed tests indicate this seed typically has a high percentage of hard seed and may strongly benefit or require dormant seeding to establish a good stand, but early spring planting inoculated scarified seed is necessary for rhizobia establishment. Dormant seed with inoculated, unscarified seed.	Germ 44.4, 38, 44, r15-95 (80)%. Hard 44.8, 50, na, r4.0-77 (73)%. Test 22, 21, 21, r14-29 days.	170,000	<i>Leguminosae</i>
<i>Lespedeza virginica</i> Slender Bushclover	Bury/Facul	Dor, Leg	B/D	D	D	Genesis seed tests indicate this seed typically has a high percentage of hard seed and may strongly benefit or require dormant seeding to establish a good stand, but early spring planting inoculated scarified seed is necessary for rhizobia establishment. Dormant seed with inoculated, unscarified seed.	Germ 42.3, 3.8, na, r25.5-82 (56.5)%. Hard 44.7, 49.5, na, r15-62 (47)%. Test 24, 20, nz, r14-36 days.	160,000	<i>Leguminosae</i>
<i>Liatris aspera</i> Button Blazing Star	Facul	Dor	B	B	D	Field sown results are possible with spring seeding, but most lots have significant to strong benefits from dormant seeding.		230,000	<i>Compositae</i>
<i>Liatris cylindracea</i> Dwarf Blazing Star	Facul	Dor	B	B	D	Dormant seed only. Initial test datum indicates seeds are strongly dormant, 77%.		230,000	<i>Compositae</i>
<i>Liatris pycnostachya</i> Prairie Blazingstar	Facul	Spr, Dor	B	B	D	Most bearded lots can be planted spring or dormant. 1 in 10 lots may significantly benefit from dormant seeding.		160,000	<i>Compositae</i>
<i>Liatris spicata</i> Spike Blazingstar	Facul	Dorv, Spr	B	B	D	Field sown results are possible with spring seeding, but 2/3 of lots have significant to strong benefits from dormant seeding.		160,000	<i>Compositae</i>

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Lilium michiganense</i> Michigan lily	Bury*	Dor, Rec	BR	BR	BR	Plant fresh seed or dormant seed with seed that has been stored in a ziplock bag and refrigerated. Dry stored seed may be of low viability.		110,000	Liliaceae
<i>Lobelia cardinalis</i> Cardinal Flower	Surface	Dorv	B	B	B	Dormant seeding is significantly to strongly beneficial to 50% of lots.		9,000,000	Campanulaceae
<i>Lobelia siphilitica</i> Great Blue Lobelia	Surface	Dorv	B	B	B	For field establishment, 75% of lots significantly to strongly require dormant seeding.		11,000,000	Campanulaceae
<i>Lobelia spicata</i> Spiked Lobelia	Surface	Dorv	B	B	B	Dormant seeding is best for field establishment, but 50% of lots are strongly dormant or 50% of lots are nondormant.		20,000,000	Campanulaceae
<i>Ludwigia alternifolia</i> Seed box	Surface	Dorv	B	B	B	Dormant seeding is best for field establishment, but spring works some years. From year to year, dormancy mechanisms range from nondormant to 88% dormant.		11,000,000	Onagraceae
<i>Lupinus perennis occidentalis</i> Lupine	Bury/Facul	Dor, Leg	D	D	D	Genesis seed tests indicate this seed typically has a high percentage of hard seed and may strongly benefit or require dormant seeding to establish a good stand, but early spring planting inoculated scarified seed is necessary for rhizobia establishment. Dormant seed with inoculated, unscarified seed.	Germ 59.9, 62, 62, r8.0-81 (73) %. Hard 27.9, 22.5, 25, r9.0-90 (81)%. Test 13, 15, 14, r13-35 days.	18,000	Leguminosae
<i>Lycopus americanus</i> Common Water Horehound	Surface	Dorv, Sprv	B	B	B	Spring planting works 2 years out of three, with 1/3 of lots significantly to strongly dormant (31.5-60%). Dormant seed for insurance.		3,000,000	Labiatae
<i>Lycopus asper</i> Crow Potato	Surface	Dorv, Sprv	B	B	B	Genesis limited test data indicate dormant seeding for field establishment or cold moist stratification for greenhouse production is required.		920,000	Labiatae
<i>Lysimachia ciliata</i> Fringed Loosestrife	Surface	Dor	B	B	B	Genesis seed test data indicates a strong requirement for dormant seeding.		1,275,281	Primulaceae
<i>Lysimachia hybrida</i> River Loosestrife	Surface	Dor	B	B	B	Genesis seed test data indicates a strong requirement for dormant seeding.		1,500,000	Primulaceae
<i>Lysimachia quadriflora</i> Prairie Loosestrife	Surface	Dor	B	B	B	Limited data suggests dormant seeding is required.		1,400,000	Primulaceae
<i>Lysimachia thryisiflora</i> Tufted Loosestrife	Surface	Dor	B	B	B	Limited data suggests dormant seeding is required.		1,520,000	Primulaceae
<i>Lythrum alatum</i> Winged Loosestrife	Surface	Dorv	B	B	B	Dormant seeding is best, with over 50% of lots with a strong requirement for dormant seeding, but the extreme seed count gives even slight % germination the appearance of a good crop.		2,800,000	Lythraceae
<i>Maianthemum racemosum (Smilacina r)</i> Feathery False Solomon's Seal*	Bury*	Fresh, Dor, Rec	BR	BR	R	Dormant hand plant new crop (fresh) seed, or fresh seed that has been properly stored. Double dormant.		9,000	Liliaceae
<i>Mentha arvensis</i> Wild Mint	Surface	Dorv	B	B	B	Dormant seeding is best, with some lots significantly dormant. Spring works most years.		5,500,000	Labiatae
<i>Mertensia virginica</i> Virginia Bluebells	Bury*	Dor, Rec	BR	BR	BR	Plant fresh-picked seed, or dormant seed with seed cool moist stored		155,000	Boraginaceae
<i>Mimulus ringens</i> Monkey Flower	Surface	Dorv	B	B	B	Dormant seeding is most efficient, with over 80% of lots with a significant to strong requirement for dormant seeding, but the extreme seed count gives even slight % germination the appearance of a good crop.		45,000,000	Scrophulariaceae
<i>Monarda fistulosa</i> Bergamot	Surface	Dorv	B	B	B	Plant spring or dormant with reasonable results. 1/3 of lots are significantly to strongly dormant and benefit from dormant seeding.		1,240,000	Labiatae
<i>Monarda punctata</i> Horse Mint	Surface	Spr, Dor	B	B	B	Plant dormant or spring, only slight dormancy rates.		1,535,000	Labiatae
<i>Muhlenbergia mexicana</i> Leafy Satin Grass	Surface	Dor	B	B	B	Dormant seeding for field establishment and cold moist stratification for greenhouse crops are good insurance.		5,000,000	Poaceae
<i>Napaea dioica</i> Glade Mallow	Bury	Dor	D	D	D	Dormant seed only, significantly to strongly hard seeded (36-86%).		67,000	Malvaceae
<i>Oenothera biennis</i> Common Evening Primrose	Surface	Dor	B	B	B	Field sow dormant or spring. Some lots benefit significantly from dormant seeding.		1,440,000	Onagraceae
<i>Oenothera gaura (Gaura biennis)</i> Biennial Gaura*	Facul	Dor	B	B	D	Field establishment is best by dormant seeding.		47,000	Onagraceae

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Oligoneuron ohioensis</i> (Solidago o) Ohio Goldenrod*	Surface	Dor	B	B	B	Dormant seed only. Test data indicate a significant to strong dormancy rate.		2,000,000	Compositae
<i>Oligoneuron album</i> (Aster ptarmicoides) Upland White Aster*	Surface	Dor	B	B	B	Genesis limited data indicates some lots may be significantly dormant and need dormant seeded.		1,000,000	Compositae
<i>Oligoneuron riddellii</i> (Solidago r) Riddell's Goldenrod*	Surface	Dorv	B	B	B	Dormant seeding is best and required by most lots, dormancy is variable, from 2% to 85%.		1,700,000	Compositae
<i>Oligoneuron rigidum</i> (Solidago r) Stiff Goldenrod*	Facul	Dorv, Spr	B	B	D	Dormant seeding is best. Field establishment is possible from spring seeding, but about 60% of lots are significantly to strongly dormant.		650,000	Compositae
<i>Onoclea sensibilis</i> Sensitive Fern	Surface	Dor	B	B	B	Spores should be dormant seeded (spored?). Germination is in early spring.		7,718,000,000	Dryopteridaceae
<i>Osmorhiza claytoni</i> Sweet Jarvil	Bury	Dor	D	D	D	Field establishment dormant seed only. This species has seed lots significantly to totally dormant.		43,000	Umbelliferae
<i>Packera aurea</i> { <i>Senecio aureus</i> } Golden Ragwort*	Surface	Spr, Dor, (Rec?)	B	B	B	Seed may be short lived		1,500,000	Compositae
<i>Panicum dichotomiflorum</i> Knee Grass	Bury	Dor	D	D	D	Dormant seeding is required; most lots are strongly dormant.		520,000	Poaceae
<i>Panicum virgatum</i> Switch Grass	Bury	Spr, Dorv	D	D	D	Plant spring or dormant, but spring plantings usually develop more successfully because of less weed pressure.		338,000	Poaceae
<i>Parthenium integrifolium</i> Wild Quinine	Bury	Dor	D	D	D	Dormant seeding is recommended for field establishment, although spring seeding works half the time. Dormancy mechanisms are variable, percentages ranging from zero to 43% dormant seed.		118,000	Compositae
<i>Pedicularis canadensis</i> Wood Betony	Bury*, Succ	Dor, Hemipar	BR	BR	R	Dormant seed successional restoration with host species.		580,000	Scrophulariaceae
<i>Pedicularis lanceolata</i> Swamp Betony	Bury	Dor, Hemipar	D	D	D	Dormant seed successional restoration with host species.		600,000	Scrophulariaceae
<i>Peltandra virginica</i> Arrow Arum	Bury* (submerge)	Rec	BR	BR	BR	Dormant seed late fall-early winter or early spring into water or press into mud. Do not dry or drill.		640	Araceae
<i>Penstemon calycococcus</i> Calico Beardtongue	Surface	Dor	B	B	B	Field establish by dormant seeding only, dormancy typically 64-75%.		16,000,000	Scrophulariaceae
<i>Penstemon digitalis</i> Foxglove Beardtongue	Surface	Dor	B	B	B	Field establishment by dormant seeding is best, seed is significantly to strongly dormant.		1,760,000	Scrophulariaceae
<i>Penstemon grandiflorus</i> Large Flowered Beardtongue	Facul	Dor	B	B	D	Field establishment by dormant seeding is best, seed is significantly to strongly dormant, 35-84% dormant.	Germ 14.3, 5.0, 21, r1.0-48%. Dorm 65.1. 66, 66, r35-84%. Test 39, 40, na, r31-48 days.	240,000	Scrophulariaceae
<i>Penstemon pallidus</i> Pale Beardtongue	Surface	Sprv	B	B	B	Spring plant works most years, but one of 3 lots strongly dormant (>70%).		2,800,000	Scrophulariaceae
<i>Penthorum sedoides</i> Ditch Stonecrop	Surface	Dorv, W	B	B	B	Most lots have a significant to strong requirement for dormant seeding, but the extreme seed count gives even slight germination the appearance of a good crop. Some lots have significant germination from spring seeding. Best planted when the wetland is available.		51,000,000	Penthoraceae
<i>Persicaria lapathifolia</i> (Polygonum l) Nodding Smart Weed*	Surface	Dorv	B	B	B	No treatment, but seeding is best from dormant or early spring seeding. Dormancy mechanisms vary widely. This species forms part of the long term wetland soil seed bank.		255,000	Polygonaceae
<i>Persicaria pensylvanica</i> (Polygonum p) Giant Smartweed*	Surface	Dorv	B	B	B	Best from dormant seeding. This species forms part of the long term wetland soil seed bank.		168,000	Polygonaceae
<i>Persicaria virginiana</i> (Polygonum v) Jumpseed*	Bury	Dor	D	D	D	Dormant seeding is best, seed is significantly to strongly dormant (or hard seeded).		70,000	Polygonaceae
<i>Phlox divaricata</i> Wild Sweet Williams	Bury*	Fresh, Dor, Rec	BR	BR	BR	Hand plant fresh seed or dormant seed using material that has been properly dried and stored.		240,000	Polemoniaceae
<i>Phlox pilosa</i> Prairie Phlox	Bury*	Fresh, Dor, Rec	BR	BR	BR	Hand plant fresh seed or dormant seed using material that has been properly dried and stored.		345,000	Polemoniaceae
<i>Phryma leptostachya</i> Lopseed	Bury*	Dor	B	B	R	Dormant seed only. Test data indicate lots are strongly dormant, >90%.		62,000	Phrymaceae
<i>Physostegia angustifolia</i> Narrow-leaved Obedient Plant	Facul	Dor	B	B	D	Dormant seed only. Initial test datum indicates seeds are strongly dormant, >55%.		259,000	Labatae

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Phystostegia virginiana</i> False Dragonhead	Facul	Dor	B	B	D	Dormant seed is best, all lots tested are significantly to strongly dormant; < 10% of lots will give so-so results by spring planting.		257,000	Labiatae
<i>Poa palustris</i> Marsh Blue Grass	Surface	Spr, Dor	B	B	B	For field establishment plant spring or dormant. Seed test data indicate most lots are non-dormant.		2,560,000	Poaceae
<i>Polemonium reptans</i> Jacob's Ladder	Surface	Dor, Rec	B	B	B	Dormant seeding of properly cold moist stored new crop seed is best.		355,000	Polemoniaceae
<i>Polygonatum canaliculatum</i> Smooth Solomon's Seal	Bury*	Dor, Rec	B	R	R	Dormant hand plant new crop (fresh) seed, or fresh seed that has been properly stored. Double dormant.		19,000	Liliaceae
<i>Polytaenia nuttallii</i> Prairie parsley	Bury	Dor	D	D	D	Limited test data shows highly dormant seeds. Until proven otherwise, we are treating this as an early maturing species of the numerous hydrophilic carrots.		57,000	Umbelliferae
<i>Pontederia cordata</i> Pickerelweed	Bury	Dor	D	D	D	PENDING		12,000	Pontederiaceae
<i>Preanthes alba</i> (<i>Nabalus a</i>) Lion's Foot	Bury*	Dor	BR	BR	R	Limited datum suggests dormant seeding is strongly required. Hand rake under an established overstory.		300,000	Compositae
<i>Preanthes racemosa</i> (<i>Nabalus r</i>) Glaucous White Lettuce	Bury	Dor	B	B	R	Dormant seed only. Initial test datum indicates seeds are strongly dormant, >55%.		470,000	Compositae
<i>Primula meadia</i> (<i>Dodecatheon meadia</i>) Shooting Star*	Surface	Dor	B	B	B	Field establishment is best as dormant seeding up to late winter.		1,800,000	Primulaceae
<i>Pseudognaphalium obtusifolium</i> (<i>Gnaphalium obtusifolium</i>) Catsfoot*	Surface	Spr	B	B	B	Field sow dormant or spring. Limited test data show the seed is nondormant.		15,000,000	Compositae
<i>Pycnanthemum pilosum</i> (<i>P. verticillatum pilosum</i>) Hairy Mt. Mint*	Surface	Dorv	B	B	B	Seed dormant or spring. Genesis preliminary data indicates some lots benefit from cold moist stratification (58 germ, 38 dorm).		3,900,000	Labiatae
<i>Pycnanthemum tenuifolium</i> Slender Mt Mint	Surface	Spr, Dor	B	B	B	Field sow dormant or spring. Dormant fraction slight to modest.		6,000,000	Labiatae
<i>Pycnanthemum virginianum</i> Common Mt Mint	Surface	Dor	B	B	B	Best dormant seeded. Over 50% of lots have a significant to strong requirement for dormant seeding, but the high seed count gives even modest germination the appearance of a good crop.		4,420,000	Labiatae
<i>Ratibida columnifera</i> Prairie Coneflower	Surface	Spr, Dor	B	B	B	Field sow spring or dormant; seed has little or no dormancy.		850,000	Compositae
<i>Ratibida pinnata</i> Yellow Coneflower	Surface	Sprv, Dor	B	B	B	Can be spring or dormant seeded, but germination of some lots is significantly to strongly improved by dormant seeding.	Germ 70.1, 71, 86, r38-96 (58)%. Dorm 19.5, 16, 0.0, r0.0-49) (49)%. Test 34, 30, 22, r21-78 days.	524,000	Compositae
<i>Rosa arkansana</i> Sunshine Rose	Bury	Dor, Rec?	D	D	D	Treat as recalcitrant. Dormant seed for field establishment. Spring planted seed may carry over	Germ 1.0, 1.0, na, r0.0-2%. Dorm 41.5, 41.5, na, r 31-52%. Test 33, 33, na r32-34 days.	40,000	Rosaceae
<i>Rosa blanda</i> Early Wild Rose	Bury	Dor, Rec?	D	D	D	Dormant seed for field establishment. Double dormant or recalcitrant(?).	Germ 0.8, 0.5, 0, r0.0-2.0%. Dorm 67, 80, na, r37.5-82%. Test 33, 33, 29, r29-35 days.	55,000	Rosaceae
<i>Rosa carolina</i> Pasture Rose	Bury	Dor	D	D	D	Dormant seed for field establishment. Double dormant or recalcitrant(?).	Germ 2.0, 2.0, 2.0 r2.0-2.0%. Dorm 40.5, 31.5, na, r19-80%. Test 32, 31, na, r26-41 days.	43,000	Rosaceae
<i>Rosa palustris</i> Swamp Rose	Bury	Dor	D	D	D	Dormant seed for field establishment. Some germination 1 st spring.		26,000	Rosaceae
<i>Rosa setigera</i> Illinois Rose	Bury	Dor	D	D	D	Dormant seed for field establishment. Some germination 1st spring. Cryptically dioecious.	Germ 0.0, 0.0, 0.0, r0.0%. Dorm 91.5, 91.5, na, r92-94%. Test 28, 27.5, na, r27-28 days.	160,000	Rosaceae
<i>Rudbeckia amplexicaulis</i> Claspng Coneflower	Surface	Spr, Dor	B	B	B	Plant early spring or dormant; very low dormancy rates. But why?		840,000	Compositae

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Rudbeckia gloriosa</i> Gloriosa Daisy	Surface	Spr, Dor	B	B	B	Plant early spring or dormant; very low dormancy rates. But why?		1,700,000	Compositae
<i>Rudbeckia hirta</i> Black Eyed Susan	Surface	Spr	B	B	B	Plant spring or dormant, zero to low dormant seed percentages typical.		1,500,000	Compositae
<i>Rudbeckia laciniata</i> Green Coneflower	Facul	Sprv, Dor	B	B	D	Field sow spring or dormant. Genesis seed test data indicate most lots have modest (13-12) to zero percent dormant seed.		225,000	Compositae
<i>Rudbeckia speciosa sullivantii</i> (fulgida) Showy Black Eyed Susan	Surface	Spr, Dorv	B	B	B	Spring planting will give results, but 40% of lots may be significantly to strongly dormant.		600,000	Compositae
<i>Rudbeckia subtomentosa</i> Sweet Coneflower	Surface	Spr, Dor	B	B	B	Plant spring or dormant, seeds have slight to zero dormancy.		885,000	Compositae
<i>Rudbeckia triloba</i> Brown Eyed Susan	Surface	Spr, Dorv	B	B	B	Plant spring or dormant. 40% of lots have significant to strong benefit from dormant seeding. The dormancy varies from zero to 50%.		540,000	Compositae
<i>Ruellia humilis</i> Wild Petunia	Bury	Dor	D	D	D	Dormant seed for field establishment. Seed may have a short shelf life.		68,000	Acanthaceae
<i>Rumex altissimus</i> Tall Water Dock	Facul	Spr, Dor	B	B	D	Field plant spring or dormant. Seeds have little or no dormancy (0-1%).		230,000	Polygonaceae
<i>Rumex orbiculatus</i> (<i>R. britannica</i>) Great Water Dock*	Facul	Sprv, Dor	B	B	D	Field plant spring works most years. 80% of lots tested have little or no dormancy (0-1%), while 20% are significantly dormant, at 44%.		180,000	Polygonaceae
<i>Sagittaria latifolia</i> Duck Potato	Surface	Dor	B	B	B	Field establishment is best by dormant seeding, but plant when the wetland is accessible.		1,300,000	Alismataceae
<i>Salvia azurea</i> Blue Sage	Facul	Spr, Dor	B	B	D	Field sow spring or dormant.		130,000	Labiatae
<i>Sanicula canadensis</i> Sanicle	Bury	Dor	D	D	D	Initial test data indicate dormant seeding for field establishment is necessary.		63,000	Umbelliferae
<i>Saururus cernuus</i> Lizard's Tail	Facul?	Dor	B	B	D	Preliminary test data indicate dormant seeding is necessary.			Saururaceae
<i>Schizachyrium scoparium</i> (<i>Andropogon scoparius</i>) Little Bluestem*	Facul	Spr, Dorv*	D	D	D	Plant spring or dormant, but spring plantings develop more readily due to less weed pressure.		250,000	Poaceae
<i>Schoenoplectus acutus</i> (<i>Scirpus a.</i>) Hard Stem Bulrush*	Facul	Dor, W	B	B	D	Seeds have significant to strong requirement for dormant seeding for field establishment, but plant when wetland is accessible immediately after construction.		368,000	Cyperaceae
<i>Schoenoplectus pungens</i> (<i>Scirpus p.</i>) Chairmakers Rush*	Facul	Dor	B	B	D	Seeds have significant to strong requirement for dormant seeding for field establishment, but plant when wetland is accessible immediately after construction.		220,000	Cyperaceae
<i>Schoenoplectus tabernaemontani</i> (<i>Scirpus validus</i>) Great Bulrush*	Facul	Dor	B	B	D	Seeds have significant to strong requirement for dormant seeding for field establishment, but plant when wetland is accessible immediately after construction.		5,600,000	Cyperaceae
<i>Scirpus atrovirens</i> Dark Green Rush	Surface, L	Dorv	B	B	B	Dormant seeding is best, the dormancy mechanisms vary widely from year to year, from 90% germ and zero% dorm to zero% germ and 98% dorm. Small seeds need light to germinate, surface sow or very shallow cover.		8,500,000	Cyperaceae
<i>Scirpus cyperinus</i> Wool Grass	Surface, L	Dorv	B	B	B	Dormant seeding is best, the dormancy mechanisms vary widely from year to year; some lots totally dormant and some lots totally nondormant. Small seeds need light to germinate, surface sow or very shallow cover.		23,300,000	Cyperaceae
<i>Scirpus pendulus</i> Red Bulrush	Surface, L	Dor	B	B	B	Seeds have a strong requirement for dormant seeding. Small seeds need light to germinate, surface sow or very shallow cover.		6,200,000	Cyperaceae
<i>Scrophularia marilandica</i> Late Figwort	Surface	Spr, Dorv	B	B	B	Genesis test data indicate good crops can be grown without dormant seeding, but germination will be enhanced (10-15%) with it. For field planting, this seed should be sown on top of the ground in early winter or spring		2,500,000	Scrophulariaceae

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Scutellaria lateriflora</i> Mad Dog Skullcap	Surface	Spr, Dorv	B	B	B	Successful by spring seeding, but dormant seeding provides increased and more uniform germination.		1,050,000	<i>Labiatae</i>
<i>Senna hebecarpa</i> (<i>Cassia hebecarpa</i>) Wild Senna*	Bury/Facul	Dor, Leg	B/D	D	D	Genesis seed tests indicate this seed typically has a high percentage of hard seed and may strongly benefit or require dormant seeding to establish a good stand, but early spring planting with inoculated scarified seed is necessary for rhizobia establishment. Dormant seed with inoculated, unscarified seed.	Germ 18.4, 14, 7.0, r4.0-62 (58)%. Hard 60.1, 63, na, r25-86 (61)%. Test 27, 30, na, r14-36 days.	23,000	<i>Leguminosae</i>
<i>Senna marilandica</i> (<i>Cassia marilandica</i>) Maryland Senna*	Bury/Facul	Dor, Leg	B/D	D	D	Genesis seed tests indicate this seed typically has a high percentage of hard seed and may strongly benefit or require dormant seeding to establish a good stand, but early spring planting with inoculated scarified seed is necessary for rhizobia establishment. Dormant seed with inoculated, unscarified seed.	Germ 4.0, 4.0, 4.0, r1.0-7.0 (6.0)%. Hard 64, 68.5, na, r29-92 (63)%. Test 20, 20, na, r13-29 days.	27,000	<i>Leguminosae</i>
<i>Silene regia</i> Royal Catchfly		Dor				Dormant seed only. Seeds have a strong requirement for dormant seeding.		380,000	<i>Caryophyllaceae</i>
<i>Silene stellata</i> Starry Campion								516,628	<i>Caryophyllaceae</i>
<i>Silphium integrifolium</i> Rosinweed	Bury	Dorv	D	D	D	Dormant seed is best. Dormancy mechanisms vary from year to year, field stand establishment from spring seeding is possible some years.		29,500	<i>Compositae</i>
<i>Silphium laciniatum</i> Compass plant	Bury	Dor	D	D	D	Dormant seed only. Adequate field establishment from spring seeding is potentially possible 1 year in 10.		12,800	<i>Compositae</i>
<i>Silphium perfoliatum</i> Cup Plant	Bury	Dorv	D	D	D	Dormant seed best. Dormancy mechanisms vary from year to year, field stand establishment from spring seeding is possible 3 out of 10 years.		28,300	<i>Compositae</i>
<i>Silphium terebinthinaceum</i> Prairie Dock	Bury	Dor	D	D	D	Dormant seed only. Adequate field establishment from spring seeding is potentially possible 1 year in 10.		22,900	<i>Compositae</i>
<i>Sisyrinchium albidum</i> Blue-eyed Grass	Surface	Dor	B	B	B	Initial test data indicate dormant seeding is strongly necessary.		320,000	<i>Iridaceae</i>
<i>Sisyrinchium campestre</i> Blue-eyed Grass	Surface	Dor	B	B	B	Initial test data indicate dormant seeding is strongly necessary.		430,000	<i>Iridaceae</i>
<i>Sium suave</i> Tall Water Parsnip	Facul	Spr, Dor	B	B	D	Plant dormant or spring. Initial test datum indicates dormant seeding is modestly beneficial.		800,000	<i>Umbelliferae</i>
<i>Solidago altissima</i> Tall Goldenrod	Why	Just say no	*	*	*	Sow anytime, this species will prevail, wanted or not, sown or not.		8,000,000	<i>Compositae</i>
<i>Solidago caesia</i> Blue-stemmed Goldenrod	Surface	Dor	B	B	B	Dormant seeding is best. Lightly scratch seed into <i>in situ</i> woodlands.		2,000,000	<i>Compositae</i>
<i>Solidago canadensis</i> Canada Goldenrod	Why	Just say no	*	*	*	Sow anytime, this species will prevail, wanted or not, sown or not.		8,000,000	<i>Compositae</i>
<i>Solidago flexicaulis</i> ZigZag Goldenrod	Surface	Dorv	B	B	B	Dormant seeding is best. Limited data indicate the dormancy mechanisms vary and spring plantings may be successful some years. Lightly scratch seed into <i>in situ</i> woodlands.		1,350,000	<i>Compositae</i>
<i>Solidago gigantea</i> Late Goldenrod	Surface	Spr, Dor	B	B	B	Plant dormant or spring. Genesis seed test data indicate slight to modest dormancy.		5,750,000	<i>Compositae</i>
<i>Solidago juncea</i> Early Goldenrod	Surface	Dor	B	B	B	Dormant seeding is best. Test data indicate significant to strong dormancy most years.		3,450,000	<i>Compositae</i>
<i>Solidago missouriensis</i> Missouri Goldenrod	Surface	Dor	B	B	B	Limited data indicate dormancy mechanisms vary. Dormant seeding can be strongly beneficial.		6,000,000	<i>Compositae</i>
<i>Solidago nemoralis</i> Oldfield Goldenrod	Surface	Dorv	B	B	B	Genesis seed test data indicates dormancy varies widely. Spring plant is successful 5 out of 8 years, but some lots strongly benefit from dormant seeding.		3,400,000	<i>Compositae</i>
<i>Solidago patula</i> Rough-leaved Goldenrod	Surface	Dor	B	B	B	Dormant seed only. Test data indicate a significant to strong dormancy rate.		1,100,000	<i>Compositae</i>
<i>Solidago rugosa</i> Wrinkled Leaf Goldenrod	Surface	Sprv	B	B	B	Spring seeding works with 4 out of 5 lots. Not native in northern Illinois		5,000,000	<i>Compositae</i>

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Solidago speciosa</i> Showy Goldenrod	Surface	Dor	B	B	B	Dormant seed only. Although modest stand establishment is possible by spring seeding, our seed testing confirms most lots require or significantly benefit from dormant seeding.		1,700,000	Compositae
<i>Solidago ulmifolia</i> Elm Leaved Goldenrod	Surface	Dor	B	B	B	Genesis seed tests confirm the need for dormant field seeding or cold moist stratification for greenhouse crops, most lots are significantly to strongly dormant		3,200,000	Compositae
<i>Sorghastrum nutans</i> Indian Grass	Facul	Spr, Dorv*	B	B	D	Plant spring or dormant, but spring plantings develop more successfully because of less weed pressure.		194,000	Poaceae
<i>Sparganium eurycarpum</i> Bur reed	Bury	Dor	D	D	D	Dormant seed or seed as the site becomes available. Further treatments unknown.		105,000	Sparganiaceae
<i>Spartina pectinata</i> Cord Grass	Bury	Spr, Dor, Rec	D	D	D	Field sowing in spring is best because of weed pressure, even though many lots are significantly dormant. Curbstone data indicates some seed may germinate the second or third growing season. Germ 2-93%, Dorm zero-85%		155,000	Poaceae
<i>Sphenopholis intermedia</i>	Surface	Spr	B	B	B	If you can find it for sale, plant spring or dormant as limited data suggests little or no dormancy. Germ 68.5-77%. Dorm zero - 2.5%.		6,500,000	Poaceae
<i>Spiraea alba</i> Meadowsweet	Surface	Spr	B	B	B	Genesis initial test data indicate seed is nondormant to slightly dormant (7%) and can be spring or dormant seeded on top of the ground. Germ 74-84%. Dorm zero - 7%.		9,557,894	Rosaceae
<i>Sporobolus asper</i> Rough Dropseed	Surface	Dor	B	B	B	Plant spring or dormant, but some lots are have a significant dormancy (20% - 30%).		590,000	Poaceae
<i>Sporobolus cryptandrous</i> Sand Dropseed	Surface	Dorv	B	B	B	Dormant seeding is best, with 50% of lots significantly dormant (20% to 64%).		3,400,000	Poaceae
<i>Sporobolus heterolepis</i> Northern Dropseed	Facul	Spr, Dor (Rec?)	B	B	D	Warm season grasses are best field sown in spring because of weed pressure, although seed test data indicate most lots benefit or strongly require dormant seeding. The fact that this species may be recalcitrant may cloud the dormancy issues as recalcitrance has clouded the growing of many native species for decades.		220,000	Poaceae
<i>Symphotrichum cordifolium</i> (<i>Aster cordifolius</i>) Heart Leaved Aster*	Surface	Spr, Dorv	B	B	B	Genesis test indicate spring planting works most years, the seed non-dormant or with a low percent dormancy, but some years strongly benefit from dormant seeding.		2,100,000	Compositae
<i>Symphotrichum drummondii</i> (<i>Aster drummondii</i>) Drummond's Aster*	Surface	Dor	B	B	B	Genesis seed test data indicate this species has a strong to absolute requirement for dormant seeding.		1,800,000	Compositae
<i>Symphotrichum ericoides</i> (<i>Aster ericoides</i>) Heath Aster*	Surface	Spr, Dorv	B	B	B	Genesis seed tests indicate dormant seeding is strong necessity over 40% of the time. The percent dormancy varies from year to year, with some lots primarily non-dormant, with other years primarily dormant; for best results field sow dormant.		4,000,000	Compositae
<i>Symphotrichum laeve</i> (<i>Aster laevis</i>) Smooth Blue Aster*	Surface	Dorv, Spr	B	B	B	Easy from seed, our test results indicate dormant seeding (or cold moist stratification for greenhouse crops) is almost always necessary, with dormancy ranging from 24% - 88% in 80% of lots		1,100,000	Compositae
<i>Symphotrichum lanceolatum</i> (<i>Aster simplex</i>) Panicked Aster*	Surface	Spr	B	B	B	Sow dormant or spring. Moist cold stratifying may benefit some seed lots, but good crops are possible without stratification. Non-dormant lots are known.		3,300,000	Compositae
<i>Symphotrichum lateriflorum</i> (<i>Aster lateriflorus</i>) Calico Aster*	Surface	Dorv	B	B	B	Test data indicate most lots are significantly to strongly dormant and should be dormant seeded. Modest to zero dormant lots are known.		3,600,000	Compositae
<i>Symphotrichum novae-angliae</i> (<i>Aster novae-angliae</i>) New England Aster*	Surface	Dor/Spr?	B	B	B	Many crop years show zero dormancy, but almost 50% of lots have a strong requirement for cold moist stratification. Dormant seeding is best.		1,600,000	Compositae
<i>Symphotrichum oblongifolium</i> (<i>Aster o</i>) Aromatic Aster*	Surface	Dorv	B	B	B	2/3 of lots are strongly dormant, 38-59%. 1/3 of lots are nondormant.		4,500,000	Compositae

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Symphyotrichum ontarionis</i> (Aster ontarionis) Ontario Aster*	Surface	Spr, Dor	B	B	B	Limited test data indicates plant either dormant or spring. Seed is nondormant.		4,500,000	Compositae
<i>Symphyotrichum oolentangiense</i> (Aster azureus) Sky Blue Aster*	Surface	Spr, Dorv	B	B	B	Most lots benefit strongly from dormant seeding, but it can be established from spring planting.		1,400,000	Compositae
<i>Symphyotrichum pilosum</i> (Aster pilosus) Frost Aster from Hell*	Surface	Spr, Dor	B	B	B	Cold dry storage may be ok, as some lots have zero dormancy. Limited test data shows cold moist stratification is not needed.		3,000,000	Compositae
<i>Symphyotrichum praealtum</i> (Aster praealtus) Willow Aster*	Surface	Dor	B	B	B	Clone, use plugs. Dormant seeding for field establishment or moist cold stratification for greenhouse crops benefits most lots, dormancy ranging from 25% to 35%. Nondormancy is known.		2,500,000	Compositae
<i>Symphyotrichum prenanthoides</i> (Aster prenanthoides) Crooked Stemmed Aster*	Surface	Dorv	B	B	B	Test data indicate 50% of lots require dormant seeding, dormant is safest.		2,000,000	Compositae
<i>Symphyotrichum puniceum</i> {Aster puniceus} Swamp Aster*	Surface	Spr, Dorv	B	B	B	This aster can be successfully seeded spring or dormant. Dormant seeding or cold moist stratification (for greenhouse work) will slightly to greatly improve germination of most lots. Rarely lots have zero dormancy.		1,300,000	Compositae
<i>Symphyotrichum puniceum firmum</i> (A. firmus) Shining Swamp Aster	Surface	Dor	B	B	B	Dormant seeding is strongly required for field sowing. Moist cold stratify or fall plant is mandatory for profitable greenhouse germination.		1,800,000	Compositae
<i>Symphyotrichum sericeum</i> (Aster sericeus) Silky Aster*	Surface	Dorv	B	B	B	Dormant seeding is best for field sowing. Moist cold stratify or fall plant improves greenhouse germination and is mandatory in 50% of lots.		750,000	Compositae
<i>Symphyotrichum shortii</i> {Aster shortii} Short's Aster*	Surface	Dor	B	B	B	Genesis seed test results indicate dormant seeding is required for field establishment. Cold moist stratify for greenhouse crops		1,200,000	Compositae
<i>Symphyotrichum urophyllum</i> {Aster sagittifolius} Arrow-Leaved Aster*	Surface	Dor	B	B	B	Dormancy rates vary from year to year, but dormant seeding is required most years for field establishment. Moist cold stratify or dormant seed is required for a good greenhouse crop.		1,400,000	Compositae
<i>Tephrosia virginiana</i> Goat's Rue	Facul, Bury, Leg	Dorv	B/D	D	D	Genesis seed tests indicate this seed typically has a high percentage of hard seed and may strongly benefit or require dormant seeding to establish a good stand, but early spring planting inoculated scarified seed is necessary for rhizobia establishment. Dormant seed with inoculated unscarified seed.	Germ 24.3, 15, na, r7.0-51 (44)%. Hard 70.7, 77, na, r44-91 (47)%. Test 31, 29, na, r28-35 days.	40,000	Leguminosae
<i>Teucrium canadense</i> Germander	Facul	Dor	B	B	D	For field establishment dormant seed only.	Germ 24.6, 30.8, na r0.0-43 (43)%. Dorm 59.9, 54, na, r44-85 (41)%. Test 37, 37, 35, r32-42 days.	245,000	Labiatae
<i>Thalictrum dasycarpum</i> Purple Meadow Rue	Facul	Dor, Rec	B	B	D	Dormant seed properly stored seed. Significantly to strongly dormant, recalcitrant.	Germ 11.7, 6.0, 12.0, r1.0-57.5 (56.5)%. Dorm 62.9, 67, na r34.5-87, (52.5)%. Test 34, 35, 41 r22-41 days	230,000	Ranunculaceae
<i>Thalictrum dioicum</i> Early Meadow Rue	Facul	Dor, Rec	B		Fresh, HR	Hand plant fresh seed or dormant seed with seed that has been properly stored. Seed has a short shelf life.	Germ 0.0%. Dorm 31%. Test 41 days. (Feb test)	116,800	Ranunculaceae
<i>Thalictrum thalictroides</i> (Anemone) Rue Anemone*	Bury*	Fresh, Dor, Rec	R	R	R	Hand plant fresh seed or dormant seed with seed that has been properly stored.	Germ 3.0%. Dorm 58%. Test 32 days.	210,000	Ranunculaceae
<i>Thaspium barbinode</i> Hairy Meadow Parsnip	Bury*	Dor	HR			Initial test data indicate dormant seeding is strongly necessary. If you ever score some of this, hand rake, dormant seed, under existing overstory only.	Germ 6.0, 6.0, na, r4.0-8.0 (4.0)%. Dorm 87.5, 57.5, na, r85-90 (5.0)%. Test 36, 36, na. r34-38 days.	182,201	Umbelliferae
<i>Thaspium trifoliatum</i> Meadow Parsnip	Facul	Dor	B	B	D	Initial test data indicate dormant seeding is strongly necessary.	Germ 3.0%. Dorm 85%. Test 36 days.	144,000	Umbelliferae

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Tradescantia bracteata</i> Bracted Spiderwort	Facul	Dor	B	B	D	Initial test data indicate dormant seeding is strongly necessary.	Germ 12%. Dorm 72%. Test 34 days.	127,774	Commelinaceae
<i>Tradescantia ohiensis</i> Ohio Spiderwort	Facul	Dor, Rec	B	B	D	Dormant seeding is necessary, germination without is slight to modest.	Germ 9.2, 8.0, 14, r2.0-24 (22)%. Dorm 51.9, 54.8, 58, r14.5-77 (62.5)%. Test 36, 36, 34, r29-42 days.	145,000	Commelinaceae
<i>Tridens flavus</i> Purple Top	Facul	Dor	B	B	D	Limited test data indicate significant benefit from dormant seeding.	Germ 64%. Dorm 32%. Test 24 days.	416,000	Poaceae
<i>Triosteum perfoliatum</i> Late Horse Gentian	Bury*, Bury	Dor	BR	BR	R	Genesis seed tests indicate <i>Triosteum</i> seeds are strongly dormant.	Germ 1.4, 1.0, 1.0, r0.0-3.0 (3.0)%. Dorm 83, 78, 95, r70-95 (25)%. Test 32, 33, na, 25-39 days.	10,750	Caprifoliaceae
<i>Tripsacum dactyloides</i> Eastern Gamma Grass	Bury	Dor	D	D	D	Dormant seeding is recommended. A limited amount of stratified seed is commercially available annually from major growers.	Germ 26.3, 21, na, r16-42 (26)%. Dorm 54, 50, na, r47-65 (18)%. Test na.	5,920	Poaceae
<i>Uvularia grandiflora</i> Bellwort	Bury*	Dor	Rake	Rake	l pity the fool	Dormant seeding under an existing overstory is absolutely necessary.	Germ 8.0%. Dorm 87%. Test 41 days.	35,080	Liliaceae
<i>Verbena hastata</i> Blue Vervain	Surface	Sprv	B	B	B	Spring seeding works well 8 out of ten years, but strongly dormant lots are known.	Germ 45.7, 54, 5.0, r4.0-88 (84)%. Dorm 35.3, 17, 0.0, r0.0-92 (92)%. Test 32, 32, 23, r19-50 days.	1,800,000	Verbenaceae
<i>Verbena stricta</i> Hoary Vervain	Surface	Dor	B	B	B	Dormant seed is best.	Germ 18.9, 8.0, 8.0, r4.0-71(67)%. Dorm 59.2, 60.5, na, r13-91 (78)%. Test 35, 35, 26, r26-49 days.	400,000	Verbenaceae
<i>Verbena urticifolia</i> White Vervain	Surface	Dorv	B	B	B	Most lots significantly or strongly require dormant seeding, but a nondormant lot is known.	Germ 30.7, 16, 7, r6-92 (86)%. Dorm 49.9, 40, na, r0-90 (90)%. Test 33, 37, 41, r20-41 days.	1,100,000	Verbenaceae
<i>Verbesina alternifolia</i> (<i>Actinomeris alternifolia</i>) Wingstem*	Facul	Dorv	B	D	D	Genesis seed tests indicate most lots benefit substantially from cold moist stratification or dormant seeding.	Germ 41, 37, 37, r4-84 (80)%. Dorm 35.5, 35, na, r6-88 (82)%. Test 39, 31, na, r 24-88 days.	148,000	Compositae
<i>Vernonia fasciculata</i> Common Ironweed	Facul	Sprv, Dor	B	B	D	Spring planting works most years. 20% of lots will benefit significantly to strongly from dormant seeding.	Germ 45.6, 42, 65, r14-90 (76)%. Dorm 23.3, 12.5, 0.0, r0.0-83 (83)%. Test 31, 30, 25, r20-41 days.	520,000	Compositae
<i>Vernonia gigantea</i> (<i>V. altissima</i>) Giant Ironweed*	Facul	Dorv, Spr	B	B	D	Dormant seeding is best, but essentially nondormant lots are known.	Germ 58.4, 68.5, na, r22.5-88 (65.5)%. Dorm 20.4, 16.8, na, r0-67 (67)%. Test 31, 30, na, r21-48 days.	430,000	Compositae
<i>Vernonia missurica</i> Missouri Ironweed	Facul	Dorv	B	B	D	Spring seeding works most years, but 30% of lots are strongly dormant.	Germ 46.3, 44, na, r11-81 (70)%. Dorm 22.2, 10.5, 9, r0.0-80 (80)%. Test 32, 34, 34, r22-43 days.	580,000	Compositae
<i>Vernonia novaboracensis</i>	Facul	Dor	B	B	D	Test data indicate dormant seeding is strongly required.	Germ 14.3, 14.3, na, r9-19.5 (10.5)%. Dorm 54.8, 54.8, na, r51.5-58 (6.5)%. Test na.	497,531	Compositae

Species	depth	season plus	Seeding methods			Bottom Line	MMMR	seeds/lb	family
			Frost	spr	lt spr				
<i>Veronicastrum virginicum</i> Culver's Physic	Surface	Dor, Rec	B	B	B	Fall seeding is best. Genesis seed tests show 2/3 of all lots tested are significantly to strongly dormant. C 10% of lots perform with nondormant seeding.	Germ 18.1, 8.0, 8.0, r1.0-77 (76)%. Dorm 40.4, 39.8, 0.0, r0.0-88 (88)%. Test 36, 37, 29, r23-50 days.	13,300,000	<i>Scrophulariaceae</i>
<i>Viola pedatifida</i> Prairie Violet	Facul	Dor	B	B	B	The hydrophilic seeds should be sown as fresh seed, or dormant seeded from moist-stored, refrigerated seed. Do not dry sow. Hybrids are prevalent. Chasmogamous & cleistogamous fruits.	Germ 6.8, 6, na, r3-12 (9)%. Dorm 67, 81, na, r18-89 (71)%. Test 30, 33, 33, r21-34 days.	448,000	<i>Violaceae</i>
<i>Zizania aquatica</i> Wild Rice	Bury* (submerge),	Dor, Rec	hand	hand	hand	Seed is very hydrophilic. Dormant seeding or CMS seed in spring and flooding the seed immediately is strongly required. Seeds can be scattered in shallow water and the sediment slightly disturbed with a light rake.	Germ 23.7, 21, na, r11-39 (28)%. Dorm 57, 57, na, r51-63 (12)%. Test 24, 28, na, r15-30 days.	11,350	<i>Poaceae</i>
<i>Zizia aptera</i> Heart-leaved Golden Alexander	Facul	Dor	B	B	D	Genesis test data indicate dormant seeding is significantly to strongly required.	Germ 6.4, 6, 6, r0.0-14 (14)%. Dorm 62.3, 80.5, na, r23-90 (67)%. Test 35, 35, 35, r26-43 days.	190,000	<i>Umbelliferae</i>
<i>Zizia aurea</i> Golden Alexander	Facul	Dor	B	B	D	Genesis test data indicate dormant seeding is significantly to strongly required..	Germ 17.6, 14, 12, r2-38 (36)%. Dorm 61.3, 63, 52, r19-90 (71)%. Test 36, 38, 34, r23-46 days.	184,000	<i>Umbelliferae</i>
Data subject to revision without notice.									
code details					code details				
Depth					Dormancy rates				
Surface surface sow					0-10% no to slight				
Facul surface sow dormant and early spring, drill late spring					10% - 20% modest				
Bury open land use rangeland drill, emergent rake in.					20% - 50% significant				
Bury* woodland hand plant, lightly rake					over 50% strong				
Season plus					Seeding methods & times				
Leg legume, successful inoculation?					frost Nov-Mar				
Dor dormant seed best					spr Mar-April 15				
Dorv dormant needed > 50% years, spring OK some years					lt spr April 15 on				
Spr spring plant, dormant almost always works also.					B broadcast				
Sprv spring plant works > 50% years, dormant often required					D Drill				
Succ Successional					Fresh plant fresh seeds only				
Rec recalcitrant seeds/bulbils, do not dry seeds/bulbils					Hemipar hemiparasitic, needs a host				
Dor/Spr? it's a toss up					W wetland construction factor, trumps all seasons or reasons				
L seeds need light, surface sow or shallow cover					MMMR Mean, Median, Mode, Range for germination & dormant seeds and length of seed test				
1 mean 3.5 =AVERAGE()					80 mean 115.0				
2 median 3.5 =MEDIAN()					90 median 120.0				
3 mode no mode =MODE()					120 mode 120.0				
4 max 6 =MAX()					130 max 150.0				
5 min 1 =MIN()					120 min 80.0				
6 range 5 =MAX-MIN					150 range 70.0				
1 mean 3.9 =AVERAGE()					1 mean 3.7				
2 median 3.5 =MEDIAN()					2 median 4				
3 mode 3 =MODE()					4 mode 4				
3 max 7 =MAX()					4 max 6				
4 min 1 =MIN()					5 min 1				
5 range 6 =MAX-MIN					6 range 5				
6									
7									