



United States Department of Agriculture  
 Natural Resources Conservation Service  
 200 North High Street, Room 522  
 Columbus Ohio 43215



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TECHNICAL NOTE: – AGRONOMY – OH-2

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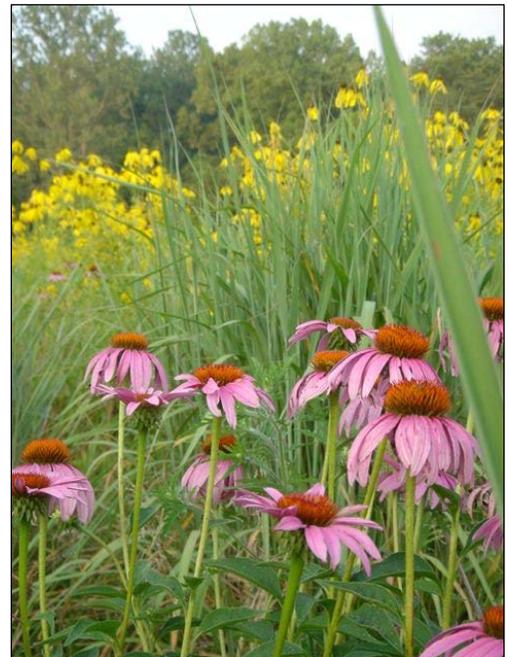
## Broadcast Seeding Warm Season Grasses

**Background:** Bearded warm season grass (WSG) seed presents a challenge for seeding through conventional grain/grass drills. Special drills or drill attachments have been manufactured with aggressive agitators to assist in feeding this fluffy seed through the drill without bridging over. Not all producers have access to this equipment. This technical note provides some alternatives to producers who want or need to establish their own warm season grasses yet do not have access to a specialized grass drill.

### I. General Guidelines for all Warm Season Grass Seedings:

**1) Seed:** Select species of grasses and forbs which are compatible with one another and suitable for the site conditions. Some species do better on drier soils while others will flourish on wetter soils. Consult your Conservation Plan of Operations (CPO) and/or job sheets for recommended species and rates.

Use seed from a reputable vendor that is registered with the Ohio Department of Agriculture (ODA). Be sure that the purchased seed is labeled according to ODA regulations and the Ohio Revised Code. Seed tags should contain at a minimum, the lot number, the kind and variety of seed, the percent of pure seed, the percent germination, the percent dormant or hard seed and the name and amount of noxious weeds contained in the mix. This information is necessary to calculate the Pure Live Seed (PLS) and the appropriate seeding rate.



If there is any question about the quality of seed or if the seed is not labeled properly, it should be returned to the vendor or it can be sampled and tested by:

Ohio Department of Agriculture  
 Division of Plant Industry – Grain, Feed and Seed Section  
 8995 E. Main Street  
 Reynoldsburg, Ohio 43068  
 614-728-6410

- **Calculating Pure Live Seed (PLS) and Seeding Rates:**

Warm season grasses are purchased on a Pure Live Seed basis. This means that if you purchase 50 lbs of PLS, you will probably get shipped a bag containing more than 50 lbs of material. PLS is calculated as follows: **% PLS= % Pure Seed x (% Germination+ % Dormant seed)**

For example: If you ordered 50lbs of pure live big bluestem seed and the seed tag states:

Lot number 745-HG	
Kind	Big Bluestem
Pure Seed	99.0%
Germination	72%
Dormant (Hard) Seed	10%
Weed Seed	.5%
Noxious Weed Seed	0.0%

**PLS Calculation:**

% PLS= % Pure Seed [99] x (% Germination [72] + % Dormant seed [10])

% PLS= [.99] x ([.72] + [.10])

% PLS= .99 x .82

% PLS= .81

Or Pure Live Seed = 81 %

50 lbs PLS divided by .81 = 61.2 lbs

Your "50 lb" bag of big bluestem seed should weigh 61.2 lbs as shipped.



**Seeding Rate Adjustment for PLS:** So if the recommended seeding rate is 6 lbs/acre of PLS you need to adjust your actual rate planted:  
 6 lbs PLS/acre divided by .81 (PLS) = 7.4 lbs/acre.

In other words you would need to plant 7.4 lbs/acre of the seed in the bag to get 6 lbs/acre of pure live big bluestem seed. The material in the bag should cover 8.3 acres.



**2) Reducing Weed Competition:** In general, warm season grasses and forbs are not very competitive as seedlings. Once established they can compete quite well. It is recommended that measures be taken to reduce weed competition for the first year or two after planting. This can be done using tillage prior to seeding (if fields are flat), with timely applications of appropriate herbicides or by mowing. Be prepared to spray or mow during the first two years of establishment if weed competition threatens the new stand.



**Herbicides:** Tillage will stir the weed seedbank in the soil, bringing weed seed up into the zone of germination. A herbicide application after tillage may be necessary. There are several different herbicides that will help with weed control. Here are a couple of common options:

**Option 1)** Till and culti-pack in early April. Allow approximately two weeks for weeds to germinate and grow. Apply appropriate burndown herbicide such as Round-up plus 2.4-D or Journey. Allow one week for weed burn down prior to seeding warm season grasses. Culti-pack after seeding.

**Option 2)** Till, culti-pack, seed and culti-pack again between early April and late May. Apply an ALS inhibiting herbicide such as Plateau immediately after planting.

*Some herbicides used for warm season grasses may kill switchgrass and eastern gamagrass seedlings. Any mention of trade names such as Roundup, Journey, and Plateau, does not constitute an endorsement of those products. Consult your farm product supplier for equivalent herbicides. Always read and follow label directions.*

**Mowing:** During the growing season, consecutive and well timed mowing will ensure annual weed control. Mow annuals (i.e. foxtail) with the onset of flowering, but prior to seed development. As they regrow and attempt to flower and set seed, another mowing may be necessary. Two to three mowings during the first growing season are recommended. Initially mow leaving a stubble height of 4-6 inches. Thereafter leave a stubble height of 6-8 inches.

**Caution:** For stands planted for wildlife cover, mowing destroys the habitat created by warm season grasses. Be sure to observe mowing restrictions around the nesting season. First consider spot mowing or spraying to reduce weed competition rather than full field mowing.

**For land enrolled in the Conservation Reserve Program (CRP),** mowing is authorized only during the establishment period for your warm season grass stand, as a possible management practice for Mid-Contract Management (must be approved), or if noxious weeds persist. Periodic or annual mowing after the seeding is established is prohibited. Spot mowing or spraying to control noxious weeds is authorized.



Henslow's Sparrow  
Picture Courtesy of William Hull  
Ohio Ornithological Society  
<http://www.ohiobirds.org>

**3) Site Preparation:** Any system which provides good seed to soil contact while keeping the seeding depth to ¼ inch or less has a high probability for success. Tilled soils should be culti-packed to provide a firm seedbed. Soil should be firm enough that your footprint is no deeper than ½ inch. All too often warm season grasses and forbs are planted too deeply with a drill. Approximately 30-40% of the seed should be visible on the soil surface when seeding is completed.

## II. Broadcast Seeding Warm Season Grasses:

### 1) Field Preparation and Planting

Ground Cover Prior to Planting	Seedbed Preparation and Seeding	Timing	Comments
<b>Bare ground or Soybean Stubble</b>	1) Till and level ground if needed using: <ul style="list-style-type: none"> <li>• Light Disk and/or</li> <li>• Field Cultivator (or similar tool)</li> </ul>	Between April 1 <sup>st</sup> and May 31 <sup>st</sup> .	Soil should be firm enough that your footprint is no deeper than ½ inch.
	2) Culti-pack to firm seedbed		See Section II-2) Broadcasting Methods below
	3) Broadcast WSG/Forb seed		
	4) Culti-pack again for seed to soil contact.		
	5) Apply ALS inhibiting herbicide (Plateau) if needed.	Prior to WSG emergence	See Section I-2) Reducing Weed Competition above
	6) Control weed competition.	May-September	
<b>Corn or Wheat Stubble</b>	1) Bale wheat straw or corn fodder	After harvest of crop	
	2) Till ground using: <ul style="list-style-type: none"> <li>• Disk and/or</li> <li>• Field Cultivator (or similar tool)</li> </ul>	Between April 1 <sup>st</sup> and May 31 <sup>st</sup> .	Soil should be firm enough that your footprint is no deeper than ½ inch.
	3) Culti-pack to firm seedbed		See Section II-2) Broadcasting Methods below
	4) Broadcast WSG/Forb seed		
	5) Culti-pack again for seed to soil contact.		
	6) Apply ALS inhibiting herbicide (Plateau) if needed.	Prior to WSG emergence	See Section I-2) Reducing Weed Competition above
	7) Control weed competition.	May-September	
<b>Grassland or Pastureland</b>	1) Spray cool season grass or pasture with Glyphosate (Roundup or Journey) in fall of the previous year	September of Previous year	Spray while grass is still actively growing.
	2) If field is not highly erodible, prepare the field using a primary tillage implement to destroy old sod.	Between April 1 <sup>st</sup> and May 31 <sup>st</sup> .	
	3) Level ground using: <ul style="list-style-type: none"> <li>• Light Disk and/or</li> <li>• Field Cultivator (or similar tool)</li> </ul>		Soil should be firm enough that your footprint is no deeper than ½ inch.
	4) Culti-pack to firm seedbed		See Section II-2) Broadcasting Methods below
	5) Broadcast WSG/Forb seed		
	6) Culti-pack again for seed to soil contact.		
	7) Apply ALS inhibiting herbicide (Plateau) if needed.	Prior to WSG emergence	See Section I-2) Reducing Weed Competition above
	8) Control weed competition.	May-September	

*Any mention of trade names such as Roundup, Journey, and Plateau, does not constitute an endorsement of those products. Consult your farm product supplier for equivalent herbicides. Always read and follow label directions.*

## 2) Broadcasting Methods:

Depending on the kind of seed, broadcasting warm season grass seed can be challenging. Hard seed like switchgrass or eastern gamagrass are easy to broadcast with a spinner broadcast spreader. Bearded fluffy seeds such as big bluestem, little bluestem, and indiagrass are much more challenging. This section is intended to identify some methods for broadcasting these seeds uniformly across the field. The seedbed must be properly prepared for a broadcast seeding. See Section II-1 Above

Broadcast Equipment	Method	Hints /Tips
<p><b>Commercial Fertilizer Truck or Fertilizer Spreader</b></p>	<p>Have fertilizer dealer mix WSG seed with carrier:</p> <ul style="list-style-type: none"> <li>• Lime at a rate of 500 lbs / acre</li> </ul> <p style="text-align: center;"><b>Or</b></p> <ul style="list-style-type: none"> <li>• Phosphorus or Potash Fertilizer at a rate of 200 lbs / acre.</li> </ul> <p style="text-align: center;"><b>DO NOT USE NITROGEN FERTILIZER!</b></p> <p>Some producers have the fertilizer dealer also mix water with the phosphorus or potash fertilizer at a rate of 5 gallons per ton of fertilizer to help the WSG seed stick to the fertilizer pellets.</p>	<p>Can be used to seed large acreage.</p> <p>The WSG will not broadcast as far as the carriers. You must overlap to ensure even coverage.</p> <p>Nitrogen fertilizer will stimulate cool season grasses and weeds.</p> <p>If water is used in the mix, the WSG seed should be carried with the fertilizer pellets and overlapping should not be as important. Broadcast immediately so that the water/fertilizer do not dry and cake.</p>
<p><b>Spinner Type Seeder with Agitator</b></p>	<p>Spinner type seeders with multiple vanes and a spreading disk can throw bearded seed 8-12 feet without a carrier. The bearded seed will lock together the smaller legumes and fine seed. (See tips to ensure even coverage)</p> <p style="text-align: center;"><b>Or</b></p> <p>Have seed dealer mix the WSG with carrier:</p> <ul style="list-style-type: none"> <li>• Cracked wheat or oats at a rate of 1 bu/acre</li> </ul> <p style="text-align: center;"><b>Or</b></p> <ul style="list-style-type: none"> <li>• 50 lbs of pelletized lime per acre</li> </ul>	<p>Can be used to seed medium to large acreage.</p> <p><b>Calibrate seeder by adding one acre of seed to the seeder and plant a 206' x 206' area. Adjust seed flow settings accordingly.</b></p> <p>Cracked wheat will not germinate</p> <p><b>One tip is to cut the seeding rate in half and go over the seeding area twice in opposite directions.</b></p>
<p><b>Conventional Cyclone Seeder or WSG Hand Broadcaster</b></p>	<p>Use debearded seed with a conventional Cyclone type seeder.</p> <p style="text-align: center;"><b>Or</b></p> <p>Hand WSG broadcast seeders are specially designed with picker wheels at the base of the box to help pull the seed down into the spinner.</p>	<p>Limited to small to medium size acreage</p> <p><b>You must overlap to ensure even coverage. One tip is to cut the seeding rate in half and go over the seeding area twice in opposite directions.</b></p>
<p><b>Broadcast by Hand</b></p>	<p>Seed is thrown upward into a slight breeze to let the wind scatter the seed. Care must be taken to broadcast uniformly. Increase seed rate by 50%.</p>	<p>Limited to very small areas</p> <p><b>You must overlap to ensure even coverage.</b></p>

### Prepared by:

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