

# *Sleeping Beauties*

## How to Germinate Dormant Seeds

Kelly Schultz



# Wild Seeds



## ∞ Variability

∞ The timing & method of a seed's dispersal dictates what natural cues must take place before germination will occur

∞ *October is a terrible time to be a seedling*

∞ *And yet...most seeds ripen in fall*

∞ *Dormancy protects these seeds*

# Wild Seeds



☞ When seeds are ripe, it's a good time to sow

☞ C

☞ W/C\*

☞ DD

☞ P

☞ Sc, C(10), I

☞ Light

☞ A

☞ Other

( in general )

If you are sowing in the field:

If you are sowing in pots:

❧ C

❧ W/C\*

❧ DD

❧ P

❧ Sc, C(10), I

❧ Light

❧ A

❧ Other

## Cold-moist Stratification

1. Stratification = temperature treatments
2. 60-90 days of cold, damp conditions
3. The most common treatment
4. There are exceptions to every rule
5. 120-150 days for woodies
6. <40°F

If you are sowing in the field:

Sow by January (in northern IL); sow woodies by November

If you are sowing in pots:

1. Ziplocks: mix with damp sand, store in the refrigerator
2. Sow in pots, store outside by January

☞ C

☞ W/C\*

☞ DD

☞ P

☞ Sc, C(10), I

☞ Light

☞ A

☞ Other

## Warm-moist, Cold-moist Stratification

- Early-ripening species (mid-June)

- Berries (maybe)

- W ~ 70°F



If you are sowing in the field:  
Sow asap

If you are sowing in pots:

1. Ziplocks: mix with damp sand, store on the counter, then move to the refrigerator. Watch for mold!
2. Sow in pots, store outside asap

☞ C

☞ W/C\*

☞ DD

☞ P

☞ Sc, C(10), I

☞ Light

☞ A

☞ Other

## Warm-moist, Cold-moist Stratification\*

- Recalcitrant
- Hydrophilic
- Use Fresh Seed
- Sow immediately or refrigerate/freeze
- Low Viability ?

If you are sowing in the field:

Sow asap. Or seal in plastic & store in refrigerator/freezer

If you are sowing in pots:

Sow asap. Or seal in plastic & store in refrigerator/freezer



☞ C

☞ W/C\*

☞ DD

☞ P

☞ Sc, C(10), I

☞ Light

☞ A

☞ Other

## Double Dormant

- double the stratification fun!

- 2+ years of warm/cold cycles

If you are sowing in the field:

Sow asap & be patient.

If you are sowing in pots:

Sow asap & be patient. Don't give up!





☞ C

☞ W/C\*

☞ DD

☞ P

☞ Sc, C(10), I

☞ Light

☞ A

☞ Other

## Remove Pulp

- 2 layers of protection:
  1. Hard seed coat
  2. Chemical inhibitor
- Clean seeds with a blender & rinse
- Purchased seeds do not require special treatments
- C or W/C\* or DD

### If you are sowing in the field:

Remove pulp, wear down seed coat, rinse seeds; sow in fall/winter

### If you are sowing in pots:

Remove pulp, wear down seed coat, rinse seeds; sow in fall/winter

- ☞ C
- ☞ W/C\*
- ☞ DD

## Remove Pulp

- 2 layers of protection:
  1. Hard seed coat
  2. Chemical inhibitor
- Clean seeds with a blender & rinse
- Purchased seeds do not require special treatments
- C or W/C\* or DD



fall/winter

field  
 wn s  
 w in  
 s:  
 wn s  
 w in



William Cullina: Growing & Propagating Wildflowers

- ❧ C
- ❧ W/C\*
- ❧ DD
- ❧ P
- ❧ Sc, C(10), I
- ❧ Light
- ❧ A
- ❧ Other

## Scarification & Inoculant

- Scarification = to scar, cut, or wear down the seed coat
- Legumes: sandpaper (20-30 sec)
  - In the wild, occurs through freeze/thaw cycles or microbes
  - Short strat
  - Test: soak scarified seeds in water
- Inoculant: N-fixation, overall plant health

If you are sowing in the field:

DO NOT SCARIFY. Mix seeds with inoculant & a little water; sow in fall/winter

If you are sowing in pots:

Scarify, stratify for 10 days. Inoculant can be added when stratifying or when sowing.



☞ C

☞ W/C\*

☞ DD

☞ P

☞ Sc, C(10), I

☞ Light

☞ A

☞ Other

## Scarification

- Lotus: utility knife

- Acid

- Rock tumbler

- NJ Tea: Hot-water scarification

### If you are sowing in the field:

Heat up water (170-210°F); remove from heat, add seeds & let sit for 24 hours. Sow promptly after HW (in fall/winter)

### If you are sowing in pots:

Heat up water (170-210°F); remove from heat, add seeds & let sit for 24 hours. Strat for 90 days

∞ C

∞ W/C\*

∞ DD

∞ P

∞ Sc, C(10), I

∞ Light

∞ A

∞ Other

## Requires light to germinate

General Rule: sow seeds as deep as they are wide

1. Tiny seeds
2. Fluffy seeds

If you are sowing in the field:

Sow with a broadcaster; do not drill, do not bury

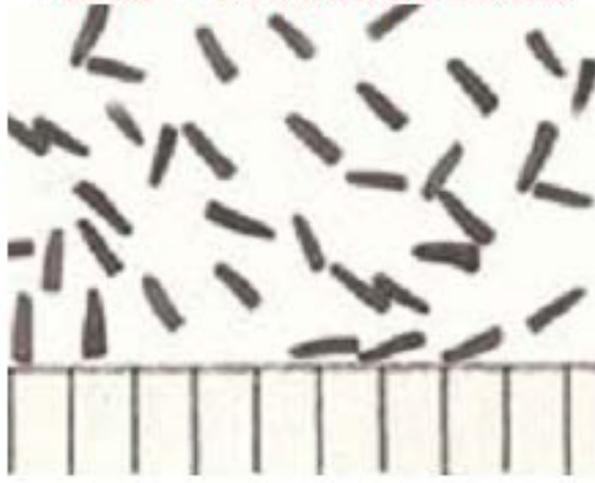
If you are sowing in pots:

Sow on top of the soil

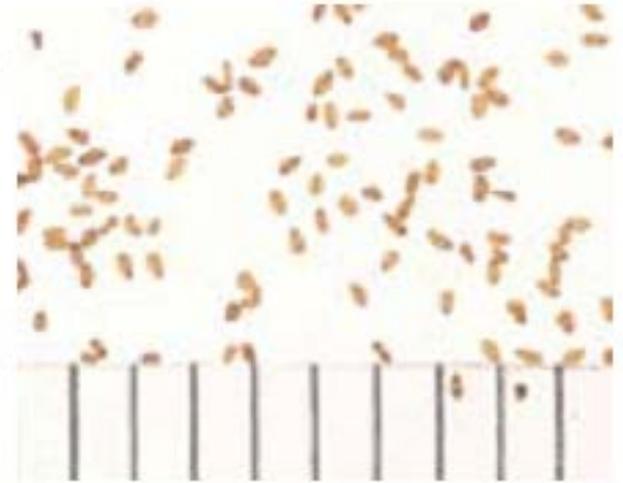
\*\*Scale = 1/16 inch increments



Big Bluestem  
*Andropogon gerardii*



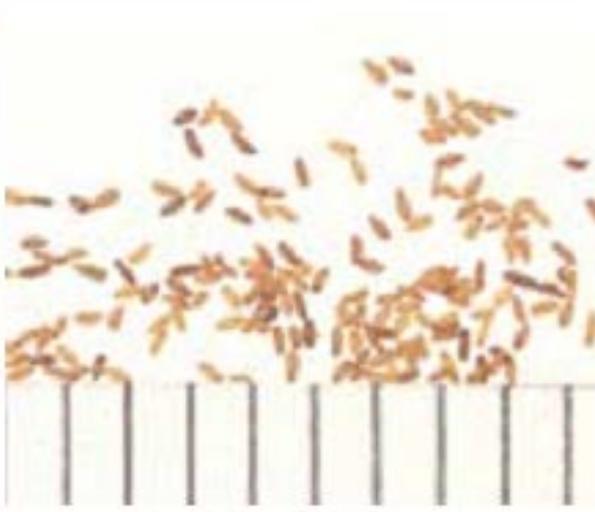
Black-eyed Susan  
*Rudbeckia hirta*



Blue Lobelia  
*Lobelia siphilitica*



Butterfly Milkweed  
*Asclepias tuberosa*



Cardinal Flower  
*Lobelia cardinalis*



Compass Plant  
*Silphium laciniatum*



∞ C

∞ W/C\*

∞ DD

∞ P

∞ Sc, C(10), I

∞ Light

∞ A

∞ Other

## Requires darkness to germinate

General Rule: sow seeds as deep as they are wide

- \*some\* of the bigger seeds (1/4")

If you are sowing in the field:

Broadcast or bury seeds

If you are sowing in pots:

Put a light layer of soil on top of the seeds

☞ C

☞ W/C\*

☞ DD

☞ P

☞ Sc, C(10), I

☞ Light

☞ A

☞ Other

## A: No Pretreatment Necessary

- Sow like those veggie seed packets
- Common grasses
- Sometimes common prairie flowers
- BUT Stratification will not hurt

### If you are sowing in the field:

- For spring germination, sow in spring or fall.
- Caution: warm-season germination → warm-season dominance?

### If you are sowing in pots:

- Sow anytime

☞ C

☞ W/C\*

☞ DD

☞ P

☞ Sc, C(10), I

☞ Light

☞ A

☞ Other

## Other

- Cool Soils

- Flux

- Smoke

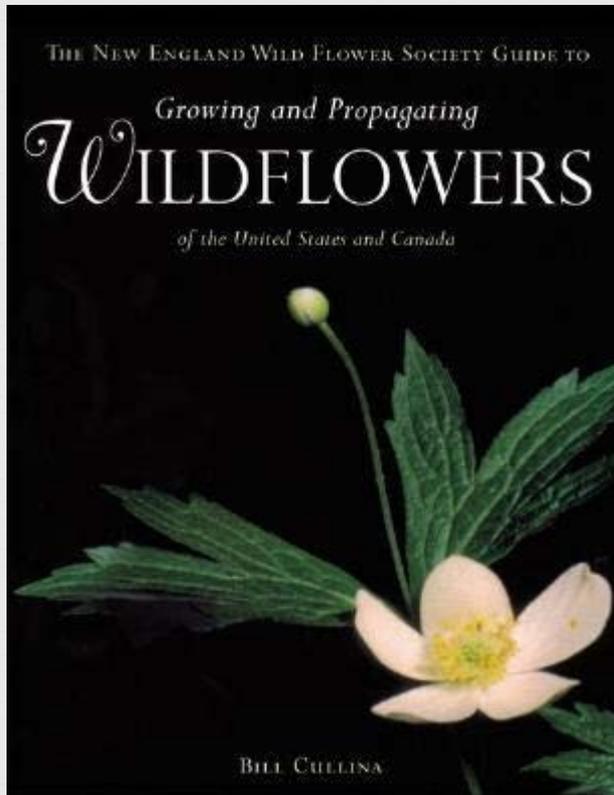
- Natural Soils

- Parasitic plants

If you are sowing in the field:

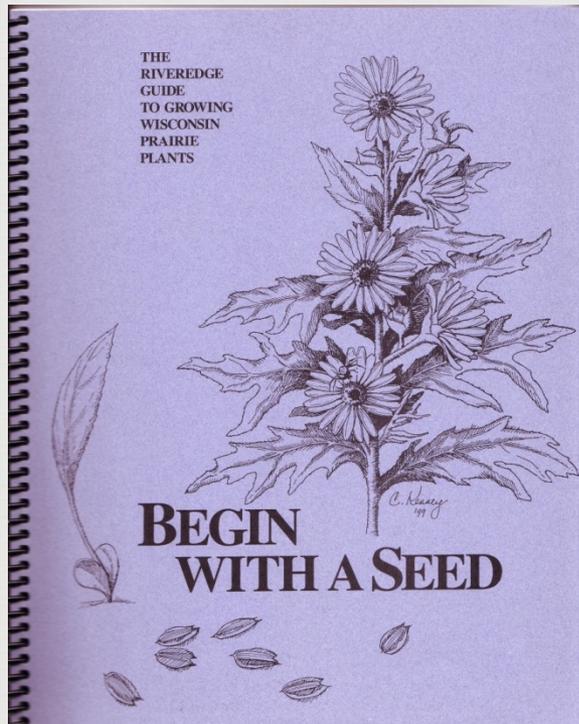
If you are sowing in pots:

# Resources



*William Cullina*  
*New England Wildflower Society*

# Resources



*Begin With a Seed:  
The Riveredge Guide  
to Growing Wisconsin Prairie Plants*

*Riveredge Nature Center, WI*

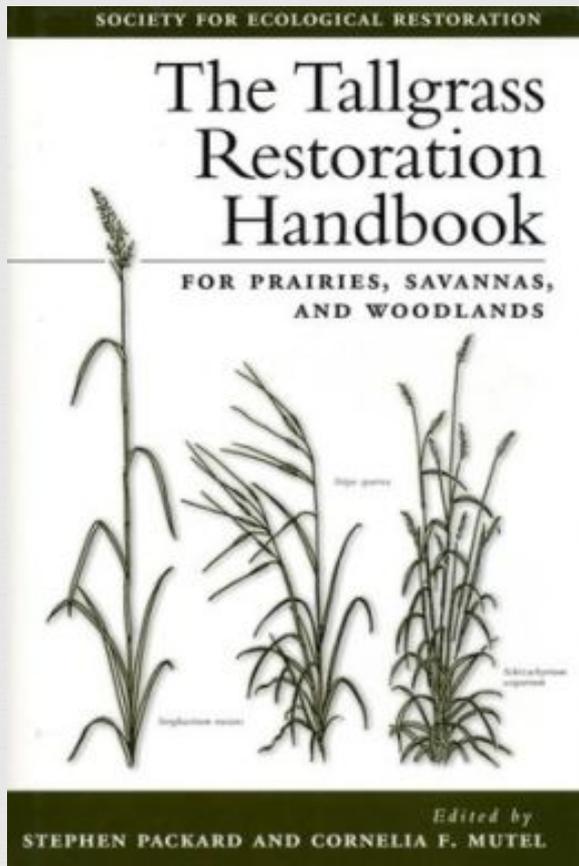
A	
DESCRIPTIVE LISTING OF FORBS	
Name	Common
<i>Agalinis purpurea (Gerardia purpurea)</i>	Purple Fals
<i>Agalinis tenuifolia (Gerardia tenuifolia)</i>	Slender Fal
<i>Agastache foeniculum</i>	Purple Hys
<i>Agastache nepetoides</i>	Yellow Gian
<i>Agastache scrophulariaefolia</i>	Giant Hys
<i>Agoseris cuspidata</i>	Prairie Dan
<i>Aletris farinosa</i>	Colic Root
<i>Alisma subcordatum</i>	Common W
<i>Allium canadense</i>	Wild Garlic
<i>Allium cernuum</i>	Nodding W
<i>Allium stellatum</i>	Prairie Oni
<i>Amorpha canescens</i>	Lead Plant
<i>Amorpha fruticosa</i>	False Indigo
<i>Anemone canadensis</i>	Canada An
<i>Anemone cylindrica</i>	Thimblewee
<i>Anemone patens</i>	Pasque Flo
<i>Anemone virginiana</i>	Tall Thimbl
<i>Angelica atropurpurea</i>	Angelica
<i>Antennaria neglecta</i>	Pussy Toes
<i>Apocynum androsaemifolium</i>	Dogbane
<i>Apocynum cannabinum</i>	Indian Hem
<i>Aquilegia canadensis</i>	Columbine
<i>Arabis glabra</i>	Tower Mus
<i>Arabis hirsuta</i>	Hairy Rock
<i>Arabis lyrata</i>	Rock Cress
<i>Arenaria stricta</i>	Rock Sand
<i>Artemisia campestris</i>	Wormwood
<i>Artemisia caudata</i>	Beach Wor
<i>Artemisia ludoviciana</i>	White Sage
<i>Asclepias amplexicaulis</i>	Bluntleaf M
<i>Asclepias exaltata</i>	Poke Milk
<i>Asclepias hirtella</i>	Green Milk
<i>Asclepias incarnata</i>	Marsh Milk
<i>Asclepias purpurascens</i>	Purple Milk
<i>Asclepias sullivantii</i>	Prairie Milk
<i>Asclepias syriaca</i>	Common M
<i>Asclepias tuberosa</i>	Butterfly W
<i>Asclepias verticillata</i>	White Milk
<i>Asclepias viridiflora</i>	Short Green
<i>Aster azureus</i>	Azure Aste
<i>Aster ericoides</i>	Heath Aste
<i>Aster laevis</i>	Smooth Bl
<i>Aster lateriflorus</i>	Calico Aste

- Latin Name
- Common Name
- 3 References (guide books)
- Flower color
- Height (low, high, height range)
- Flower Period
- Sun exposure
- Moisture
- Germination codes
- Harvest dates
- Special soil types
- Comments
- Attracts butterflies, hummingbirds
- Clay tolerant
- Shade tolerant
- Deer resistant
- Endangered or Threatened

Type a question for help

	M	N	O
	Sun Exposure	Moisture	Germination
P		M, WM, W	C
P, S		DM, M, WM	J or C
P, S		DM, M	K or C(90)
P, S		DM, M, WM	K or C(120)
P, S		M, WM	K or C(90)
P		D	C(30), G
P		DM	A or C, D
P		W	A
P, S, W		DM, M, WM	A
P, S		DM, M, WM	C
P		D, DM, M	C
P		DM, M	C(10), H, I
P, S		DM, M, WM	C(10), I
P, S		D, DM, M	F
P, S		D, DM, M	A or C, G
P		DM, M	J or C
P, S		DM, M, WM	C, G
P, S		WM	K or C
P, S		D, DM	C
P, S		D, DM, M	A
P, S		DM, M, WM	A
P, S, W		DM, M, WM	C
P		DM	A or C
P, S		D, DM	C, D
P, S		D, DM	A
P, S		D	C
P		D	A, D
P		D	A or C
P, S		D, DM, M	A, D
P		D	C
P, S		DM	C or A
P		D, DM	C or A
P		M, WM, W	C or A
P, S		DM, M, WM	C or A
P		M, WM	C or A
P, S		D, DM, M	C or A
P, S		D, DM, M	C or A
P, S		D, DM, M	A or C
P		D, DM	C or A
P, S		D, DM, M	A
P, S		D, DM, M	A
P, S		DM, M, WM	A
P, S, W		DM, M, WM	A

# Resources



Jim Steffen's chapter

# Resources



<http://www.nativeplantnetwork.org/Network>

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 keyword search

## PROPAGATION PROTOCOL SEARCH

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	Species: <input type="text"/>
	Type in or choose from the list below Genus - Species <input type="text"/>
Family Scientific Name:	Type in or choose from the list below Family <input type="text"/>
State/Province:	No Preference <input type="text"/>
Product type:	No Preference <input type="text"/>
Organization:	No Preference <input type="text"/>
Company/Nursery Name:	No Preference <input type="text"/>

# Resources



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☞ Commercial Native Seed Nurseries

*Thank You!*



# *Thank You!*



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[www.lcfpd.org/nursery](http://www.lcfpd.org/nursery)

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