

Section I: General Information for Grasses, Legumes and Forbs Grown in MI

Section 1 - Table 5: Broadcast Seeding Warm Season Grasses: 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 Indiangrass 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 1) Field Preparation and Planting above.

Broadcast Equipment	Method	Hints /Tips
Commercial Fertilizer Truck or Fertilizer Spreader	<p>Have fertilizer dealer mix WSG seed with carrier:</p> <ul style="list-style-type: none"> • Lime at a rate of 500 lbs. / acre <p style="text-align: center;">Or</p> <ul style="list-style-type: none"> • Phosphorus or Potash Fertilizer at a rate of 200 lbs. / acre. <p style="text-align: center;">DO NOT USE NITROGEN FERTILIZER!</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>
Spinner Type Seeder with Agitator	<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;">Or</p> <p>Have seed dealer mix the WSG with carrier:</p> <ul style="list-style-type: none"> • Cracked wheat or oats at a rate of 1 bu/acre <p style="text-align: center;">Or</p> <ul style="list-style-type: none"> • 50 lbs. of pelletized lime per acre 	<p>Can be used to seed medium to large acreage.</p> <p>Calibrate seeder by adding one acre of seed to the seeder and plant a 206' x 206' area. Adjust seed flow settings accordingly.</p> <p>Cracked wheat will not germinate</p> <p>One tip is to cut the seeding rate in half and go over the seeding area twice in opposite directions.</p>
Conventional Cyclone Seeder or WSG Hand Broadcaster	<p>Use debearded seed with a conventional Cyclone type seeder.</p> <p style="text-align: center;">Or</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>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.</p>
Broadcast by Hand	<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>You must overlap to ensure even coverage.</p>

**TABLE 2 - Permanent Critical Area Seedings
(Waterway-Type Areas, Critical Areas, and Construction Areas)**

Seeding Mixture ^{1,3,4}	lbs./acre (/1000 ft²)	Suitable Uses	Wildlife Value	Drainage	Remarks
<i>Creeping Red Fescue</i>	40 (.10)	WW,CA,HU,CO	LOW	MWD	
<i>Creeping Red Fescue</i> <i>Kentucky Bluegrass</i>	20 (.5) 20 (.5)	CA, HU, CO	LOW	MWD	For waterways, if management as a lawn.
<i>Creeping Red Fescue</i> <i>Tall Fescue</i> <i>Kentucky Bluegrass</i> <i>Perennial Ryegrass</i>	25 (.6) 20 (.6) 5 (.2) 5 (.2)	CA, HU, CO, FR, WW	LOW	SPD	On soils which have higher clay content, increase Tall Fescue and reduce Creeping Red Fescue.
<i>Creeping Red Fescue</i> <i>Kentucky Bluegrass</i> <i>Redtop</i> <i>Smooth Bromegrass</i> <i>Timothy</i> <i>Birdsfoot Trefoil</i>	20 (.5) 5 (.2) 1 (.03) 20 (.5) 2 (.05) 10 (.3)	CA, HU, CO	LOW	SPD	
<i>Creeping Red Fescue</i> <i>Redtop</i> <i>Smooth Bromegrass</i> <i>Perennial Ryegrass</i>	20 (.5) 1 (.03) 20 (.3) 5 (.2)	CA, HU, CO	LOW	PD	
<i>Tall Fescue</i> <i>Smooth Bromegrass</i>	15 (.4) 15 (.4)	WW, CA, HU, CO	LOW	SPD	Add 6# of Birdsfoot Trefoil if desired.
<i>Tall Fescue</i> <i>Redtop</i> <i>Perennial Ryegrass</i>	30 (.7) 2 (.05) 5 (.2)	WW, CA	LOW	SPD,MK	For close mowing and for waterways with < 2.0 ft/sec velocity. Add 6# of Birdsfoot Trefoil if desired.
<i>Smooth Bromegrass</i> <i>Birdsfoot Trefoil</i>	15 (.4) 10 (.3)	CA	LOW	SPD	
<i>Tall Fescue</i> <i>Smooth Bromegrass</i>	20 (.5) 20 (.5)	WW	LOW	SPD	
<i>Tall Fescue</i> <i>Crownvetch</i>	10 (.3) 15 (.4)	CA, HU, CO	LOW	MWD	
<i>Reed Canarygrass</i>	10 (.3)	CA, HU, CO	LOW	VPD, MK	
<i>Reed Canarygrass</i> <i>Timothy</i> <i>Redtop</i>	10 (.3) 4 (.1) 1 (.03)	CA, HU, CO	MED	MK	
<i>Smooth Bromegrass</i>	30 (.7)	WW, CA	LOW	MWD	Add 6# of Birdsfoot Trefoil if desired.
<i>Smooth Bromegrass</i> <i>Red Top</i> <i>Perennial Ryegrass</i>	25 (.6) 2 (.05) 5 (.2)	WW	LOW	SPD	Add 6# of Birdsfoot Trefoil if desired.
<i>Timothy</i> <i>Birdsfoot Trefoil</i>	3 (.1) 10 (.3)	CA, HU, CO	MED	MWD	

- One (1) bushel/acre of rye or wheat or oats; or 5 lbs./acre of annual or perennial rye is highly recommended for adding to the mix for quicker green-up or stabilization. See Table 4 for further details.
- WW=Waterway Type Areas; CA=Critical Areas; HU=Heavy Use Areas; CO=Construction Areas; and FR=Harvest Trails and Landing Sites.
- See Table 6 for seeding dates.
- Use the higher seeding rates for steeper slopes, reclamation areas, or poorer site conditions.
- Minimum drainage or better required for acceptable growth: WD=Well Drained; MWD=Moderately Well Drained; SPD=Somewhat Poorly Drained; PD=Poorly Drained; and MK=Muck Soils.
- All warm-season grass seeding rates are listed as pure live seed (PLS).

**TABLE 2 - Permanent Critical Area Seedings - Continued
(Waterway-Type Areas, Critical Areas, and Construction Areas)**

Seeding Mixture 1,3,4	lbs./acre (/1000 ft ²)	Suitable Uses	Wildlife Value	Drainage	Remarks
Big bluestem Prairie Sandreed Little Bluestem	5 (.2) 5 (.2) 5 (.2)	Sand Dune area	HIGH	MWD	Plant after sand is stabilized with beach grass (2 yrs).
American Beachgrass	Planted Vegetatively	Sandy areas subject to blowing	MED	WD	To stabilize sand areas subject to blowing refer to Additional Criteria on page 3 for planting information.
Red Top Perennial Ryegrass Orchard Grass Birdsfoot Trefoil	2 (.05) 5 (.2) 1 (.03) 3 (.1)	CA, CU	HIGH	SPD	
Switch Grass Perennial Ryegrass Ladino Clover Orchard Grass	2 (.05) 5 (.2) 3 (.1) 1 (.03)	CA, HU, CO	HIGH	SPD	
Big Bluestem Little Bluestem Switchgrass	2 (.05) 2 (.05) 2 (.05)	CA, CO	HIGH	MWD	
Orchard Grass Ladino Clover Red Top	8 (.25) 2 (.05) 3 (.1)	FR	HIGH	MWD	
Creeping Red Fescue Perennial Ryegrass Red Clover	20 (.5) 6 (.2) 3 (.1)	CO, CA, FR	LOW	MWD	
Lathco' Flatpea Perennial Ryegrass	30 (.7) 20 (.5)	FR	MED	MWD	For shaded Woodland.
Lathco' Flatpea Tall Fescue	20 (.5) 20 (.5)	FR	LOW	MWD	For shaded Woodland.
Crownvetch Tall Fescue Redtop	15 (.4) 20 (.5) 2 (.05)	FR	LOW	MWD	For shaded Woodland.
Birdsfoot Trefoil Timothy	8 (.3) 4 (.1)	FR	HIGH	MWD	For Wooded Edges and Openings.
White Clover Kentucky Bluegrass Timothy	1 (.03) 6 (.2) 2 (.05)	FR	MED	MWD	For Wooded Edges and Openings.
Orchardgrass Ladino Clover Redtop	10 (.3) 2 (.05) 3 (.1)	FR	HIGH	MWD	For Wooded Edges and Openings.
Tioga' Deertongue Birdsfoot Trefoil	8 (.3) 6 (.2)	FR	MED	MWD	For Wooded Edges and Openings.

1. One (1) bushel/acre of rye or wheat or oats; or 5 lbs./acre of annual or perennial rye may be added to the mix for quicker green-up or stabilization.
2. WW=Waterway Type Areas; CA=Critical Areas; HU=Heavy Use Areas; CO=Construction Areas; and FR=Forest Roads and Landing Sites
3. See Table 6 for seeding dates.
4. Use the higher seeding rates for steeper slopes, reclamation areas, or poorer site conditions.
5. Minimum drainage or better required for acceptable growth: WD=Well Drained; MWD=Moderately Well Drained; SPD=Somewhat Poorly Drained; PD=Poorly Drained; and MK=Muck Soils.
6. All warm-season grass seeding rates are listed as pure live seed (PLS).

TABLE 3 - Trees and Shrubs for Critical Areas (for areas less subject to erosion)

In areas less subject to erosion plant trees where the plant canopy and leaf litter will provide adequate erosion control. Space trees 6' x 6' and shrubs 3' x 3'. Stagger seedlings in adjacent rows.

Soil Conditions	Trees	Shrubs
Well and moderately well drained sand and loamy sand (coarse textured soils)	Jack Pine ¹ , Red Pine, White Pine ¹ , Black Locust ² , Imperial Carolina Poplar	Hawthorn ¹ , Crabapple ¹ , Serviceberry ¹ , Arnot' Bristly Locust ² , Autumn Olive ^{1,2}
Well and moderately well drained, moderately coarse to moderately fine textured soils (sandy loam, loam silt loam, and clay loam textured soils)	Jack Pine ¹ , Red Pine, White Pine ¹ , Norway Spruce ¹ , White Spruce ¹ , Black Locust ²	Gray Dogwood ¹ , Crabapple ¹ , Nannyberry ¹ , Autumn Olive ^{1,2}
Well and moderately well drained clay and silty clay (fine textured soils)	White Pine ¹ , Norway Spruce ¹ , Black Locust ² , White Spruce ¹	Silky Dogwood ¹ , Crabapple ¹ , Nannyberry ¹ , American Cranberrybush ¹

1. Indicates species best suited for wildlife food or cover.
2. Indicates species that may be invasive in some areas.

TABLE 4 -Temporary Seeding for Fields or Critical Areas

Seed Mixture	lbs./acre or lbs./1000 ft ²	Planting Zone 1 ₁	Planting Zone 2 ₁	Planting Zone 3 ₁
Oats	96 or 2	4/1 to 9/15	4/15 to 8/1	5/1 to 8/1
Perennial Ryegrass	20 or .5	8/1 to 10/15	6/1 to 8/1	8/1 - 10/1
Sudangrass	40 or 1	6/1 to 7/15	6/1 to 7/15	Not Rec.
Wheat	120 or 3	9/20 to 10/15	9/10 to 10/1	9/10 to 10/1
Cereal Rye	120 or 3	8/1 to 10/15	8/1 to 10/10	8/1 to 11/1
Buckwheat	75 or 2	6/1 to 7/15	6/1 to 7/15	6/15 to 7/15

1. Planting Zones: 1 - Lower Peninsula, South of US 10
2 - Lower Peninsula North of US 10
3 - Upper Peninsula