

# FORAGE GUIDE



# FORAGE & FIELD GUIDE

## VOLUME IV

Since 1965 The CISCO Companies have worked very hard to earn a significant niche in the agricultural products distribution business in the Midwest. Our founder, Myron Hemmingsen, directed the company to keep two things in mind in doing business and made them his motto—"Quality Products, Personal Service."

We believe that our forage seed business has carried that motto forward to today and beyond. We realize farmers have many choices. We believe it is our job to market the very finest forage species and varieties for superior performance in our midwestern soils and climate. We realize that forage producers are wanting high yields and value-added quality on fewer acres. The time for high-quality forage products is now.

Being an independently owned company we are not locked into our own researched products whether they are good, bad, or indifferent. Instead, we have access to all of the forage breeding companies that are currently releasing products. It is our job to evaluate the available products and market the best ones for our area. We do this in conjunction with the University of Kentucky as they are uniquely qualified to evaluate forage varieties. Along with that, we have our demonstration plots in Bristol, Indiana and we are looking forward to another demo plot, planting in the late summer of 2020, around Cambridge City, Indiana.

Along with the selection of excellent varieties, we want to offer proper management guidelines so that producers obtain our improved variety's genetic potential. Consultation with any of our staff agronomists is available anytime to develop a plan for a positive outcome. We want our customers to have success with our products. We hope you find this publication useful.



# Table of Contents

ALFALFA

<b>Alfalfa</b>	<b>4-12</b>
CISCO 328	6
Enduro 420 HD	5
Enduro 423 AP	6
Enduro 427 LHR	6
Enduro 525 HD	5
Performance Chart	10
WL 349 HQ	7
WL 354 HQ	7
WL 356 HQ.RR	8,9
WL 358 LH	7
WL 359 LH.RR	8,9
WL 365 HQ	7
WL 372 HQ.RR	8,9
WL 375 HVX.RR	8,9,11,12

CLOVER

<b>Clovers</b>	<b>13-30</b>
<b>AberLasting Clover</b>	<b>28</b>
<b>Alsike Clover</b>	<b>18</b>
<b>Balansa White Clover</b>	<b>19</b>
<b>Berseem White Clover</b>	<b>20-21</b>
<b>Crimson Clover</b>	<b>22-23</b>
AU Robin	23
Dixie	23
KY Pride	23
White Cloud	23
<b>Ladino Clover</b>	<b>24-25</b>
Advantage	24
Jumbo II	25
Pinnacle	25
Will	25
<b>Medium Red Clover</b>	<b>14-16</b>
Bearcat Red Clover	16
Common Red Clover	16
Gallant Red Clover	15
<b>Mammoth Red Clover</b>	<b>17</b>
<b>Plow Down Clover Mixes</b>	<b>30</b>
<b>Sweet Clover</b>	<b>29</b>
White Blossom	29
Yellow Blossom	29
<b>White Clover</b>	<b>26-27</b>
Durana	26
Legacy	27
New Zealand	27
White Dutch	27

FORAGE GRASSES

<b>Additional Legumes</b>	<b>31-42</b>
<b>Birdsfoot Trefoil</b>	<b>32-33</b>
Dawn	32
Empire	33
Leo	33
Norcen	33
Viking	33
<b>Coated vs. Raw</b>	<b>31</b>
<b>Cow Peas</b>	<b>40</b>
<b>Crown Vetch</b>	<b>34</b>
<b>Forage Soybeans</b>	<b>41</b>
<b>Hairy Vetch</b>	<b>35-36</b>
Amoreiras	36
Common Hairy Vetch	36
Villana	35
<b>Korean Lespedeza</b>	<b>37</b>
<b>Spring Peas</b>	<b>39</b>
Stockade Field Peas	39
<b>Sunn Hemp</b>	<b>42</b>
<b>Winter Peas</b>	<b>38</b>
Austrian Winter Peas	38
Survivor Forage Winter Peas	38

PASTURE PERFECT

<b>Forage Grasses</b>	<b>43-62</b>
<b>Annual Ryegrass</b>	<b>54-55</b>
Bruiser	54
Centurion	55
LowBoy	55
Winterhawk	55
<b>Festulolium</b>	<b>61-62</b>
Duo	62
Perseus	61
Spring Green	62
<b>Forage Tall Fescues</b>	<b>47-51</b>
Bar Optima Plus	50
Barolex	49
Bronson	47
Bull	48
Fawn	49
Kentucky-31	51
Martin II	49
Payload	48
STF-43	48
Tower ProTek	50
<b>Intermediate Ryegrass</b>	<b>58</b>
TetraMag	58
<b>Italian Ryegrass</b>	<b>56-57</b>
Feast II	57
Green Spirit	57
TetraPrime	56
<b>Meadow Bromegrass</b>	<b>63</b>
AC Admiral	63
MacBeth	63
<b>Meadow Fescues</b>	<b>52-53</b>
Big Gains	53
Milkway	53
Preval	52
<b>Orchardgrass</b>	<b>44-46</b>
Alpine II	44
Crown Royale	45
Devour	45
Endurance	45
High Leaf Ratio	46
Late Mate II	46
Potomac	46
Profit	45
Tekapo	46
<b>Perennial Ryegrass</b>	<b>59-60</b>
Albion	59
Power	60
Remington PLUS NEA2	60
TetraSweet	60
<b>Reed Canarygrass</b>	<b>65</b>
Rival	65
Palaton	65
<b>Smooth Bromegrass</b>	<b>64</b>
Hakari Alaska Bromegrass	64
<b>Timothy</b>	<b>66-67</b>
Barpenta	67
Catapult	66
Climax	66
Kootenai	67
Tuukka	67
<b>Enduro Plus</b>	<b>68-74</b>
<b>Annual Mixes</b>	<b>69-70</b>
Milk Maker	69
Partner Pea/Oat Milk	69
Tri Feast Forage Mix	70
Udder Filler Forage Mix	70
<b>Perennial Mixes</b>	<b>71-74</b>
Baler Mix	71
Beef Pasture Mix	71
Drought Buster Mix	72
Hay & Graze Clover Mix	72
HayMaster Grass Mix	73
Horse Hay Mix	73
Premium Pasture/Hay Mix	74
<b>Pasture Perfect</b>	<b>75-76</b>
Champion Pasture Mix	76
Midwestern Grazer Mix	76
Renovator Special Mix	76
Superior Forage Mix	76
<b>Summer Annuals</b>	<b>77-92</b>
Forage Sorghum	82-84

SUMMER ANNUALS

GW 400 BMR	83
GW 475 BMR	84
Silo-Pro BMR	82
<b>Grain Sorghum</b>	<b>85</b>
Wilder	85
<b>Millet</b>	<b>87-92</b>
Pearl Millet	88
Sweet Summer BMR	88
Tiff Leaf III	88
German Foxtail Millet	89
Japanese Millet	90
Teff Grass	91
CISCO Summer Delite	91
Egyptian Wheat	92
<b>Sorghum Sudan</b>	<b>78-81</b>
Super Sugar DM	80
Sweet Bites	81
Sweet Forever BMR	79
Sweet Six BMR	78
<b>Sudangrass</b>	<b>86</b>
Piper	86
Pro-Max BMR	86
<b>Cereal Grains</b>	<b>93-105</b>
<b>Barley</b>	<b>97-98</b>
Lacey (Spring)	97
Nomini (Winter)	98
Valor (Winter)	98
<b>Buckwheat</b>	<b>105</b>
<b>Cereal Rye</b>	<b>99-100</b>
Common Cereal Rye	97
Elbon	98
Graze King 90 Forage	98
Hazlet	99
Wheeler Forage	100
<b>Cover Crop Wheat</b>	<b>104</b>
<b>Oats</b>	<b>94-96</b>
Buck	95
Cosaque Black Winter	96
Haywire	95
Jerry	96
Kara	95
Reins	96
<b>Triticale</b>	<b>101-102</b>
Elevator (Spring)	101
Forerunner (Fall)	102
Traction (Fall)	102
TriCal Flex 719 (Fall)	102
<b>Spelt</b>	<b>103</b>
Sungold	103
<b>Forbs</b>	<b>106-113</b>
<b>Chicory</b>	<b>107</b>
Endure	107
Oasis	107
<b>Kale</b>	<b>108</b>
Bayou Kale	108
Maris Kestrel	108
<b>Rape</b>	<b>109</b>
Bonar	109
Dwarf Essex	109
<b>Radish</b>	<b>110-111</b>
GroundHog	111
Respect	111
Scav-N-Ger	110
<b>Turnips</b>	<b>112-113</b>
Appin	112
Barkant	112
Jackpot	113
Pasja	113
Purple Top	113
<b>Pure Live Seeds</b>	<b>114</b>
<b>Warm Season Grasses</b>	<b>115</b>

GRAINS

FORBS

# Legumes

Forage legumes are used on farms and ranches across the nation to improve forage yields and quality. Legumes produce their own nitrogen (N) in a symbiotic relationship with certain strains of bacteria. These bacteria provide the plant with nitrogen (N), while the plant provides carbon (C) to the bacteria. The bacteria attach to the plant to form nodules. Legumes generally have a higher crude protein (CP) level than grasses. They can produce up to 250 lb/A of nitrogen (N) and have a crude protein (CP) level range from 15-25%.



# *CISCO* Alfalfa Varieties

The CISCO Enduro Plus Brand alfalfas have been bred for high forage quality, yield, and great disease resistance. This all leads to more profit per acre and persistent stands. All of the Enduro Plus Brand alfalfas are non-GMO and offered in raw seed or OMRI approved coatings, such as Apex Green.



# Alfalfa



**Plant type:** Perennial Legume

**Planting dates:** March–April or Aug–Sept.

**Soil pH:** 6.6–7.2

**Soil adaption:** Well-drained, high fertility

**Planting depth:** 1/8”–1/4”

**Approximate seeds/lb:** 227,000

**Seeding rate:** 14–20 lbs/A  
8–10 lbs/A mix

**Days to germination:** 7–10

**Main usage:** Pasture, hay, silage

**Height at maturity:** 15”–36”

**Length of stand:** 3–7 years

**Reproduces by:** Seed

**Pounds per bushel:** 60

**Precautions:** **Bloat Potential**



## Enduro 525 HD

- Enduro 525HD Brand Alfalfa is an aggressive, high forage yielding alfalfa with very fast recovery
- Enduro 525HD is an HD® “Highly Digestible” alfalfa that expands the harvest window for capturing outstanding forage quality
- 25-30 day harvest schedule for best forage yield and quality
- 4-6 cuts per season



## Enduro 420 HD

- Enduro 420HD is a very high-quality, highly digestible alfalfa
- Fall dormancy 4; Winterhardiness 2
- A true “Dairy Quality” alfalfa with outstanding yield
- Non-GMO option for high digestibility
- 4-5 cuts per season with the ability to retain forage quality up to a 35-day harvest schedule, allowing for a wider harvest window



## Enduro 423 AP

- Enduro 423AP is a branch rooted, sunken crown alfalfa variety with high forage yield and quality
- Resistance to Aphanomyces Root Rot Race 1, 2 and isolates of Race 3
- Fall dormancy 4; winterhardiness 2
- A great 'All Purpose' alfalfa with the ability to grow on many different soil types
- Exhibits excellent regrowth after cutting



## Enduro 427 LHR

- "8th Generation" potato leafhopper resistance
- Perfectly suited for Midwest alfalfa production in sprayed or unsprayed conditions
- High-yielding, highly digestible, dairy quality alfalfa
- Works well in 3, 4, or 5 harvests per year
- Long stand life
- PLH resistance from glandular hairs on stems; Non-GMO
- Available as raw seed or OMRI approved Apex Green coating



## CISCO 328

- Fall dormancy 3.4; Winterhardiness 1.8
- Large crowns with good shoot production and heaving tolerance
- Superior persistence due to excellent disease package
- Reasonably priced alfalfa brand with a tremendous value
- Excellent forage yield and quality



## WL 365 HQ

- Highest yielding, most winterhardy HQ conventional alfalfa available
- Fall dormancy 5; Winterhardiness 1.1
- Performs well in a 4-6 cut system
- Fine stemmed, dark green HQ variety that is highly palatable
- Very rapid regrowth after cutting



## WL 358 LH

- True “no spray” PLH resistant
- Fall dormancy 4
- “8th Generation”; 93% resistant to potato leafhoppers
- Non-GMO available with OMRI approved coating for potential organic eligibility
- Great tool for pastures with alfalfa, chemical-free programs, or a simplified management system
- Very well adapted to a Midwestern environment



## WL 354 HQ

- Unique wet soil disease package with a DRI of 35/35
- HR to Aphanomyces race 1 and 2
- Fall dormancy 3.9; Winterhardiness 1.4
- Exhibits very good traffic tolerance



## WL 349 HQ

- Outstanding yield potential and agronomic performance in a 4-5 cut system
- Fall dormancy 4.4; Winterhardiness 1.7
- HR to Aphanomyces Root Rot Race 1, 2, and 3, as well as Anthracnose
- Top tier for yield, quality, and persistence under tough soil conditions





# 2020 W-L ALFALFAS LINEUP

## HARVXTRA® ALFALFA WITH ROUNDUP READY® TECHNOLOGY

### WL 375HVX.RR

- WL 375HVX.RR offers multi-dimensional use in significantly improved quality, for maximizing fiber digestibility or greater DM yield
- Reduced-lignin % (ADL, acid detergent lignin) content of 22% less than the average of competitive check varieties gives WL 375HVX.RR a 18% greater RFQ (relative forage quality), and a 16% greater NDFD (neutral detergent fiber digestibility) than the average of competitive check varieties
- New generation disease package with high resistance to multi-race aphanomyces root rot (Race 1, 2 and 3), and resistance to multi-race anthracnose
- FD 5, WH 2.1 and 40/40 DRI



## ROUNDUP READY® ALFALFA

### WL 359LH.RR

- 8th generation HopperShield™ protection in a Roundup Ready® package
- Impressive vigor under moderate or heavy PLH pressure
- Excellent yield potential and forage quality in a 3 to 5-cut management system
- FD 4, WH 2.2, 34/35 DRI



### WL 356HQ.RR

- Industry-leading Aphanomyces Race 2 resistant Roundup Ready® alfalfa
- Proven powerhouse of yield, quality and disease resistance, one of the most widely-planted Roundup Ready® varieties in the country
- FD 4, WH 1.6, 35/35 DRI



### WL 372HQ.RR

- Our highest-yielding dormant Roundup Ready® alfalfa released-to-date
- For aggressive and intensive managers; adapted for 4- to 6-cut systems
- FD 5, WH 1.8, 34/35 DRI





## WL 372 HQ.RR

- Great alfalfa for cash crop hay producers or dairies
- Contains Roundup Ready Technology® for broad spectrum weed control
- Fall dormancy 4.8; Winterhardiness 1.8
- Fine-stemmed hay with high RFQ levels



## WL 359 LH.RR

- 86% resistance to potato leafhoppers with Roundup Ready Technology®
- “8th Generation” PLH resistance
- Fall dormancy 4; Winterhardiness 2
- Works well in a 3-5 cut system
- Superb weed control during establishment and throughout the life of the stand



## WL 356 HQ.RR

- Fall dormancy 4; Winterhardiness 1.6 with Roundup Ready Technology®
- Highly resistant to Aphanomyces Root Rot Race 1 and 2, as well as Anthracnose
- Great yielder under tough soil conditions
- 3-5 cuts per season



## WL 375 HVX.RR



- FD 4 alfalfa with up to 22% reduced lignin
- Flexible harvest: 4-6 cuts per year
- Contains Roundup Ready Technology® for broad spectrum weed control
- Potential to remove 1 cutting without sacrificing forage quality
- Highly resistant to Aphanomyces Root Rot Race 1, 2, and 3, as well as Anthracnose Race 1

# Alfalfa Performance

	Enduro 525HD	Enduro 420HD	Enduro 423AP	Enduro 427LHR	WL 365HQ	WL 358LH
Fall Dormancy	4.9	4	4	4	4.9	4.1
Winterhardiness	1.1	2	2	1.9	1.1	2
DRI	33/35	30/30	39/40	30/30	30/30	30/30
Fusarium Wilt	HR	HR	HR	HR	HR	HR
Phytophthora Root Rot	HR	HR	HR	HR	HR	HR
Bacterial Wilt	HR	HR	HR	HR	HR	HR
Verticillium	HR	HR	HR	HR	HR	HR
Anthracoese Race 1	HR	HR	HR	HR	HR	HR
Aphanomyces Race 1	HR	R	HR	HR	HR	HR
Aphanomyces Race 2	MR	R	HR	**	**	**
Aphanomyces Race 3			R			
Roundup Ready	No	No	No	No	No	No
Potato Leafhopper Resistant	No	No	No	87%	No	92%

\*\* Not Rated

	WL 354HQ	WL 349HQ	WL 372HQ.RR	WL 359LH.RR	WL 356HQ.RR	WL 375HVX.RR
Fall Dormancy	3.9	4.4	4.8	3.9	3.8	4.6
Winterhardiness	1.4	1.7	1.8	2.2	1.6	2.1
DRI	35/35	45/45	30/30	30/30	35/35	40/40
Fusarium Wilt	HR	HR	HR	HR	HR	HR
Phytophthora Root Rot	HR	HR	HR	HR	HR	HR
Bacterial Wilt	HR	HR	HR	HR	HR	HR
Verticillium	HR	HR	HR	HR	HR	HR
Anthracoese Race 1	HR	HR	HR	HR	HR	HR
Aphanomyces Race 1	HR	HR	HR	HR	HR	HR
Aphanomyces Race 2	HR	HR	**	**	HR	HR
Aphanomyces Race 3		HR				
Roundup Ready	No	No	Yes	Yes	Yes	Yes
Potato Leafhopper Resistant	No	No	No	86%	No	No

\*\* Not Rated



# WL 375HVX.RR

FD5

DORMANT

## W-L ALFALFAS BULKS UP HARVXTRA® ALFALFA LINEUP WITH FD5 ADDITION

W-L HarvXtra® Alfalfa is a revolutionary new offering in alfalfa production.

Our first fall dormancy 5 release, WL 375HVX.RR, simply delivers. WL 375HVX.RR compliments the 2016 release of FD4 WL 341HVX.RR, offering another valuable winterhardy option with a new, superior agronomic package and the HarvXtra® Alfalfa trait.

### WL 375HVX.RR Advantages

- WL 375HVX.RR offers tremendous value of flexibility in choosing to maximize fiber digestibility, or realize greater yield by delaying cutting frequency, perhaps removing 1 cut, without sacrificing feed quality
- Reduced-lignin % (ADL, acid detergent lignin) content of 22% less than the average of competitive check varieties gives WL 375HVX.RR a 16% greater RFQ (relative forage quality), and a 18% greater NDFD (neutral detergent fiber digestibility) than the average of competitive check varieties
- Yield performance of WL 375HVX.RR rivals WL 372HQ.RR, our highest yielding dormant variety ever, across 4 of our major U.S. research facilities
- Superb yield potential and agronomic characteristics under 4-cut system if delaying cutting frequency, or under 5- to 6-cut systems to maximize increased feed value
- Perfect Disease Resistance Index (40/40), which includes 'High Resistance' to Aphanomyces Race 1, Race 2, AND Race 3; and includes multi-race resistance to Anthracnose
- WL 375HVX.RR contains Roundup Ready® Technology for unsurpassed broad spectrum weed control and crop safety to maximize seedling survival at establishment and provide a useful tool on established stands
- Well-adapted for Midwest, Northeast, Central, Northern, & Southern Plains, as well as intermountain regions and Pacific Northwest; ideally-suited for on-farm dairy, beef or cash hay producers
- WL 375HVX.RR delivers quick recovery for frequent harvest schedules under intense management
- Quick stand establishment with WL 375HVX.RR that comes fully loaded with W-L's Gold Treatment PLUS containing Stamina® and Take-Off® seed treatment



### AGRONOMIC TRAITS

Maturity	Early
Fall Dormancy	4.6
Winterhardiness	2.1
Digestibility/Feed Value	HarvXtra®
Recovery After Harvest	Very Fast
Standability	Excellent
Traffic Tolerance	Very Good
Disease Resistance Index	40/40

\*HarvXtra® Alfalfa with Roundup Ready® Technology

### PEST RESISTANCE TRAITS

Bacterial Wilt	HR
Fusarium Wilt	HR
Verticillium Wilt	HR
Anthracnose	HR
Phytophthora Root Rot	HR
Aphanomyces Root Rot (Race 1)	HR
Aphanomyces Root Rot (Race 2)	HR
Aphanomyces Root Rot (Race 3)	HR
Aphids	R
Stem Nematode	HR

HR = HIGH RESISTANCE R = RESISTANT

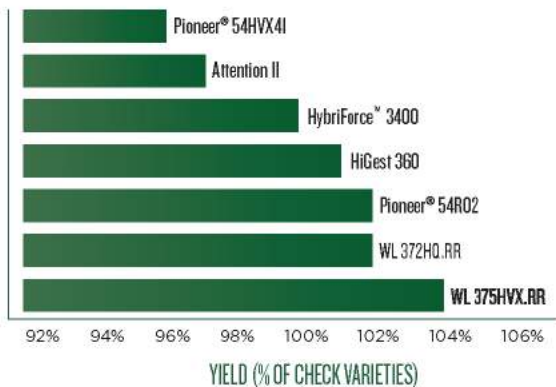


■ Area of Primary Adaptation

## Planting WL 375HVX.RR utilizing the Roundup Ready® weed control system provides many benefits over conventional herbicide programs

- Exceptional weed control at both stand establishment and in established stands means fewer weeds and higher-quality hay and haylage
- Exceptional crop safety at all growth stages with the Roundup Ready® weed control system
- Recommended 1st glyphosate application at 1st-3rd trifoliolate stage to provide early weed control on new seedlings and lower seedling mortality
- The simplicity of using a single herbicide (Roundup®) provides superior weed control with no need to tank mix
- Flexibility in timing of application allows growers utilizing the Roundup Ready® system to spray when necessary; no carryover or crop rotation limitations
- Minimal wait (5 days) after Roundup® application before haying/feeding

### WL HVX.RR Outyields the Competition\* West Sale, WI; Mt. Joy, PA; Nampa, ID; Touchet, WA; 2016-2017



## Simply the new forage quality leader of FD5 Alfalfas\*

Boone, IA; Mt. Joy, PA; West Salem, WI 2015-2016

Variety	ADL	NDFD	RFQ
WL 375HVX.RR	78%	116%	118%
WL 372HQ.RR	102%	100%	100%
HiGest 360	98%	103%	103%
HybriForce™ 3400	99%	102%	102%
Pioneer® 54R02	100%	98%	97%
Attention II	101%	98%	98%

ADL = Acid Detergent Lignin    NDFD = Neutral Detergent Fiber digestibility    RFQ = Relative Forage Quality

W-L Research and Forage Genetics International recommends the use of RFQ (relative forage quality) in place of RFV (relative feed value) because it more accurately reflects the value that improved fiber digestibility has in forages like HarvXtra® Alfalfa with Roundup Ready® Technology. RFQ better reflects performance that can be expected when animals are fed forages.

Likewise, RFQ is a far better index of forage quality than TDN (total digestible nutrients) because the TDN equation may not properly reflect fiber digestibility.



Planting WL 375HVX.RR with high resistance to multiple races of aphanomyces and anthracnose significantly improves stand establishment and production.

\* Results are based on controlled field trials at the listed W-L Research location. Results may vary and are dependent on factors outside of W-L Research's control, such as weather. Yield, profit and other results cannot be predicted or guaranteed by W-L Research.

For more information visit [wresearch.com](http://wresearch.com) and [HarvXtra.com](http://HarvXtra.com). In the following states, purchase and use of HarvXtra® Alfalfa with Roundup Ready® Technology is subject to a Seed and Feed Use Agreement, requiring that products of this technology can only be used on farm or otherwise be used in the United States: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming. In addition, due to the unique cropping practices do not plant HarvXtra® Alfalfa with Roundup Ready® Technology and Roundup Ready® Alfalfa in Imperial County, California, pending import approval and until Forage Genetics International, LLC (FGI) grants express permission for such planting.

Forage Genetics International, LLC ("FGI") is a member of Excellence Through Stewardship® (ETS). FGI products are commercialized in accordance with ETS Product Launch Stewardship Guidance, and in compliance with FGI's Policy for Commercialization of Biotechnology-Derived Plant Products in Commodity Crops. As of June 2017, HarvXtra® Alfalfa with Roundup Ready® Technology and Roundup Ready® Alfalfa have pending import approvals. GROWERS MUST DIRECT ANY PRODUCT PRODUCED FROM HARVXTRA® ALFALFA WITH ROUNDUP READY® TECHNOLOGY SEED OR CROPS (INCLUDING HAY AND HAY PRODUCTS) ONLY TO UNITED STATES DOMESTIC USE. Any crop or material produced from this product can only be exported to, or used, processed or sold in countries where all necessary regulatory approvals have been granted. It is a violation of national and international law to move material containing biotech traits across boundaries into nations where import is not permitted. Growers should talk to their grain handler or product purchaser to confirm their buying position for this product. Growers should refer to <http://www.biotradestatus.com/> for any updated information on import country approvals. Excellence Through Stewardship® is a registered trademark of Biotechnology Industry Organization.

ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. Roundup Ready® crops contain genes that confer tolerance to glyphosate. Glyphosate herbicides will kill crops that are not tolerant to glyphosate.

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# Clovers

Clovers are widely adapted legumes that improve forage production in several ways. They increase protein and mineral content of pastures, hay, and silage. Clovers can tolerate a wider range of soils and growing conditions than alfalfa. Most clovers can tolerate lower pH soils as well as poor drainage. Clovers mix well with many forage grasses, but can also be grown in pure stands. Clovers can be used for improving soil health, conservation, and honey production. The following section will help you place the right clover on your farm.

CLOVER



# Medium Red Clover



**Plant type:** Perennial Legume

**Planting dates:** Jan–April or Aug–Sept

**Soil pH:** 6.0–7.0

**Soil adaption:** Well drained

**Planting depth:** 1/8”–1/4”

**Approximate seeds/lb:** 272,000

**Seeding rate:** 10–12 lbs/A  
2–6 lbs/A mix

**Days to germination:** 7–12

**Main usage:** Pasture, hay, pasture renovation, soil improvement

**Height at maturity:** 24”–36”

**Length of stand:** 1–4 years

**Reproduces by:** Seed

**Pounds per bushel:** 60

**Precautions:** Bloat Potential



Suggested seeding rates for red clover seeded in a mixture or along with single grass.	
Species	Lbs/A of Medium Red Clover
Red Clover Alone	8-12
Timothy	4-6
Orchardgrass	4-6
Perennial Ryegrass	4-8
Smooth Bromegrass	6-8
Reed Canarygrass	6-8
Tall Fescue	4-6



- Premium medium red clover only available from *CISCO*
- Proven 3-4 year stand life
- High yielding persistent variety developed for the Midwest
- Frost seeds well to improve pastures and hay fields
- The best red clover available

**Gallant Red Clover** is a modern, Midwest-bred red clover. It has been selected for high yield, stand persistence, and a strong disease package. The trait that leads to persistence is its unmatched black patch resistance. Gallant is also resistant to northern and southern anthracnose and is also resistant to powdery mildew. Gallant can produce high yields well into years three and four. It has been the leader in yield at The Ohio State variety trials. Gallant Red clover is a real return on investment for top forage producers. Notice in the below data the tremendous yield and persistence (% stand) compared to other varieties.

### Red Clover Variety Trial Ohio, South Charleston, Sown 4/9/2013

Variety	28-May	2-Jul	8-Sep	2015	2014	2013	2013-14	%Stand
-----Tons Dry Matter/A-----								
Gallant	1.95	1.16	1.14	4.45	6.43	2.91	13.53	83
RC0401*	1.82	0.87	0.98	3.63	6.24	3.08	12.93	66
FSG 402	1.76	0.80	0.73	3.18	6.26	2.98	12.53	69
PGI 44	1.76	0.82	0.72	3.25	6.14	2.91	12.34	71
Common Red	0.92	0.50	0.07	1.32	4.27	2.55	8.41	4
Mammoth Red	0.70	0.33	0.12	1.29	4.56	1.86	7.59	4
Mean	1.48	0.74	0.63	2.85	5.65	2.72	11.22	50
LSD	0.57	0.29	0.33	1.00	1.09	0.49	2.15	21.6
Prob>F	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.0001
CV	25.5	26.0	34.8	23.0	12.9	12.0	12.7	28.9

\*Variety tested using experimental seed that may not give performance identical to that of commercially available seed  
 Establishment: Seeded with a Hege 3-point hitch drill with presswheels at 12 lb/a  
 Plot Size: 4' x 20', 7' alleys and borders, RCBD with four reps  
 Soil type/analysis: Crosby slit loam, pH=7.0, P=48 lb/a, CEC=12.7, O.M.=1.8, (10/13)





## Bearcat Red Clover

- Bearcat is a diploid double-cut red clover
- Out of the same breeding program as Gallant
- Aggressive regrowth and a superior disease resistance package
- Outstanding stand persistence and high forage yield
- Disease resistance breeding including Fusarium wilt inoculation and Mycoleptodiscus root rot selections
- Consistent productivity in adverse environments with medium maturity



## Common Medium Red Clover

- Short-lived perennial forage legume
- Increases pasture productivity
- Frost seeds into wheat, hay fields, and pastures as well
- Available as coated or raw seed
- Coated seed improves frost seeding success
- Red clover contains isoflavones, specifically biochanin A, which has shown to contribute to higher average daily gains and reduces the effect of fescue toxicosis

# Mammoth Red Clover



**Plant type:** Biennial, weak perennial

**Planting dates:** Jan–April or Aug–Sept

**Soil pH:** 5.5–7.0

**Soil adaption:** Most soil types

**Planting depth:** 1/8”–1/4”

**Approximate seeds/lb:** 272,000

**Seeding rate:** 10–12 lbs/A  
2–6 lbs/A mix

**Days to germination:** 7–10

**Main usage:** Soil improvement, plow down

**Height at maturity:** 36”–48”

**Length of stand:** 1–2 years

**Reproduces by:** Seed

**Pounds per bushel:** 60

**Precautions:** Bloat Potential



Mammoth red clover, or single-cut clover, is not as desirable for hay or pasture as medium red clover because of its coarse stems. However, its vigorous growth (it grows taller than medium red clover) and maturity (10 days to two weeks later than medium red clover) make it a good choice for soil improvement. Mammoth red clover has been widely used as a plow-down or cover crop with sweet clover to build organic matter in the soil and provide nitrogen to the following crop. Mammoth red clover can be frost seeded into winter wheat.



# Alsike Clover



**Plant type:** Perennial Legume

**Planting dates:** Jan–April or Aug–Sept

**Soil pH:** 6.0–6.5

**Soil adaption:** Poorly drained, med. fertility

**Planting depth:** 1/8”–1/4”

**Approximate seeds/lb:** 728,000

**Seeding rate:** 6–8 lbs/A  
1–2 lbs/A mix

**Days to germination:** 7–10

**Main usage:** Hay, pasture

**Height at maturity:** 12”–36”

**Length of stand:** 2–3 years

**Reproduces by:** Seed

**Pounds per bushel:** 60

**Precautions:** Bloat potential, photo sensitivity,  
not for horses, slow drying for hay



Adapted to the same general area as red clover. Alsike clover makes a very palatable, high-quality hay when planted with other clovers and grasses, especially timothy. Alsike produces high-quality pasture and hay. It prefers a heavy, moist soil and will do better than other clovers on poorly drained acid soils. Alsike clover does not do well in light, sandy soils.



## Common Alsike Clover

- Adapted to similar areas as red clover
- Grows on wide range of heavier soils
- Can tolerate standing water for 7-14 days
- Deep branched taproot
- Great winterhardiness



**CAUTION:** Alsike clover has a tendency to cause bloat and should be fed to livestock with care. On pasture high in alsike clover content, take steps to introduce animals gradually to the forage to reduce bloat potential. It has also been implicated as causing “alsike clover poisoning” in horses. Alsike-induced photo-sensitization has been reported among animals grazing alsike clover. This will occur in bright, sunny weather and causes a reddening of the skin and swelling of the affected areas in horses.

# Balansa Clover



**Plant type:** Annual Legume

**Planting dates:** April-October

**Soil pH:** 4.5-8.5

**Soil adaption:** Moderate to well drained

**Planting depth:** 1/8"-1/4"

**Approximate seeds/lb:** 500,000 (coated)

**Seeding rate:** 8-15 lbs/A  
3-6 lbs/A mix

**Days to germination:** 7

**Main usage:** Cover crop, nurse crop, pasture, hay, wildlife

**Height at maturity:** 18"-30"

**Length of stand:** 6 months or less

**Reproduces by:** Seed

**Pounds per bushel:** 60



## Fixation Balansa Clover

- Adaptable across a wide range of soils
- Great for cover crop or forage
- Can be seeded later in the fall than crimson clover at a lower seeding rate
- Moderate growth in fall with a growth explosion in spring
- Works well with fall triticale and cereal rye



# Berseem Clover

**Plant type:** Annual Legume

**Planting dates:** April-August

**Soil pH:** 6.0-7.5

**Soil adaption:** Moderate to well drained

**Planting depth:** 1/8"-1/4"

**Approximate seeds/lb:** 130,000 (coated)

**Seeding rate:** 8-15 lbs/A  
3-6 lbs/A mix

**Days to germination:** 7

**Main usage:** Cover crop, nurse crop, pasture, hay, wildlife

**Height at maturity:** 18"-30"

**Length of stand:** 6 months or less

**Reproduces by:** Seed

**Pounds per bushel:** 60



## Frosty Berseem Clover

- Great companion with alfalfa to improve yield and forage quality
- Very fast growing clover that feeds similar to alfalfa
- Will tolerate temperatures down to 5°F
- Works well after wheat in a cover crop mixture
- Hollow stems help with quick hay drying
- Contains tannins that prevent bloat in livestock
- Can be used to improve winter-damaged alfalfa stands for one season





# Is it alfalfa or is it clover?

The synergy between Berseem Clover and Alfalfa is widely known. Until now Berseem's cold tolerance was not sufficient to withstand the bitter climate of the northern US.

Now there's Frosty Berseem Clover, a cold tolerance breakthrough!

Able to withstand temperatures down to 5° Fahrenheit with no snow cover.

Now you can boost your yields, quality and your profits.



- Late maturing
- Non-bloating
- Supports multiple cuttings/grazings
- Excellent regrowth
- Crude protein are 16.5% to 22.1%
- Relative feed values as high as 182

Find out more at: [www.FROSTYClover.com](http://www.FROSTYClover.com)

# Crimson Clover

**Plant type:** Winter Annual Legume

**Planting dates:** Aug–Sept

**Soil pH:** 4.8–8.2

**Soil adaption:** Adapted to wide variety of soils as long as soil is well drained

**Planting depth:** 1/8"–1/4"

**Approximate seeds/lb:** 150,000

**Seeding rate:** 20 lbs/A  
8–10 lbs/A mix

**Days to germination:** 7–10

**Main usage:** Hay, pasture, soil improvement, cover crop

**Height at maturity:** 24"–36"

**Length of stand:** Weak biennial

**Reproduces by:** Seed

**Pounds per bushel:** 60

**Precautions:** Bloat potential



Crimson clover is an overwintering annual usually grown as a cover crop that is best seeded after wheat. When planting, be sure to allow six to eight weeks of growth before a freeze. Crimson clover can be grazed or hayed in the spring. This species is known for its fine, fibrous root system, shade tolerance, and quick establishment.





## AU Robin

- Improved crimson clover variety
- Earlier maturing than VNS crimson clover
- Can produce up to 140 lb/A of nitrogen (N)
- Quick growing



## Dixie

- Reseeding variety
- Can reach 2.5' in height
- Fine, fibrous root structure
- Available as coated or raw seed



## KY Pride

- Outstanding cold tolerance
- Late maturity with improved forage yields
- Great in cover crop mixes as well as pollinator mixes
- Rapid regrowth after harvest



## White Cloud

- First white crimson clover
- Exhibits faster growth and increased forage yield
- Improved nitrogen (N) production
- Available coated seed only



# Ladino Clover



**Plant type:** Perennial Legume

**Planting dates:** Feb–April or Aug–Sept

**Soil pH:** 5.8–6.5

**Soil adaption:** Wide

**Planting depth:** 1/8”–1/4”

**Approximate seeds/lb:** 800,000

**Seeding rate:** 4–6 lbs/A  
0.5–2 lbs/A mix

**Days to germination:** 7–10

**Main usage:** Hay, conservation, pasture, wildlife

**Height at maturity:** 15”–36”

**Length of stand:** 2–5 years

**Reproduces by:** Seed and stolons

**Pounds per bushel:** 60

**Precautions:** Bloat potential, slow drying as hay



The white clovers, *Trifolium repens* L, found in the United States are generally found in one of three different ecotypes. The smallest is wild white clover. Generally, this is a native clover. The common white clover found in yards and pastures, as well as White Dutch clover, are usually in the intermediate-sized group. The largest white clovers are often called ladino clovers. Ladino clovers are usually used in pastures. White clovers grow on a wide range of soil pH, drainage, and topography. Ideally, it likes cool, moist growing conditions. It should be mixed with grasses to lower bloat potential. White clover can tolerate more grazing pressure than other clovers and frost seeds very well.



## Advantage

- Great for pastures or wildlife plots
- Remains in a vegetative state during whitetail deer antler growth
- High crude protein content with large, succulent leaves
- Early vigor and hardiness
- Bred under grazing pressure



## Jumbo II

- Fast growing, high yielding
- Great forage quality
- Very large leaves, up to three inches in optimal conditions
- Excellent regrowth



## Pinnacle

- New, advanced variety
- Upright growth combined with vigor
- Fine stems and dark, green leaves
- Bred for superior persistence with good leaf disease tolerance



## Will

- Persistent in hot climates, but also very winterhardy
- Excellent stolon production
- Great yield potential
- Excellent grazing tolerance



## Common Ladino Clover

- Great legume for pastures
- Provides nitrogen and protein content to a pasture
- Spreads with stolons and tolerates close grazing
- Available coated or raw

# White Clover

**Plant type:** Perennial Legume

**Planting dates:** Feb–April or Aug–Sept

**Soil pH:** 5.5–7.0

**Soil adaption:** Wide

**Planting depth:** 1/8"–1/4"

**Approximate seeds/lb:** 768,000

**Seeding rate:** 3–5 lbs/A  
0.5–2 lbs/A mix

**Days to germination:** 7–10

**Main usage:** Soil improvement,  
pasture, wildlife

**Height at maturity:** 3"–24"

**Length of stand:** 2–10 years

**Reproduces by:** Seed and stolons

**Pounds per bushel:** 60

**Precautions:** Bloat hazard, slow drying as hay



## Legacy

- Latest generation New Zealand bred white clover
- Dry matter yield that strengthens with time
- Large leaves to capture sunlight and drive yield
- More yield = more nitrogen fixed, which reduces the need for N applications
- Perfect rotational grazing option
- Prolific producer of stolons for greater persistence and yield





## Durana

- Low maintenance pasture improvement
- Extremely persistent under grazing conditions
- Best used to improve cool-season pastures
- Grazes best in spring, early summer, and fall
- Available coated and inoculated



## New Zealand

- Highly palatable white clover
- Yields are greatest in mild, humid climates
- Best adapted to well drained, silt loam and clay soils



## White Dutch

- Commonly used in lawns as ground cover
- Great for use in plant nurseries between the rows
- Also works in pastures
- Making a comeback as a source of nitrogen in lawn
- Small leaves, low growing
- Available in raw or coated and inoculated



# AberLasting Clover

**Plant type:** Perennial Legume

**Planting dates:** Feb–April or Aug–Sept

**Soil pH:** 5.8–6.5

**Soil adaption:** Wide

**Planting depth:** 1/8"–1/4"

**Approximate seeds/lb:** 800,000

**Seeding rate:** 3–5 lbs/A  
0.5–2 lbs/A mix

**Days to germination:** 7–10

**Main usage:** Hay, conservation, pasture, wildlife

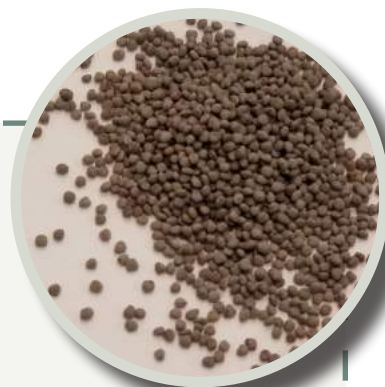
**Height at maturity:** 15"–36"

**Length of stand:** 2–5 years

**Reproduces by:** Seed and stolons

**Pounds per bushel:** 60

**Precautions:** Bloat potential, slow drying as hay



## AberLasting

- Cross between White and Caucasian Clover
- More drought tolerant than White Clover
- Better establishment than Kura Clover
- Great grazing tolerance
- Great for forage, cover crop, or wildlife



# Sweet Clover



**Plant type:** Biennial Legume

**Planting dates:** January–April

**Soil pH:** 6.5–7.5

**Soil adaption:** Wide

**Planting depth:** 1/8”–1/4”

**Approximate seeds/lb:** 250,000

**Seeding rate:** 10–15 lbs/A  
2–6 lbs/A mix

**Days to germination:** 7–10

**Main usage:** Soil improvement

**Height at maturity:** 24”–60”

**Length of stand:** 2 years

**Reproduces by:** Seed

**Pounds per bushel:** 60

**Precautions:** Soybean stem nematode host, not for hay or pasture



## Yellow Blossom

- Soil builder, legume
- Can improve soil drainage with large, vigorous tap root
- Good food source for honey bees and beneficial predatory wasps
- Matures 10-14 days earlier than white blossom sweet clover
- Do not use for hay, pasture, or silage



## White Blossom

- Soil builder, legume
- Prefers well drained soil
- Can improve soil drainage with large, vigorous tap root
- Good food source for honey bees
- Produces lighter colored honey than yellow blossom sweet clover
- Matures 10-14 days later than yellow blossom sweet clover
- Do not use for hay, pasture, or silage

# Plow Down Clover Mixes

**Plant type:** Annual/Biennial Legume

**Planting dates:** January–May

**Soil pH:** 6.5–7.0

**Soil adaption:** Wide

**Planting depth:** 1/8"–1/4"

**Approximate seeds/lb:** 260,000

**Seeding rate:** 10–12 lbs/A

**Days to germination:** 7–10

**Main usage:** Soil improvement

**Height at maturity:** 24"–48"

**Pounds per bushel:** 60

**Precautions:** Soybean stem nematode host, not for hay or pasture



## Plow Down Clover Mixes

- Can produce over 100 lb/A of nitrogen (N) for following crops
- Improves soil drainage and water percolation
- Increases organic matter, improves tilth and soil structure
- Works well frost seeded into wheat
- Great cover crop once the wheat is harvested
- **80/20 Plow down** is 80% Mammoth red clover and 20% Yellow Blossom sweet clover
- **60/40 Plow down** is 60% Mammoth red clover and 40% Yellow Blossom sweet clover



# Coated vs. Raw or Pre-Inoculated Seed?

## Benefits of Coated Seed:

- Ensures Nodulation–The coating material surrounds each seed with a rich concentration of specifically isolated strains of rhizobia to ensure nodulation.
- Protects Seed Germination Zone–The coating material protects the rhizobia from damage by fertilizer salts for longer periods than other methods in order to mix seed and fertilizer and broadcast them together.
- Improves Seedling Emergence–The hygroscopic qualities of the coating material pulls moisture to the seed and is especially beneficial in dry soils and shallow planted seed.
- More Uniform Stands– The added weight and density increase the uniformity and distance that seed can be spread with a spin type seeder.
- Potential for Highest Yields–The coating can increase yields by assisting with quick nodulation and providing specific strains of rhizobium for maximum efficiency.
- More Plants Per Pound of Seed–The additional surviving plants from coated seed more than offsets the seed loss from the weight gain of the coating material.
- Increases Survivability 50% or More–Because of its added bulk, the coating material is able to hold larger numbers of rhizobia while also increasing their likelihood of surviving.
- High Concentration of Rhizobia Bacteria–The coating provides a micro-environment for quick growth of the rhizobia by putting calcium carbonate and other growth encouraging materials in the coating.





# Birdsfoot Trefoil



**Plant type:** Perennial Legume

**Planting dates:** March–April or Aug–Sept

**Soil pH:** 5.5–7.0

**Soil adaption:** Poorly drained, low pH soils

**Planting depth:** 1/8”–1/4”

**Approximate seeds/lb:** 400,000

**Seeding rate:** 6–12 lbs/A  
3–5 lbs/A mix

**Days to germination:** 14

**Main Usage:** Pasture, hay

**Height at maturity:** 2’–4’

**Length of stand:** 4–8 years

**Reproduces by:** Seed

**Pounds per bushel:** 60

**Precautions:** Requires inoculation



Birdsfoot trefoil is a perennial forage legume that is well adapted to the north-central states. It can be used for both pasture and hay production. However, most of the hay production is as baleage or silage. BFT is well adapted to poorly drained or acidic soils. It should be strongly considered in areas where alfalfa cannot be grown; however, it will not tolerate extended periods of standing water. BFT requires good management to reach its full potential. It requires a rest period of 40-45 days between harvests and some leaf area must be left to encourage regrowth. An ideal stubble height is 4.5”. Another interesting trait of BFT is that livestock will not bloat on it, unlike other forage legumes. Trefoil also maintains forage quality from first bloom through seed production. This provides a longer harvest window. It can be slow to establish, but once established, it will provide for a lifetime. The different varieties of trefoil have different growth characteristics, which are important to variety selection.



## Dawn

- Prostrate growth habit
- Great for pasture and grazing
- Fine stemmed
- Indeterminate growth
- Similar to Empire



## Empire

- Prostrate growth
- Late maturing, great for pasture
- Very fine stemmed
- Tolerates wet soil very well
- Moderate winterhardiness and seedling vigor



## Leo

- Semi-upright to upright variety
- Good dual purpose hay and pasture
- Early spring growth
- Very good seedling vigor
- Produces the majority of its yield earlier in the season



## Norcen

- Semi-upright to upright variety
- Good dual purpose hay and pasture
- Exhibits good yields
- Maturity falls between Empire and Viking
- Most winterhardy trefoil available



## Viking

- Upright variety
- Earliest maturing trefoil
- Great for hay production
- Moderate winterhardiness

# Crown Vetch

**Plant type:** Perennial Legume

**Planting dates:** April–May or Aug–Sept

**Soil pH:** 5.5–7.0

**Soil adaption:** Wide

**Planting depth:** 1/4"–1/2"

**Approximate seeds/lb:** 98,000

**Seeding rate:** 10–25 lbs/A  
5–10 lbs/A mix

**Days to germination:** 14+

**Main Usage:** Stabilization, cover

**Height at maturity:** 1'–2'

**Length of stand:** Long

**Reproduces by:** Seed, rhizome

**Pounds per bushel:** 60

**Precautions:** Invasive, must inoculate,  
not intended for animal consumption



**Not for sale in Indiana. On March 18, 2019, the Invasive Terrestrial Plant Rule (312 IAC 18-3-25) was signed by the governor and prohibits the "sale, offer, or growth for sale, gift, barter, exchange, or distribution" of the species crown vetch.**



## Crown Vetch

- Good legume for soil conservation
- Grows in low fertility, low pH areas
- Low-maintenance once established
- Can become invasive if left uncontrolled



# Hairy Vetch



**Plant type:** Biennial Legume

**Planting dates:** March–May or Aug–Sept

**Soil pH:** 6.6–7.2

**Soil adaption:** Well drained, high fertility

**Planting depth:** 1/8”–1/4”

**Approximate seeds/lb:** 16,000

**Seeding rate:** 18–20 lbs/A  
8–15 lbs/A mix

**Days to germination:** 7–10

**Main Usage:** Pasture, hay, silage

**Height at maturity:** 15”–24”

**Length of stand:** 3–7 years

**Reproduces by:** Seed

**Pounds per bushel:** 60

**Precautions:** Normally contains hard seed and can emerge in the future



## Villana

- Improved variety of hairy vetch
- Excellent winterhardiness
- Can product 60-120 lb/A of nitrogen (N)
- Best fall seeded
- A unique plant breeding breakthrough with virtually 0% hard seed





## Amoreiras

- Low growing cover crop hairy vetch
- Great nitrogen (N) producer
- Establishes quickly and covers the ground



## Common Hairy Vetch

- Excellent source of nitrogen (N) as a cover crop
- Used as a forage legume in pastures in cool, moist environments
- Moderate winterhardiness



# Korean Lespedeza



**Plant type:** Annual Legume

**Planting dates:** March–May or Aug–Sept

**Soil pH:** 6.6–7.2

**Soil adaption:** Well drained, high fertility

**Planting depth:** 1/8”–1/4”

**Approximate seeds/lb:** 238,000

**Seeding rate:** 25–35 lbs/A  
8–15 lbs/A mix

**Days to germination:** 7

**Main Usage:** Pasture, hay, silage

**Height at maturity:** 15”–36”

**Length of stand:** 3–7 years

**Reproduces by:** Seed

**Pounds per bushel:** 25

➔ Korean lespedeza is commonly used for wildlife food and cover, forage, cover or nurse crop as well as temporary cover for erosion. Korean lespedeza is the earliest germinating of the annual lespedezas, providing the earliest grazing of any lespedezas. It should be grazed or cut when it reaches the half bloom stage. All harvesting methods should leave a 3” stubble. It is a reseeding annual that reaches full bloom in late summer when the growth rate rapidly declines. The reason for its popularity is due to what it can do on poor soils. It will grow well on acidic soils with low fertility and can survive both drought and flood. It is a good companion with bunch type grasses, such as timothy, orchardgrass, and tall fescue. It provides much-needed summer grazing when cool-season grasses are dramatically slower at biomass production. As with all legumes, it is important to inoculate with the correct species of rhizobial bacteria.



## Korean Lespedeza

- Annual legume mostly used for wildlife food plots
- Can be used as a forage, temporary ground cover, or a cover crop
- Grows well on acidic, low fertility soils
- Matches with bunch grasses such as orchardgrass, timothy, and tall fescue

# Winter Peas



**Plant type:** Annual Legume

**Planting dates:** Aug–Sept

**Soil pH:** 6.0–7.0

**Soil adaption:** Wide range of soils

**Planting depth:** 1/2"–1"

**Approximate seeds/lb:** 3,500

**Seeding rate:** 30–50 lbs/A  
20–40 lbs/A mix

**Days to germination:** 7–10

**Main Usage:** Wildlife, cover crop,  
green manure plow down

**Height at maturity:** 2'–4'

**Length of stand:** Annual

**Reproduces by:** Seed

**Pounds per bushel:** 60



## Austrian Winter Peas

- Cold tolerant, viney, annual legume
- Great for cover crop and wildlife plots
- More cold tolerance than Canadian field peas
- Can produce 60-120 lb/A nitrogen (N) and yield 1-2 t/A forage yield
- Can survive down to 20°F
- Needs to be inoculated and drilled
- Large fan root structure adds organic matter to soil



## Survivor Forage Winter Peas

- Advanced cold tolerance
- Pink flowers
- High yielding forage producer
- Great N producer

# Spring Peas



**Plant type:** Annual Legume

**Planting dates:** March–April or Aug–Sept

**Soil pH:** 6.0–7.0

**Soil adaption:** Wide range of soils

**Planting depth:** 3/4”–1”

**Approximate seeds/lb:** 3,500

**Seeding rate:** 40–80 lbs/A  
30–40 lbs/A mix

**Days to germination:** 7–10

**Main Usage:** Wildlife, cover crop,  
green manure plow down

**Height at maturity:** 2’–4’

**Length of stand:** Annual

**Reproduces by:** Seed

**Pounds per bushel:** 60



## Stockade Field Peas

- Improved field pea, leafier
- Spring-planted field pea
- Work well with cereal grains, such as oats or triticale for a forage crop
- Also used as a cover crop
- Need to be inoculated and drilled





# Cow Peas

**Plant type:** Annual Legume

**Planting dates:** May–August

**Soil pH:** 6.0–7.0

**Soil adaption:** Wide, 60° or warmer soil temperature

**Planting depth:** 1/2”–1”

**Approximate seeds/lb:** 1,600-4,300

**Seeding rate:** 30–90 lbs/A

**Days to germination:** 7–10

**Main Usage:** Pasture, cover crop, silage

**Height at maturity:** 3’–4’

**Length of stand:** Annual

**Reproduces by:** Seed

**Pounds per bushel:** 60



## Cowpeas

- Warm season annual legume similar to soybeans
- Grows well in dry, hot conditions
- Mix with sorghum sudangrass for pasture or silage
- One harvest crop
- Inoculate to enhance nitrogen (N) production
- Produces 70 – 150 lb/A N
- Great wildlife crop



**COWPEAS** WITH SORGHUM SUDANGRASS

# Forage Soybeans



**Plant type:** Annual legume

**Planting dates:** May-June

**Soil pH:** 6.0-7.0

**Soil adaption:** Well drained, moderate to good fertility

**Planting depth:** 3/4" - 1 1/2"

**Approximate seeds/lb:** 2,600

**Seeding rate:** 140,000 - 160,000/A

**Days to germination:** 5-7

**Main Usage:** Wildlife, silage

**Height at maturity:** 3'-6'

**Length of stand:** Annual

**Reproduces by:** Seed

**Pounds per bushel:** 60



## Forage Soybeans



- Group 5.6 forage soybean
- Ranges 17-25% in crude protein
- Can be mixed with other summer annual crops such as sorghum sudangrass
- Developed at University of Arkansas as a forage soybean
- Can grow 4-6' tall, delivers high yields
- Resistant to SDS, soybean mosaic virus, and frogeye leaf spot
- Non GMO



# Sunn Hemp

**Plant type:** Annual Legume

**Planting dates:** May-August

**Soil pH:** 5-8.4

**Soil adaption:** Most soil types

**Planting depth:** Up to 1" max

**Approximate seeds/lb:** 15,000

**Seeding rate:** 15 lb/A alone;  
5-10 lbs/A in mix

**Days to germination:** 3-7

**Main Usage:** Nitrogen fixing  
cover crop

**Height at maturity:** up to 7'

**Length of stand:** until 1st frost

**Reproduces by:** Seed

**Pounds per bushel:** 50



## Sunn Hemp

- Warm season legume with rapid growth
- Produces up to 100 lbs of nitrogen per acre
- Can reach 6 feet tall in 60 days
- Generally used as a cover crop, but can also be grazed, ensiled, or hayed

\*May have allelopathic effect on some weed species

# Forage Grasses

Forage grasses are a staple in forage-based livestock production. Grasses fit a wide range of soils, fertility, and livestock. They provide energy as well as the dietary fiber needed by livestock. Grasses need supplemental nitrogen (N) to reach their full yield potential. This can be achieved with commercial fertilizer or the addition of a legume. Grass can increase yields in a legume forage stand. It is important to match the forage grass to your farm and livestock situation.



FORAGE  
GRASSES



# Orchardgrass



**Plant type:** Perennial Grass

**Planting dates:** April–May or Aug–Sept

**Soil pH:** 5.8–8.2

**Soil adaption:** Well drained

**Planting depth:** 1/8”–1/4”

**Approximate seeds/lb:** 416,000

**Seeding rate:** 10–15 lbs/A  
2–5 lbs/A mix

**Days to germination:** 18–22

**Main usage:** Hay, pasture

**Height at maturity:** 24”–40”

**Length of stand:** 8–10 years

**Reproduces by:** Seed

**Pounds per bushel:** 14



Orchardgrass is a bunch grass that exhibits reproductive growth of 2-4' in height and vegetative growth from 6-18". It is well adapted to most Midwestern farms because of its high yield, drought tolerance, shade tolerance, and winterhardiness. It matches well with most forage legumes, such as alfalfa, red clover, and birdsfoot trefoil. Orchardgrass can produce high-quality, high yielding feed if harvested in a timely fashion (ideally late boot stage to early bloom). If it is harvested in seed production, the forage quality drops rapidly.



## Alpine II

- Very late maturing orchardgrass
- High yielding with a great disease package
- Good seedling vigor for quick establishment
- Performed well in University of Kentucky forage trials
- Excellent companion for alfalfa



## Devour

- Tolerant to grazing, withstands grazing pressure
- Quick establishing because of good seedling vigor
- Late maturing, matches up with alfalfa or red clover
- Works well for hay
- High yielding
- Exceptional palatability



## Profit

- Late maturity, matches well with alfalfa and other legumes
- Excellent disease package, especially resistant to leaf rust
- Ideal for hay or pasture production
- Best summer performance of any orchardgrass



## Endurance

- Grazing type orchardgrass with lowest crowns
- Medium maturity
- Germplasm selected under grazing
- High yielding



## Crown Royale

- Medium-late maturity, high yielding orchardgrass
- Very cold tolerant
- Great resistance to leaf diseases and rusts
- Profuse tillering



## High Leaf Ratio

- High Leaf Ratio Orchardgrass blend from Barenburg
- High yielding, with exceptional palatability and digestibility
- High leaf to stem ratio with disease resistance
- Winterhardy, medium-late maturity



## Late Mate II

- One of the latest maturing orchardgrass varieties available
- Matches very well with alfalfa
- Great for hay production
- Dependable performance



## Tekapo

- New Zealand type grazing orchardgrass
- Exhibits very low crown and dense prostrate growth that tolerates grazing well
- Long, soft leaves provide very palatable feed
- Medium-late maturity, matches well with alfalfa and other legumes
- Ideal for pasture as well as hay production



## Potomac

- Older, more economical variety
- Early maturing orchardgrass that does not match well with legumes
- Very high yielding in monocultures
- Can be very susceptible to leaf rust pressure

# Forage Tall Fescues

## Low Endophyte Varieties



**Plant type:** Perennial Grass

**Planting dates:** March–May or Aug–Sept

**Soil pH:** 5.0–8.0

**Soil adaption:** Wide, dry-wet

**Planting depth:** 1/8”–1/4”

**Approximate seeds/lb:** 227,000

**Seeding rate:** 10–30 lbs/A  
10–15 lbs/A mix

**Days to germination:** 10–12

**Main usage:** Pasture, hay,  
stockpiling

**Height at maturity:** 24”–40”

**Length of stand:** 10+ years

**Reproduces by:** Seed, short rhizomes

**Pounds per bushel:** 25

**Precautions:** KY-31 Endophyte Fungus, KY-31 not recommended for grazing animals



Tall fescue is a relatively deep-rooted bunch grass found throughout much of the United States. It can tolerate a wide range of soils and fertility. It matches well with forage legumes, especially red and ladino clover. KY-31 tall fescue makes up 75% of all tall fescue grown. Under proper management, it can be a productive and profitable grass. However, with new low endophyte varieties, other tall fescues should be considered. The endophyte found in KY-31 is a fungus that grows between the plant cells and makes it tough, but it also reduces animal performance and causes animal health problems in extreme cases. KY-31 is not recommended for horses. All other low endophyte or friendly endophyte tall fescues are safe for horses or livestock.



### Bronson

- Low endophyte tall fescue
- Exhibits high yield and toughness associated with tall fescue
- Persistent
- Soft, palatable leaves
- Best animal acceptance per Penn State University grazing trials







## Bull

- Low endophyte tall fescue
- Matures about a week earlier than KY-31
- Lowest lignin tall fescue available
- Soft leaves
- Great for hay or pasture



## Payload

- Medium maturing tall fescue that heads approximately two days later than KY-31
- High yielding due to aggressive growth and large crown size
- Low endophyte for improved animal performance
- Yield leader with great stem rust resistance



## STF-43

- Low endophyte tall fescue blend from Barenbrug
- Soft leaves, late maturity
- Excellent palatability and high NDF levels
- Mixes well with alfalfa, red clover, and meadow fescue



## Barolex

- Late maturing tall fescue from Barenbrug
- Fine, soft leaves for improved palatability
- Improved rust resistance



## Martin II

- Low endophyte tall fescue
- Early flowering with high seedling vigor
- Great in hay or pasture situations
- Extended stay-green forage production during mild summers
- Relatively drought tolerant



## Fawn

- Low endophyte tall fescue
- Low maintenance
- Very drought tolerant
- Best for forage when plants are young
- Popularly priced

# Forage Tall Fescues

## Friendly Endophyte Varieties



### Tower ProTek

- Soft palatable tall fescue infected with the Protek novel endophyte
- Performs and yields well under drought conditions
- Improved tolerance to environmental stress
- Very safe for all types of livestock
- Great replacement for KY-31 tall fescue



### BarOptima PLUS E34

- Late maturing, high yielding tall fescue
- Beneficial endophyte improves yield and persistence without sacrificing performance
- Very palatable and safe for all types of livestock

# Forage Tall Fescues

## Endophyte Infected Varieties



### KY-31

- Endophyte infected tall fescue
- Extremely drought tolerant and tough
- Can be stockpiled
- Good for waterways and other conservation practices
- Not advised to use for grazing animals unless diluted with clover and not grazed when hot and dry



# Meadow Fescues



**Plant type:** Perennial Grass

**Planting dates:** March–May or Aug–Sept

**Soil pH:** 6.6–7.2

**Soil adaption:** Well drained, high fertility

**Planting depth:** 1/8”–1/4”

**Approximate seeds/lb:** 220,000

**Seeding rate:** 18–20 lbs/A  
3–5 lbs/A mix

**Days to germination:** 7

**Main usage:** Pasture, hay, silage

**Height at maturity:** 15”–36”

**Length of stand:** 3–7 years

**Reproduces by:** Seed

**Pounds per bushel:** 22



Meadow fescue is a grass that was introduced to the United States and Canada in the early 1800’s. Meadow fescue works well in managed intensive grazing situations and is a good choice for hay production, where “winter kill” is an issue. Meadow fescue performs well under drier conditions for making hay or silage. Although meadow fescues do contain endophytes, they are at very low levels and show no signs of having detrimental effects on livestock. Plant at a rate of two to three pounds per acre with alfalfa.



## Preval

- Good forage yield with improved disease resistance
- Extremely winterhardy
- Well-fit to rotational grazing
- Suitable for hay and grazing
- Long, wide leaves



## Big Gains

- Big Gains is a medium maturity meadow fescue that works well as hay or pasture
- Very winterhardy with early spring growth
- Works well in diverse forage mixtures
- Very persistent if not overgrazed



## Milkway

- Blend of meadow fescue and soft leaved tall fescues from Barenbrug
- High palatability with high NDF levels
- Increased tonnage and production for hay fields
- Works well as a stand-alone crop or with alfalfa



# Annual Ryegrass



**Plant type:** Annual Grass

**Planting dates:** Feb–May or Aug–Oct

**Soil pH:** 5.6–6.2

**Soil adaption:** Well-moderately drained, med-high fertility

**Planting depth:** 1/8”–1/4”

**Approximate seeds/lb:** 227,000

**Seeding rate:** 20–35 lbs/A  
10–20 lbs/A mix

**Days to germination:** 5–7

**Main usage:** Pasture, winter cover crop

**Height at maturity:** 12”–24”

**Length of stand:** 1–2 years

**Reproduces by:** Seed

**Pounds per bushel:** 24

**Precautions:** Can be considered invasive



Annual ryegrass is quick establishing and capable of producing high forage yields in a short period of time. It is a very competitive winter annual cool-season grass that works well as a cover crop, forage, and erosion control. *CISCO* has gone to great lengths to ensure you will be provided with top winterhardy varieties of annual ryegrass. Do not use common varieties of annual ryegrass as a cover crop because they may not have adequate winterhardiness, may not have an adequate disease package, or may not break dormancy evenly in the spring.



## Bruiser

- Diploid annual ryegrass
- Great disease resistance package
- Very winterhardy
- Good for high-quality forage



## Centurion

- Dual purpose cover crop and forage
- Deep rooted with great winterhardiness
- High yielding with improved forage quality
- Great disease resistance package



## LowBoy

- Aggressive tillering to minimize bare soil
- Easy to terminate
- Deep rooted
- Good cold tolerance
- Stays low to the ground



## Winterhawk

- Diploid annual ryegrass
- Above average disease resistance to crown rust and gray leaf spot
- Extremely winterhardy
- Led The Ohio State University trials in yield and winterhardiness
- Consider supplemental nitrogen (N) if used for feed





# Italian Ryegrass



**Plant type:** Annual Grass

**Planting dates:** Feb–May or Aug–Oct

**Soil pH:** 5.6–6.2

**Soil adaption:** Well-mod-well drained, med-high fertility

**Planting depth:** 1/8”–1/4”

**Approximate seeds/lb:** 227,000

**Seeding rate:** 25–40 lbs/A  
3–20 lbs/A mix

**Days to germination:** 5–7

**Main usage:** Pasture, green chop, haylage

**Height at maturity:** 12”–24”

**Length of stand:** 1–3 years

**Reproduces by:** Seed

**Pounds per bushel:** 24



Italian ryegrass is a short rotation ryegrass. During the seeding year, the plant remains vegetative and will not produce seed heads. Once it overwinters, it will produce a seed head. It can be used as a spring forage crop, a double-crop option, or as a cover crop. It can also be used to thicken an older alfalfa stand. Requires 50 lb/A of nitrogen (N) for first harvest and an additional 30-50 lb/A for each subsequent harvest.



## TetraPrime

- High yielding with excellent drought tolerance
- Improved winterhardiness
- High NDF levels for better livestock gains
- Low aftermath heading



## Feast II

- Rapid establishment and growth
- High-quality, high yielding forage
- Very palatable
- Start grazing at 10-12" in height and graze to 3-4" in height
- Make sure plants are firmly rooted before grazing begins
- May be used as a nurse crop for alfalfa establishment (2-3 lbs/A)



## Green Spirit

- Blend of diploid and tetraploid Italian ryegrass from Barenbrug
- High-quality emergency forage crop
- High yields and high-quality



# Intermediate Ryegrass

**Plant type:** Annual Grass

**Planting dates:** Feb–May or Aug–Oct

**Soil pH:** 5.6–6.2

**Soil adaption:** Well-mod-well drained, med-high fertility

**Planting depth:** 1/8"–1/4"

**Approximate seeds/lb:** 227,000

**Seeding rate:** 25–40 lbs/A  
3–20 lbs/A mix

**Days to germination:** 5–7

**Main usage:** Pasture, green chop, haylage

**Height at maturity:** 12"–24"

**Length of stand:** 1–3 years

**Reproduces by:** Seed

**Pounds per bushel:** 24



## TetraMag

- Hybrid ryegrass that persists 3-5 years
- Excellent yield and forage quality
- Cold tolerant with high seedling vigor
- Leading yielder in university trials



# Forage Perennial Ryegrass



**Plant type:** Perennial Grass

**Planting dates:** Feb–May or Aug–Oct

**Soil pH:** 5.6–6.2

**Soil adaption:** Wide

**Planting depth:** 1/8”–1/4”

**Approximate seeds/lb:** 240,000

**Seeding rate:** 20–25 lbs/A  
3–10 lbs/A mix

**Days to germination:** 7–10

**Main usage:** Pasture, hay

**Height at maturity:** 24”–36”

**Length of stand:** 3–5 years

**Reproduces by:** Seed

**Pounds per bushel:** 24



Perennial ryegrass is a high-quality, high sugar content, cool-season grass. It is not as persistent as other forage grasses such as orchardgrass. It is not as winterhardy as smooth bromegrass. It performs very well under intensive grazing conditions and should be on a 21 to 25 day rotation. In general, perennial ryegrass needs to be grazed, chopped, or wet wrapped. It is a slow drying hay crop due to its high moisture content and thick, waxy cuticle.



## Albion

- Most drought tolerant tetraploid perennial ryegrass available
- Utilized in Missouri as a KY-31 tall fescue replacement
- Late maturing tetraploid
- Bred for lower water requirements; as drought tolerant as orchardgrass
- Mixes well with legumes such as red and white clover
- Good fit for Midwestern grazers wanting a perennial ryegrass



## Power

- Late maturing tetraploid variety
- Profuse tillering and rapid regrowth
- Less sensitive to drought and heat than many other varieties
- Excellent palatability/digestibility
- Wide succulent leaves
- Excellent rust resistance



## TetraSweet

- Rapid growing tetraploid perennial ryegrass
- High energy, high digestibility
- Profuse tillering
- Late maturity
- Foliar disease resistant
- Excellent yield all season long



## Remington PLUS NEA2

- High-quality tetraploid ryegrass from Barenbrug
- Utilizes a novel endophyte to improve stress tolerance, persistence, and yield
- Ideal for management intensive grazing
- High disease resistance and good winter survivability

# Festulolium



**Plant type:** Perennial Grass

**Planting dates:** March–May or Aug–Sept

**Soil pH:** 5.5–7.5

**Soil adaption:** Wide range of soils

**Planting depth:** 1/8”–1/4”

**Approximate seeds/lb:** 210,000

**Seeding rate:** 35–40 lbs/A  
3–15 lbs/A mix

**Days to germination:** 10

**Main usage:** Hay, pasture, grazing, silage

**Height at maturity:** 12”–30”

**Length of stand:** 3–7 years

**Reproduces by:** Seed

**Pounds per bushel:** 24



Festuloliums are a hybrid between ryegrass (either annual, Italian, or perennial) and meadow fescue or tall fescue. It is a high sugar content perennial that is great for grazing or hay production. Festuloliums exhibit yields higher than perennial ryegrass, similar forage quality, and high disease resistance, persistence, and winterhardiness.



## Perseus

- Cross between Italian ryegrass and meadow fescue
- Well suited for intermediate and late cutting
- Vigorous spring growth with rapid regrowth after harvest
- Works well during tough weather conditions





## Spring Green

- Higher yielding than ryegrass during the summer
- Cold tolerant
- High forage quality
- Short rotation, high-quality feed



## Duo

- Cross between tetraploid perennial ryegrass and a meadow fescue
- Winterhardiness and persistence of a meadow fescue
- Forage quality of a perennial ryegrass
- Does not tolerate hot, dry conditions

# Meadow Bromegrass



**Plant type:** Perennial Grass

**Planting dates:** April–May or Aug–Sept

**Soil pH:** 6.0–7.5

**Soil adaption:** Well drained, fertile

**Planting depth:** 1/8”–1/4”

**Approximate seeds/lb:** 93,000

**Seeding rate:** 15–20 lbs/A  
3–8 lbs/A mix

**Days to germination:** 14

**Main usage:** Hay, pasture

**Height at maturity:** 36”–48”

**Length of stand:** 10+ years

**Reproduces by:** Seed and rhizomes

**Pounds per bushel:** 14



Meadow brome is similar to orchardgrass in maturity and grows on similar moderately to well-drained soils. It regrows faster than smooth bromegrass and will match up with alfalfa and take up to 4 cuts per year. Meadow brome can be difficult to mix well because it is a large fluffy seed similar to smooth bromegrass. Meadow brome can basically be managed like orchardgrass. Meadow brome will hang on to its quality longer on reproductive growth than orchardgrass.



## MacBeth

- Tremendous growth during cool, moist conditions
- Early spring growth
- Very palatable and high yielding
- Top-yielding with rapid regrowth
- Works well with alfalfa
- Topped several university trials



## AC Admiral

- Winterhardy bunch grass with an extensive fibrous root system
- Excellent forage quality and yield
- Well suited for hay or grazing
- Out yields smooth bromegrass



# Smooth Bromegrass



**Plant type:** Perennial Grass

**Planting dates:** April–May or Aug–Sept

**Soil pH:** 6.0–7.5

**Soil adaption:** Well drained, fertile

**Planting depth:** 1/8”–1/4”

**Approximate seeds/lb:** 140,000

**Seeding rate:** 15–20 lbs/A  
3–8 lbs/A mix

**Days to germination:** 14

**Main usage:** Hay, pasture

**Height at maturity:** 36”–48”

**Length of stand:** 10+ years

**Reproduces by:** Seed and rhizomes

**Pounds per bushel:** 14



Smooth bromegrass generally matures later than orchardgrass. It is a 2-3 cuts per year grass (45-day rest periods). It does fill in with rhizomes, and it does not like a low cutting height. It grows best in moderately to well-drained soils like orchardgrass. Smooth bromegrass is colder tolerant than orchardgrass. It holds its forage quality through seed production. Orchardgrass quality drops very quickly after the late boot stage.



## Smooth Bromegrass

- Long-lived sod forming forage grass
- Late maturing grass that matches well with birdsfoot trefoil
- Smooth Bromegrass has better cold tolerance than orchardgrass



## Hakari Alaska Bromegrass

- High-quality, rapid growing brome
- Erect, broad leaf growth
- Very cold tolerant, with stand persistence of 3-4 years
- Well suited for hay production and grazing

# Reed Canarygrass



**Plant type:** Perennial Grass

**Planting dates:** April–May or Aug–Sept

**Soil pH:** 5.5–8.2

**Soil adaption:** Wide, dry to very wet

**Planting depth:** 1/8”–1/4”

**Approximate seeds/lb:** 480,000

**Seeding rate:** 8–12 lbs/A  
2–4 lbs/A mix

**Days to germination:** 21–28

**Main usage:** Hay, conservation, pasture on wet ground

**Height at maturity:** 3’–8’

**Length of stand:** 10+ years

**Reproduces by:** Seed, rhizomes

**Pounds per bushel:** 47

**Precautions:** Can be considered invasive



Reed canarygrass is a tall sod forming grass that exhibits great tolerance to wet and flooded conditions, as well as excellent drought tolerance. It is of medium palatability and can quickly drop in forage quality as it matures. Reed canarygrass requires good management as to not allow it to spread to areas where it is undesired. Improved varieties are low in alkaloids, which in turn improves forage quality and intake. Reed canarygrass generally requires about 40 lb/A of nitrogen (N) per ton of forage. **Not for sale in Indiana. On March 18, 2019, the Invasive Terrestrial Plant Rule (312 IAC 18-3-25) was signed by the governor and prohibits the “sale, offer, or growth for sale, gift, barter, exchange, or distribution” of the species reed canarygrass.**



## Rival

- Great seedling vigor
- Low alkaloid improves animal performance
- Disease resistant
- Flood and drought tolerant



## Palaton

- High-quality, rapid growing variety
- Erect, broad leaf growth
- Very cold tolerant, with stand persistence of 3-4 years
- Well suited for hay production and grazing

# Timothy



**Plant type:** Perennial Grass

**Planting dates:** March–May or Aug–Sept

**Soil pH:** 5.0–7.0

**Soil adaption:** Wide

**Planting depth:** 1/8”–1/4”

**Approximate seeds/lb:** 1,200,000

**Seeding rate:** 10–12 lbs/A  
1–4 lbs/A mix

**Days to germination:** 10–14

**Main usage:** Pasture, hay

**Height at maturity:** 24”–40”

**Length of stand:** 2–5 years

**Reproduces by:** Seed

**Pounds per bushel:** 45



Timothy is the oldest cultivated forage grass in North America. It is highly palatable as well as winterhardy. It performs best in cool, moist conditions. Timothy is well known and preferred in the horse market. It matches well with clovers or birdsfoot trefoil due to its late maturity. The following varieties offered are ranked in the order of maturity.



## Catapult

- Aggressive growing, early to mid-maturity timothy
- Developed to perform well in a Midwestern environment
- Bred for spring vigor and summer regrowth
- Tall plant height with good stand persistence



## Kootenai

- Top of the line for yield and forage quality
- Matures three to five days earlier than Climax
- Very disease resistant and winterhardy
- Maturity matches well with alfalfa
- Consistent performance



## Tuukka

- Matures about three days earlier than Climax
- High leaf/stem ratio
- Good regrowth characteristics
- Can be mixed with alfalfa



## Climax

- Medium-late maturity
- Most commonly used in hay mixtures
- Tall, fine-stemmed, good leaf production



## Barpenta

- Very late maturity with high dry matter yields
- Exhibits good persistence and winterhardiness
- Strong spring growth
- Works well as a pure stand



# Enduro Plus

Brand Forage Products

Enduro-Plus Mixes consist of only the best forage varieties available. All varieties in the Enduro-Plus product line have been developed and tested for forage quality, yield, and persistence. These products have been designed to give you higher relative feed values, which translates into more milk per acre, more beef per acre, or more energy for horses.



ENDURO PLUS



# Annual Mixes

## Milk Maker



**Plant type:** Annual Mix

**Planting dates:** March–April or Aug

**Soil pH:** 6.0–7.0

**Soil adaption:** Wide

**Planting depth:** 1"

**Approximate seeds/lb:** 8,000–9,000

**Seeding rate:** 100 lbs/A  
70 lbs/A nurse crop

**Days to germination:** 7–10

**Main usage:** Baleage, silage,  
nurse crop

**Height at maturity:** 3'–5'

**Length of stand:** 1 cut

**Reproduces by:** Seed

**50% Stockade Forage Peas**  
**50% Elevator Spring Triticale**



- Very versatile
- Great nurse crop for forage seeding
- Fits well before or after a summer annual crop and can tolerate frost or light freeze
- High-quality haylage for improved animal performance
- 60 days from emergence to harvest; best when triticale is in the boot stage

## Partner Pea/Oat Mix



**Plant type:** Annual Mix

**Planting dates:** March–April or Aug

**Soil pH:** 6.0–7.0

**Soil adaption:** Wide

**Planting depth:** 1"

**Approximate seeds/lb:** 8,000–9,000

**Seeding rate:** 120 lbs/A  
70 lbs/A nurse crop

**Days to germination:** 7–10

**Main usage:** Baleage, silage,  
nurse crop

**Height at maturity:** 2'–5'

**Length of stand:** 1 cut

**Reproduces by:** Seed

**50% Stockade Forage Peas**  
**50% Haywire Forage Oats**



- High-quality haylage
- Tolerates frost or light freeze and fits well before or after a summer annual crop
- Great nurse crop for a forage seeding
- Spectacular yield & quality with Haywire Oats
- 60 days from emergence to harvest; best when oats are in the boot stage

## Tri Feast Forage Mix

**Plant type:** Annual Mix

**Planting dates:** April-May, Aug

**Soil pH:** 6.0-7.0

**Soil adaption:** Well-mod-well drained

**Planting depth:** 1/2"-1"

**Approximate seeds/lb:** 82,000

**Seeding rate:** 100-120 lbs/A

**Days to germination:** 7-10

**Main usage:** Pasture, baleage, silage

**Height at maturity:** 2'-4'

**Length of stand:** 1-3 cuts

**Reproduces by:** Seed



- Harvest at pre-boot
- Early maturity in spring
- Will overwinter for a spring harvest
- Designed to increase forage tonnage and high-quality forage fast

**70% Winter Triticale**

**30% TetraPrime Italian Ryegrass**

## Udder Filler Forage Mix

**Plant type:** Annual Mix

**Planting dates:** March-April or Aug

**Soil pH:** 6.0-7.0

**Soil adaption:** Wide

**Planting depth:** 1/2"-1"

**Approximate seeds/lb:** 82,000

**Seeding rate:** 120 lbs/A  
50 lbs/A nurse crop

**Days to germination:** 7-10

**Main usage:** Baleage, silage,  
nurse crop

**Height at maturity:** 2'-5'

**Length of stand:** 1 cut

**Reproduces by:** Seed



- High protein & carbohydrates
- For haylage/silage/green-chop
- Fast forage: ready in 60-80 days
- Responds well to nitrogen/manure applications

**70% Elevator Triticale**

**30% Winterhawk Annual Ryegrass**

# Perennial Mixes

## Baler Mix



<b>Plant type:</b> Perennial Mix	<b>Days to germination:</b> 7-10
<b>Planting dates:</b> April-May, Aug	<b>Main usage:</b> Hay, baleage, pasture
<b>Soil pH:</b> 6.2-7.0	<b>Height at maturity:</b> 2'-4'
<b>Soil adaption:</b> Well-mod-well drained	<b>Length of stand:</b> 3-7 years
<b>Planting depth:</b> 1/8"-1/4"	<b>Reproduces by:</b> Seed
<b>Approximate seeds/lb:</b> 343,000	
<b>Seeding rate:</b> 30-35 lbs/A	



- Only elite varieties
- Can be baled, chopped, or used for pasture
- All top producing, forage researched, value added varieties
- No cheap fillers
- Very flexible mix that is inoculated and ready to be planted

**65% Enduro 427 LHR Alfalfa**  
**20% Gallant Red Clover**  
**10% Kootenai Timothy**  
**5% Alpine II Orchardgrass**

## Beef Pasture Mix



<b>Plant type:</b> Perennial Mix	<b>Days to germination:</b> 7-10
<b>Planting dates:</b> April-May, Aug	<b>Main usage:</b> Pasture, baleage
<b>Soil pH:</b> 6.0-7.0	<b>Height at maturity:</b> 1'-3'
<b>Soil adaption:</b> Well-med-well drained	<b>Length of stand:</b> 3-7 years
<b>Planting depth:</b> 1/8"-1/4"	<b>Reproduces by:</b> Seed
<b>Approximate seeds/lb:</b> 421,000	
<b>Seeding rate:</b> 30-35 lbs/A	



- Can be stockpiled
- Soft, highly palatable fescues
- Works well for hay or grazing
- Formulated for top animal production for beef producers

**50% Bronson Tall Fescue**  
**40% Payload Tall Fescue**  
**8.5% Gallant Red Clover**  
**1.5% Jumbo II Ladino Clover**



## Drought Buster Mix



<b>Plant type:</b> Perennial Mix	<b>Days to germination:</b> 7-10
<b>Planting dates:</b> April-May, Aug	<b>Main usage:</b> Pasture, baleage
<b>Soil pH:</b> 6.0-7.0	<b>Height at maturity:</b> 2'-4'
<b>Soil adaption:</b> Well-mod-well drained	<b>Length of stand:</b> 3-7 years
<b>Planting depth:</b> 1/8"-1/4"	<b>Reproduces by:</b> Seed
<b>Approximate seeds/lb:</b> 400,000	
<b>Seeding rate:</b> 25 lbs/A	



- Can take tough growing conditions
- Specially formulated for cattle and goats for high animal production
- Displays excellent drought tolerance and very high tonnage of outstanding forage

**30% Devour Orchardgrass**  
**25% Endure Chicory**  
**25% Gallant Red Clover**  
**10% TetraPrime Italian Ryegrass**  
**10% Legacy White Clover**

## Hay & Graze Clover Mix



<b>Plant type:</b> Perennial Mix	<b>Days to germination:</b> 7-10
<b>Planting dates:</b> April-May, Aug	<b>Main usage:</b> Pasture, baleage
<b>Soil pH:</b> 6.0-7.0	<b>Height at maturity:</b> 1'-3'
<b>Soil adaption:</b> Well-med-well drained	<b>Length of stand:</b> 3-7 years
<b>Planting depth:</b> 1/8"-1/4"	<b>Reproduces by:</b> Seed
<b>Approximate seeds/lb:</b> 350,000	
<b>Seeding rate:</b> 2-8 lbs/A	



- Great for frost seeding
- Overseed grass pastures
- Proper formula of red to white clover
- Mix of outstanding clovers formulated at just the right percentage to give the best benefit for production livestock managers

**70% Gallant Red Clover**  
**30% Legacy White Clover**  
*\*both coated*

## HayMaster Grass Mix



**Plant type:** Perennial Mix

**Planting dates:** April-May or Aug-Sept

**Soil pH:** 6.0-7.0

**Soil adaption:** Wide

**Planting depth:** 1/8"-1/4"

**Approximate seeds/lb:** 183,000

**Seeding rate:** 10-15 lbs/A with legume  
25-30 lbs/A pure stand

**Days to germination:** 7-10

**Main usage:** Pasture, baleage, silage

**Height at maturity:** 2'-4'

**Length of stand:** 1-3 cuts

**Reproduces by:** Seed



- Excellent for all-grass hay
- Outstanding winterhardiness
- Excellent companion for alfalfa
- Produces under tough hot, dry conditions
- Responds well to nitrogen/manure applications
- Excellent season-long production (multi-cut mixture)

**50% MacBeth Meadow Brome**

**50% Preval Meadow Fescue**

## Horse Hay Mix



**Plant type:** Perennial Mix

**Planting dates:** April-May, Aug

**Soil pH:** 6.0-7.0

**Soil adaption:** Well-mod-well drained

**Planting depth:** 1/8"-1/4"

**Approximate seeds/lb:** 343,000

**Seeding rate:** 25 lbs/A

**Days to germination:** 7-10

**Main usage:** Pasture, hay, baleage

**Height at maturity:** 2'-4'

**Length of stand:** 3-7 years

**Reproduces by:** Seed



- Proper forage for equine
- Works best in well drained soil
- Includes Potato Leafhopper Resistant alfalfa
- Equal mixture of alfalfa and grass for great horse hay

**58% Enduro 427 LHR Alfalfa**

**19% Alpine II Orchardgrass**

**15% Albion Perennial Ryegrass**

**8% Tuukka Timothy**

# Premium Pasture/Hay Mix



**Plant type:** Perennial Mix

**Planting dates:** April–May, Aug

**Soil pH:** 6.3–7.0

**Soil adaption:** Well–mod–well drained

**Planting depth:** 1/8”–1/4”

**Approximate seeds/lb:** 374,000

**Seeding rate:** 18-20 lbs/A

**Days to germination:** 7–10

**Main usage:** Pasture, hay, baleage

**Height at maturity:** 2’–4’

**Length of stand:** 3–7 years

**Reproduces by:** Seed

**50% Enduro 427 LHR Alfalfa**

**30% Gallant Red Clover**

**10% Kootenai Timothy**

**5% Devour Orchardgrass**

**5% Albion Perennial Ryegrass**

- Only elite varieties
- Balanced alfalfa/clover/grass mix for flexible use as hay or pasture
- All top producing, forage researched, value added varieties - no cheap fillers
- Can be used for a legume base to add selected forage grasses for permanent pasture

# Pasture Perfect®

The Brand of Choice

Since 1997, the Pasture Perfect® brand has provided the finest forage seed varieties available on the market for grazing tolerance, leaf disease and drought tolerance, yield, and quality. The Pasture Perfect® brand never stops improving. We are always updating our mixes with the best possible ingredients. We believe our mixes put the “Perfect” in Pasture Perfect®.



PASTURE  
PERFECT



## Champion Pasture Mix

- 20% Devour Orchardgrass
- 20% Profit Orchardgrass
- 15% Perseus Festulolium
- 15% TetraSweet Perennial Ryegrass
- 10% MacBeth Meadow Bromegrass
- 10% Albion Perennial Ryegrass
- 5% Balin Kentucky Bluegrass
- 5% Kootenai Timothy

Formulated with grass varieties selected for horses and all production animals. It is a mix of highly palatable varieties that make super quality forage. Top choice for grazing and hay.  
**Seed at 35-50 lb/A**



## Midwestern Grazer Mix

- 35% Devour Orchardgrass - coated
- 15% Profit Orchardgrass - coated
- 15% Preval Meadow Fescue
- 15% Albion Perennial Ryegrass
- 10% MacBeth Meadow Brome
- 7% Gallant Red Clover - coated
- 3% Legacy White Clover - coated

Midwestern Grazer is intended for use with managed intensive grazing practices. This is a mix of highly palatable grasses and legumes that make high-quality forage for making milk or meat. Also a great hay mix.  
**Seed at 30-40 lb/A**



## Superior Forage Mix

- 30% Enduro 427 LHR Alfalfa
- 18% Profit Orchardgrass - coated
- 15% Bronson Tall Fescue
- 15% Gallant Red Clover - coated
- 15% Preval Meadow Fescue
- 5% Kootenai Timothy
- 2% Legacy White Clover - coated

Superior Forage is a mix of highly palatable varieties that make high-quality forage for making milk or putting weight on growing livestock. Can be used for hay, silage, dry hay, and managed intensive grazing.  
**Seed at 35-50 lb/A**



## Renovator Special Mix

- 30% TetraSweet Perennial Ryegrass
- 30% TetraMag Hybrid Ryegrass
- 20% Albion Tetraploid Per. Ryegrass
- 20% Perseus Festulolium

Renovator Special is specially designed for renovating existing pastures. Renovator Special works well for inter-seeding into existing horse and cattle pastures. It is also used for improving weak alfalfa stands. Dairy, beef, and sheep producers, along with horse owners can all benefit from using Renovator Special. It is low endophyte.  
**Seed at 10-25 lb/A**



# Summer Annuals

Summer annuals have become more than just an emergency forage crop to many producers. Summer annuals can be planted as a primary crop or a double crop. They exhibit rapid growth in hot, humid conditions and can yield two to six tons per acre. Planting can occur once the soil temperature reaches 62° F. Summer annuals require nitrogen (N) fertilization, usually 1 lb/A of N per day of growth. These crops are also more water efficient and can be productive when cool season crops are slowing down due to heat and dry weather. Strongly consider making them part of your forage crop rotation.

**Prussic Acid** is a concern with grain sorghum, forage sorghum, sorghum sudangrass, and sudangrass. The only summer annual not affected is pearl millet. Prussic acid occurs any time the plants encounter stress, especially a frost or freeze. Extreme drought can also cause high levels of prussic acid in summer annual plants. If the plants are subject to a hard frost or freeze, do not harvest or graze for 7-10 days. This allows the prussic acid (HCN gases) to dissipate from the plant. Do not start grazing if the plants are showing visible signs of drought stress. High N levels and low phosphorous (P) levels can increase prussic acid levels in plants. If you are unsure about prussic acid levels, error on the side of caution and send a sample into the lab.

**Nitrate Poisoning** in summer annuals can occur under certain conditions. High nitrogen (N), drought stress, or prolonged overcast conditions can cause high to toxic levels of nitrate to accumulate in the plant, especially in the lower stalk and stem. This in turn can be passed onto livestock. The excess nitrate causes loss of oxygen carrying capacity in the blood of the livestock. Symptoms include rapid, shallow breathing, muscle tremors, staggering, and ultimately death. Plants can be tested by a reputable lab for nitrate levels. A veterinarian should be immediately contacted if you believe livestock have been exposed to forage high in nitrates.



# Sorghum Sudan



**Plant type:** Annual Grass  
**Planting dates:** May–July  
**Soil pH:** 6.0–7.0  
**Soil adaption:** Wide, 60° or warmer soil temperature  
**Planting depth:** 3/4”–1 1/4”  
**Approximate seeds/lb:** 15,000–19,000  
**Seeding rate:** 20–50 lbs/A

**Days to germination:** 7  
**Main usage:** Green chop, hay, silage  
**Height at maturity:** 5’–7’  
**Length of stand:** Annual  
**Reproduces by:** Sterile  
**Pounds per bushel:** 56

**Precautions:** Prussic Acid, Nitrate Poisoning

## Sweet Six BMR



- Rapid growth, 45-55 days to first harvest
- 30-35 days between subsequent harvests
- BMR 6 gene, reduced lignin content up to 33% as compared to a conventional sorghum sudangrass
- Fine stemmed, high palatability with rapid regrowth
- Dry stalk gene provides reduced plant moisture content
- Best sorghum sudangrass for dry baling
- Seed at 35-50 lb/A, higher rates reduce stem diameter
- Graze at 24-30”, harvest at 30-50”
- Organic seed available

Crop Use Information	
Life Cycle	Annual
Ease of Establishment	Good
Drought Stress	Good
Minimum pH	6.0
Hay	Excellent
Silage	Excellent
Rotational Grazing	Excellent
Palatability	Excellent

Adaption Ratings	
Photosynthetic Type	Warm Season
Photoperiod	Insensitive
Soil Temperature	Warm (62°)
Water Requirement	Low

Disease/Insect/ Nematode Ratings	
Anthracoese	R
Downy Mildew	MR

Agronomic Traits	
Early Seeding Vigor	Good
Growth Habit	Upright
Recovery After Cutting	Very Good
Maturity	55-60 days to boot
Harvest	45-55” or when crop is at 50% boot stage
Uniformity	Good
Midrib Type	Brown



## Sweet Forever BMR

- 55-60 days to first harvest
- 30-60 days between subsequent harvests
- Broad harvest window
- BMR 6 gene reduces lignin content
- Photoperiod sensitive, will not head out until day length is < 12 h 17 m
- Maintains forage quality throughout the growing season
- Fits as a tool to manage weather risks with delayed harvests
- Seed at 35-50 lb/A, higher rates reduce stem diameter
- Graze at 24-30", harvest at 30-50"

Crop Use Information	
Life Cycle	Annual
Ease of Establishment	Good
Drought Stress	Excellent
Minimum pH	6.0
Hay	Excellent
Silage	Excellent
Rotational Grazing	Excellent
Palatability	Outstanding

Adaption Ratings	
Photosynthetic Type	Warm Season
Photoperiod	Sensitive
Soil Temperature	Warm (62°)
Water Requirement	Very Low

Disease/Insect/ Nematode Ratings	
Anthracoese	R
Downy Mildew	R

Agronomic Traits	
Early Seeding Vigor	Excellent
Growth Habit	Upright
Recovery After Cutting	Excellent
Maturity	12 h 20 m or less of day length
Harvest	40-84"
Uniformity	Excellent
Midrib Type	BMR/Juicy-Sweet





## Super Sugar DM

- 55-60 days to first harvest
- 30-40 days between subsequent harvests
- Conventional SSG with crude protein levels reaching 16-18%
- Fine stemmed
- Delayed Maturity (DM) trait keeps plants from heading out for up to 90 days
- Fits as a tool to manage weather delayed harvests
- Seed at 35-50 lb/A, higher rates reduce stem diameter
- Graze at 24-30", harvest at 30-50"

Crop Use Information	
Life Cycle	Annual
Ease of Establishment	Good
Drought Stress	Excellent
Minimum pH	6.0
Hay	Excellent
Silage	Excellent
Rotational Grazing	Excellent
Palatability	Excellent

Adaption Ratings	
Photosynthetic Type	Warm Season
Photoperiod	Insensitive
Soil Temperature	Warm (62°)
Water Requirement	Low

Disease/Insect/ Nematode Ratings	
Anthrachnose	R
Downy Mildew	R

Agronomic Traits	
Early Seeding Vigor	Excellent
Growth Habit	Upright
Recovery After Cutting	Excellent
Maturity	90-95 days to boot
Harvest	24-50"
Uniformity	Excellent
Midrib Type	Non-BMR



## Sweet Bites

- Vigorous growing, conventional sorghum sudangrass
- Higher leaf to stem ratio than other similar hybrids
- Rapid regrowth with resistance to anthracnose and downy mildew
- First harvest 50-55 days

Crop Use Information	
Life Cycle	Annual
Ease of Establishment	Good
Drought Stress	Excellent
Minimum pH	5.5
Hay	Excellent
Silage	Excellent
Rotational Grazing	Excellent
Palatability	Excellent

Adaption Ratings	
Photosynthetic Type	No
Photoperiod	No
Soil Temperature	Warm 62
Water Requirement	Very low

Disease/Insect/ Nematode Ratings	
Anthracnose	R
Downy Mildew	R

Agronomic Traits	
Early Seeding Vigor	Excellent
Growth Habit	Upright
Recovery After Cutting	Excellent
Maturity	63 days to boot
Harvest	40-50"
Uniformity	Excellent
Midrib Type	Juicy

# Forage Sorghum



**Plant type:** Annual Grass  
**Planting dates:** May-July  
**Soil pH:** 6.0-7.0  
**Soil adaption:** Wide, 60° or warmer  
**Planting depth:** 1"-1 1/2"  
**Approximate seeds/lb:** 13,000 - 15,000  
**Seeding rate:** 60-80,000 population  
 20" to 30" rows

**Days to germination:** 7  
**Main usage:** Hay, silage  
**Height at maturity:** 5'-8'  
**Length of stand:** Annual  
**Reproduces by:** Sterile  
**Pounds per bushel:** 56  
**Precautions:** Prussic Acid, Nitrate Poisoning



Forage sorghum has made vast improvements in forage quality and yield over the last decade. *CISCO* has selected varieties fit to the Midwest either as a primary forage crop or as a double crop option. Forage sorghums can be managed one of two ways. The first is as a conventional direct chop silage crop. The other option is to mow the forage sorghum in the early boot stage, wilt it, and chop or wet wrap it. When the plants regrow they can be mowed in the early boot stage again. This offers producers a higher yielding, higher quality option with less harvests than a sorghum sudangrass hybrid. Also, this allows forage sorghum to be grown in a shorter than normal growing season if extra forage is needed. Follow seeding rates closely, as over planting the recommended seeding rates can cause lodging.



## Silo-Pro BMR

- BMR 6, 95 days to soft dough stage hybrid
- Brachytic dwarf gene keeps maximum height at 6-7' tall
- Very large leaves that canopy quickly
- Significantly lower inputs compared to corn silage
- Can yield 15 to 25 T/A
- Seed at 45,000 - 75,000 seeds/ac in 20" to 30" rows



## GW 400 BMR

- BMR 6
- Medium-early maturity, sterile hybrid
- High sugar content, juicy stalk
- Seed at 64,000 - 95,000 seeds/ac in 20" to 30" rows
- Organic seed available

Crop Use Information	
Life Cycle	Annual
Ease of Establishment	Good
Drought Stress	Good
Minimum pH	6.0
Hay	Excellent
Silage	Excellent
Rotational Grazing	OK to graze re-growth
Palatability	Excellent

Adaption Ratings	
Photosynthetic Type	C4-Warm Season
Soil Temperature	Warm (62°F)
Water Requirement	Low

Disease/Insect/Nematode Ratings	
Downy Mildew	R

Agronomic Traits	
Early Seeding Vigor	Good
Growth Habit	Upright with sterile head
Recovery After Cutting	Good with water
Maturity	103 days to soft dough
Uniformity	Excellent
Plant Color	Tan
Standability	Good
Midrib Type	Brown

Planting Rates		
Bushel Weight	56lbs	
Seeds per lb	16,000	
<b>Rate (lbs)</b>	<b>Dryland</b>	<b>Irrigated</b>
Rows	4-8	8-12
Broadcast	4-10	15-30
Seeds/sq. ft.	2-4	6-12



## GW 475 BMR

- BMR 6
- 75 days to soft dough stage
- Great double crop forage sorghum for the Midwest
- Grows 6-7' tall
- Dry stalk trait for more rapid dry down



## 2120

- Rox Orange Cane Parentage
- Medium maturity male sterile forage sorghum
- High sugar content at maturity
- Great for wildlife

# Grain Sorghum



**Plant type:** Annual Grass  
**Planting dates:** May–August  
**Soil pH:** 6.0–6.5  
**Soil adaption:** Wide, 60° or warmer soil temperature  
**Planting depth:** 1”–1 1/2”  
**Approximate seeds/lb:** 14,000  
**Seeding rate:** 4–20 lbs/A

**Days to germination:** 7  
**Main usage:** Wildlife, grain  
**Height at maturity:** 3’–4’  
**Length of stand:** Annual  
**Reproduces by:** Seed  
**Pounds per bushel:** 56  
**Precautions:** Prussic Acid, Nitrate Poisoning



Worldwide, sorghum is a food grain for humans. In the United States, sorghum is used primarily as a feed grain for livestock. Grain sorghum types are relatively short growing (less than six feet) and provide moderate yields when harvested as forage. Grain sorghum varieties are classed in seven agronomic groups, however, milo is the only economic one for the Midwest. Leaf blades are wavy with a yellow midrib. Heads are bearded or awned, compact, and oval in shape. Seeds are large, pale pink to cream in color. Plants tend to be more tolerant to heat and drought. Feed value of grain sorghum is similar to corn. Grain sorghum can also make a great, simple spring/summer food plot for deer. It is a great choice for plots where high Whitetail deer volumes prevent other grain crops from making it through the summer.



## Wilder

- Primarily used as wildlife food in the Midwest
- Heat and drought tolerant
- Grain can be used for livestock feed
- Grows 3-4’ tall and produces grain in 90 days or less
- Becomes more palatable throughout the fall

# Sudangrass



**Plant type:** Annual Grass  
**Planting dates:** May–August  
**Soil pH:** 6.0–6.5  
**Soil adaption:** Wide, 60° or warmer soil temperature  
**Planting depth:** 1/2" - 1"  
**Approximate seeds/lb:** 43,000  
**Seeding rate:** 20-30 lbs/A

**Days to germination:** 10  
**Main usage:** Forage, cover  
**Height at maturity:** 3'–4'  
**Length of stand:** Annual  
**Reproduces by:** Seed  
**Pounds per bushel:** 40  
**Precautions:** Prussic Acid, Nitrate Poisoning



## Piper

- Fine stemmed summer annual
- Use for hay, silage, or pasture
- Great cover crop after wheat
- Resistant to Anthracnose and Downey Mildew



## Pro-Max BMR

- BMR 12 gene, reduced lignin content
- Rapid growth, first harvest in 45-50 days
- Sudan x Sudan creates a fine stemmed crop
- Smaller stem diameter, good choice for dry baling
- Seed at 35-50 lb/A, higher rates reduce stem diameter
- Graze at 24-30", harvest at 30-50"

# Millets

Millets are often used as an emergency forage during a time of drought or short feed supply. However, they are very well suited to be part of a yearly forage plan. Millets are very drought tolerant, water efficient, and require moderate fertility. Millets are slightly slower growing than some of the improved sorghum sudangrasses, but have profuse tillering after the initial harvest. Most millets require  $\frac{3}{4}$  to 1 lbs of N per day of growth. Another great benefit of millets is that they do not produce any prussic acid and are safe to feed after a frost or freeze.





# Pearl Millet

**Plant type:** Annual Grass  
**Planting dates:** May–July  
**Soil pH:** 5.5–7.5  
**Soil adaption:** Wide, 60° or warmer soil temperature  
**Planting depth:** 1/2"  
**Approximate seeds/lb:** 60,000  
**Seeding rate:** 16–20 lbs/A

**Days to germination:** 10  
**Main usage:** Hay, graze  
**Height at maturity:** 2'–4'  
**Reproduces by:** Seed  
**Pounds per bushel:** 52



## Sweet Summer BMR

- 50-60 days to first harvest
- Rapid regrowth, 30-40 days between subsequent harvests
- BMR gene technology for improved feed intake and digestibility
- Dwarfing gene for increase leaf to stem ratio and better standability
- No prussic acid concerns, safe for horses
- Safe to graze after a freeze, consider stockpiling



## Tiff Leaf III

- High-quality leafy three-way hybrid pearl millet
- Good resistance to leaf rust
- High yielding; producing good gains on livestock
- Drought tolerant
- Can persist and yield well on less than ideal soils
- Harvest at 24-36" in height

# German Foxtail Millet



**Plant type:** Annual Grass

**Planting dates:** May–July

**Soil pH:** 6.0–7.0

**Soil adaption:** Wide, 60° or warmer soil temperature

**Planting depth:** 1/2"

**Approximate seeds/lb:** 220,000

**Seeding rate:** 20–30 lbs/A

**Days to germination:** 10

**Main usage:** Hay, graze

**Height at maturity:** 2'–4'

**Length of stand:** Annual

**Reproduces by:** Seed

**Pounds per bushel:** 50



## German Foxtail Millet

- Fast maturing summer annual grass
- One cut harvest available 60 days after emergence
- Great for double cropping
- Very low water use
- Great for wildlife
- Allow six weeks after German Foxtail millet before planting wheat to avoid potential carryover of a mosaic virus from the GF millet to wheat



# Japanese Millet

**Plant type:** Annual Grass  
**Planting dates:** May–June  
**Soil pH:** 5.5–6.5  
**Soil adaption:** Well suited for areas with wet conditions  
**Planting depth:** 1/2”  
**Approximate seeds/lb:** 155,000  
**Seeding rate:** 15–30 lbs/A  
9–12 lbs/A mix

**Days to germination:** 10  
**Main usage:** Wildlife food plots  
**Height at maturity:** 1’–5’  
**Length of stand:** Annual  
**Reproduces by:** Seed  
**Pounds per bushel:** 35



## Japanese Millet

- Most rapid growth millet; 45 days to seed production
- Likes wetter, muddy areas
- Great for waterfowl and other wildlife
- Not recommended for hay or silage because of its coarse, unpalatable characteristics

# Teff Grass



**Plant type:** Annual Grass

**Planting dates:** May–July

**Soil pH:** 6.0–7.0

**Soil adaption:** Wide, 60° or warmer soil temperature

**Planting depth:** 1/8”–1/4”

**Approximate seeds/lb:** 1,250,000

**Seeding rate:** 10–12 lbs/A

**Days to germination:** 3–5

**Main usage:** Hay, silage, grazing after 1 cut

**Height at maturity:** 1’–2’

**Length of stand:** Annual

**Reproduces by:** Seed



## CISCO Summer Delite

- Fine stemmed, leafy summer annual grass that exhibits rapid growth
- Potential to produce 1.5 to 2.5 T/A in 45-55 days
- Harvest regrowth every 30-45 days
- Best suited for dry hay production, especially the horse market
- Requires a very firm seedbed, 65°F plus soil temperatures, and a seeding depth of 1/8”
- Requires nitrogen (N) fertilization and hot growing conditions
- Summer Delite coated at 34%



# Egyptian Wheat

**Plant type:** Annual Grass

**Planting dates:** May-July

**Soil pH:** 6.0-7.0

**Soil adaption:** Moderate to well drained

**Planting depth:** 1/2" - 3/4"

**Seeding rate:** 15-20 lb/A

**Days to germination:** 7

**Main Usage:** Cover, Food Plots

**Height at maturity:** 8'-10'

**Length of stand:** Annual

**Reproduces by:** Seed

**Pounds per bushel:** 56



## Egyptian Wheat

- Summer annual with rapid growth
- Can reach 7 to 10 ft in height
- Great wildlife food plot visibility screen
- Matures late and seeds last into winter
- Late maturity provides more cover and feed for wildlife

# Cereal Grains

Cereal grains are an important part of modern agriculture, whether it is for grain, forage, or a cover crop. Cereal grains are also used as a nurse crop in newly seeded hay fields and pastures. They fit into a short rotation and can tolerate cooler temperatures than other crops.



GRAINS

# Oats



**Plant type:** Annual Grain

**Planting dates:** March-April forage or grain production; Aug-Oct cover crop or forage

**Soil pH:** 6.0–6.5

**Soil adaption:** Wide

**Planting depth:** 3/4" - 1"

**Approximate seeds/lb:** 14,000

**Seeding rate:** See below

**Days to germination:** 7

**Main usage:** Forage, Graze, Gain, Cover Crop, Soil Improvement

**Height at maturity:** 3'–4'

**Length of stand:** Annual

**Reproduces by:** Seed

**Pounds per bushel:** 32

## Seeding Rate



- Grain 64 lb/ac (2 bu/ac)
- Forage 100 lb/ac (3 bu/ac), approximately 55-60 days to late boot stage
- Nurse crop 32 lb/ac (1 bu/ac)
- Cover crop 15-50 lb/ac
- Freeze at 20-22°F





## Buck

- Winterhardy oat great for a fall/winter food source
- Provides more tender growth for a longer period of time
- Very palatable and highly digestible
- Deer love buck oats



## Haywire

- High yielding, high-quality forage oat
- About 58 days to boot stage
- Excellent standability
- Led 2014 Pennsylvania trial in forage quality



## Kara

- Tall, leafy forage style oat
- Improved rust resistance and high yielding
- Topped 2018 Penn State forage trials







## Reins

- Moderately early grain oat
- High yield potential with great test weight
- Uniform plant characteristics and disease resistance
- Great lodging resistance
- Moderately short plant height
- Good tolerance to barley yellow dwarf and loose smut



## Jerry

- Dual purpose grain/forage oat
- Great as a cover crop
- Good lodging resistance
- Good yields and straw production



## Cosaque Black Winter

- Great yield - can match cereal rye yields
- Great for breaking up disease cycles, especially certain nematodes
- Works well for forage, cover crop, or biomass
- Cold tolerant

# Barley



**Plant type:** Annual Grain

**Planting dates:** March-May or Sept-Oct

**Soil pH:** 6.0-7.0

**Soil adaption:** Well drained

**Planting depth:** 1" - 1 1/2"

**Approximate seeds/lb:** 12,500

**Seeding rate:** 75-100 lbs/A

**Days to germination:** 7

**Main Usage:** Grain, forage

**Height at maturity:** 3' - 5'

**Length of stand:** Annual

**Reproduces by:** Seed

**Pounds per bushel:** 48



## Lacey (Spring)

- Six rows malting barley
- Medium sized kernels
- Consistently top yielder
- Received favorable reviews for brewing characteristics
- Released by Minnesota Ag Experiment Station
- Plant height averages 33" with good lodging resistance
- Has semi smooth awns and short rachilla hairs for easier harvest



## Valor (Winter)

- Six-rowed, short awned barley
- Excellent winterhardiness
- High-quality, high yielding forage
- Winter barley needs to be seeded early fall
- Early to mature in the spring - about two weeks before wheat
- Licensed by CISCO from Penn State University
- Recognized as one of PSU's most winterhardy barley releases
- Protected by U.S. Plant Variety Protection Act and can only be sold as a class of certified seed



## Nomini (Winter)

- Early maturity, medium height
- Six-rowed, compact spikes
- Not as winterhardy as other barleys
- Good resistance to powdery mildew, septoria, and barley yellow dwarf
- Released by Virginia Ag Experiment Station
- Good to use for grain or cover crop

# Cereal Rye



**Plant type:** Annual

**Planting dates:** Sept-Nov

**Soil pH:** 5.0-7.0

**Soil adaption:** Wide range of soils

**Planting depth:** 1"-1 1/2"

**Approximate seeds/lb:** 18,000

**Seeding rate:** 50-100 lbs/A

**Days to germination:** 7-10

**Main usage:** Grazing, green manure, silage, cover crop

**Height at maturity:** 5'-7'

**Reproduces by:** Seed

**Pounds per bushel:** 56



## Elbon

- Developed by the Noble Research Foundation
- Earlier maturity than VNS cereal rye
- Good forage producer
- Great for a cover crop



## Hazlet

- Shorter variety, resistant to lodging
- Cold tolerant with great winterhardiness
- Can germinate at or near freezing



## Wheeler Forage

- Large producer of biomass/forage - 14% more than VNS
- Later maturing than VNS cereal rye by 1-2 weeks
- Developed by Michigan Agricultural Experiment Station



## Graze King 90 Forage

- High-quality, forage type cereal rye
- Larger leaves, more tillers per plant than common cereal rye
- Higher yielding than common cereal rye
- Harvest in late boot stage for optimal quality



## Common Cereal Rye

- High yielding fall seeded forage
- Very winterhardy
- Early to mature in the spring
- Harvest in the boot stage for optimal quality
- Graze in vegetative stage for high-quality pasture
- Forage quality declines rapidly with maturity
- Huge root mass for improved soil conservation'
- professionally grown, conditioned, and tested - No noxious weeds that can occur with locally produced rye

# Triticale



**Plant type:** Annual Grain

**Planting dates:** March-April or Sept-Oct

**Soil pH:** 6.0-7.0

**Soil adaption:** Wide range of soils

**Planting depth:** 1/4"-1/2"

**Approximate seeds/lb:** 20,000

**Seeding rate:** 100-126 lbs/A  
50-70 lbs/A mix

**Days to germination:** 10

**Main Usage:** Grazing, hay, silage

**Height at maturity:** 3'-4' (Spring)  
5'-7' (Fall)

**Length of stand:** Annual

**Reproduces by:** Seed

**Pounds per bushel:** 42

## Spring Triticale



### Elevator (Spring)

- High yielding spring seeded forage
- Excellent nurse crop
- Harvest in the boot stage for optimal quality
- Graze in vegetative stage for high-quality pasture
- Forage quality declines rapidly with maturity
- Huge root mass for improved soil conservation

## Fall Triticale



- Hybrid between wheat and cereal rye
- Improved forage quality compared to cereal rye
- Matures about two weeks later than cereal rye, but two weeks before wheat
- Tillers well with a high leaf/stem ratio



### Forerunner (Fall)

- Awnless triticale
- Great for silage or pasture
- Can reach 50-60" in height
- Large, soft leaves with a great leaf/stem ratio



### Traction (Fall)

- Excellent winterhardiness
- Superior straw strength
- High forage yield
- Bearded; great for green chop
- Disease leaf resistance



### TriCal Flex 719 (Fall)

- Great for grazing, silage, or dry hay
- Outstanding yield and quality
- Awnletted (reduced beard length)
- Medium plant height
- Well adapted to northern United States

# Spelt



**Plant type:** Annual Grain

**Planting dates:** Sept-Oct

**Soil pH:** 6.0-7.0

**Soil adaption:** Wide range of soils

**Planting depth:** 1" - 1 1/2"

**Approximate seeds/lb:** 14,000 dehulled

**Seeding rate:** 80-100 lbs/A

**Days to germination:** 7

**Main Usage:** Grain

**Height at maturity:** 3'-4'

**Length of stand:** Annual

**Reproduces by:** Seed

**Pounds per bushel:** 40



## Sungold

- Sub-species of common wheat
- Used as an alternative grain for oats or barley
- Can be utilized for hay or grazing
- Can be utilized like oats, wheat, or barley either as grain or a forage
- Excellent standability & winter survival
- Medium brown chaff
- Food grade spelt
- Well adapted to Midwest growing conditions



# Cover Crop Wheat



**Plant type:** Annual Grain

**Planting dates:** Sept-Oct

**Soil pH:** 6.0-7.0

**Soil adaption:** Wide range of soils

**Planting depth:** 1" - 1 1/2"

**Approximate seeds/lb:** 14,000 dehulled

**Seeding rate:** 80-100 lbs/A

**Days to germination:** 7

**Main Usage:** Grain

**Height at maturity:** 3'-4'

**Length of stand:** Annual

**Reproduces by:** Seed

**Pounds per bushel:** 60



## Cover Crop Wheat



- Great for cover crop, erosion control, or green manure crop
- Great root system for building organic matter
- Great nurse crop for red clover or sweet clover
- Easily terminated in the spring
- Non GMO

# Buckwheat



**Plant type:** Annual Grain

**Planting dates:** June–August

**Soil pH:** 5.0–6.5

**Soil adaption:** Wide range of soils

**Planting depth:** 1”–1 1/2”

**Approximate seeds/lb:** 14,200

**Seeding rate:** 35–50 lbs/A

**Days to germination:** 7–10

**Main Usage:** Wildlife, cover crop, grain

**Height at maturity:** 2’–3’

**Length of stand:** Annual

**Reproduces by:** Seed

**Pounds per bushel:** 60



## Buckwheat

- Rapid growing broadleaf small grain
- Will flower in 35 to 45 days
- Small tap root system
- Great for mineralizing phosphorous (P) and sulfur (S) from the soil
- Great as a cover crop or a wildlife plot
- Excellent choice for a pollinator

# Forbs

Forbs are herbaceous non-woody, broadleaf plants that are not grass-like. Cropland forbs are typically annual plants that are used to fill seasonal gaps in high-quality forage. Forbs that are important forages include members of the Brassica genus and include forage rape, kale, turnips, swedes, and brassica hybrids. Brassica can generally tolerate a light freeze and in some locations can overwinter. Forbs are a great addition to any forage or cover crop mixture.



# Chicory



**Plant type:** Perennial Herb

**Planting dates:** April–May, August

**Soil pH:** 5.5–7.0

**Soil adaption:** Dry, well-drained

**Planting depth:** 1/8”–1/4”

**Approximate seeds/lb:** 425,000

**Seeding rate:** 6–8 lbs/A

1–4 lbs/A mix

**Days to germination:** 7–21

**Main Usage:** Grazing, wildlife

**Height at maturity:** 1’–3’

**Length of stand:** 1–7 years

**Reproduces by:** Seed

## Grazing Recommendations:

- Do not graze until chicory is at least 8” tall and graze no lower than 3”
- Chicory should be allowed to accumulate growth of 4-6” before going dormant in the fall
- A rest period of 14-25 days between grazing periods is best for chicory persistence and performance



## Oasis

- High-quality summer forage
- Broadleaf perennial herb
- Suitable for all types of livestock
- Tolerates hot, dry conditions
- High magnesium (Mg) content that can help control grass tetany in grazing cattle



## Endure

- Lower bolting
- Summer long production
- Fast establishing and strong regrowth
- High forage yield with excellent forage quality
- Improved persistence in wet soil

# Kale



**Plant type:** Annual Brassica

**Planting dates:** July-Aug

**Soil pH:** 5.5-7.0

**Soil adaption:** Wide

**Planting depth:** 1/8"-1/4"

**Approximate seeds/lb:** 130,000

**Seeding rate:** 3-4 lbs/A  
1 lbs/A mix

**Days to germination:** 5-7

**Main Usage:** Wildlife, forage

**Height at maturity:** 2'-4'

**Length of stand:** Annual

**Reproduces by:** Seed



Kale is a summer seeded brassica that is used for fall grazing. It has low fiber stems and is easily digested by livestock. It needs to be seeded when soil temperatures are above 50°F. Kale works well as an intermediate crop when renovating pastures.



## Maris Kestrel

- Full maturity variety with short stems
- Low fiber stems with high digestibility
- Extends grazing season as cool season pasture ends



## Bayou Kale

- Smooth leaves with a sweet taste
- Winterhardy variety
- Excellent regrowth when rotationally grazed
- Small stems, very palatable
- Deep taproot to loosen hardpan

# Rape



**Plant type:** Annual Brassica

**Planting dates:** August

**Soil pH:** 5.5-7.0

**Planting depth:** 1/8"-1/4"

**Approximate seeds/lb:** 120,000

**Seeding rate:** 6-8 lbs/A  
1-2 lbs/A mix

**Soil adaption:** Wide

**Days to germination:** 5-7

**Main Usage:** Wildlife, forage,  
cover crop

**Height at maturity:** 3'-4'

**Length of stand:** Annual

**Reproduces by:** Seed



## Bonar

- Late maturing forage rape with short stems and large leaves
- Great for finishing livestock in the fall
- Good source of winter feed after row crops
- Caution: can change milk flavor in dairy cow



## Dwarf Essex

- Cool season brassica that works well alone or seeded with oats
- Can start grazing 8-10 weeks after seeding
- Large leaves, high-quality forage
- Frost increases sugar concentration in leaves
- Not suited for hay or silage due to high plant moisture content
- Great cover crop

# Radish



**Plant type:** Annual Brassica

**Planting dates:** Early Aug-Sept

**Soil pH:** 6.0-7.0

**Planting depth:** 1/4"-1/3"

**Approximate seeds/lb:** 35,000

**Seeding rate:** 6-8 lbs/A

1-4 lbs/A mix

**Soil adaption:** Wide range of soils

**Days to germination:** 4-6

**Main Usage:** Cover crop, wildlife, soil builder

**Height at maturity:** 2'-3'

**Length of stand:** Annual

**Reproduces by:** Seed



## Scav-N-Ger



- Daikon type radish
- Great nutrient scavenger
- Mixes well with small grains and grasses
- Earthworm "magnets"
- Deep taproots and fine root hairs
- Repositions nutrients from soil profile

\*Available both as raw seed or coated with Q's Pinnacle Quick Start



## GroundHog



- Daikon cover crop radish that produces significant root mass
- Nitrogen mining, nutrient scavenging, and nutrient repositioning
- Great food source for earthworms
- Improves soil biology
- Can suppress undesired weeds

\*Available both as raw seed or coated with Q's Pinnacle Quick Start



## Respect

- Biofumigant for control of beet cyst nematode
- Well suited for erosion control and soil tilth
- Aids in reduction in soil compaction
- Can be used for grazing and forage



# Turnips

**Plant type:** Annual Brassica

**Planting dates:** March–April, August

**Soil pH:** 5.5–7.0

**Planting depth:** 1/8"–1/4"

**Approximate seeds/lb:** 240,000

**Seeding rate:** 3–10 lbs/A  
1–2 lbs/A mix

**Soil adaption:** Wide

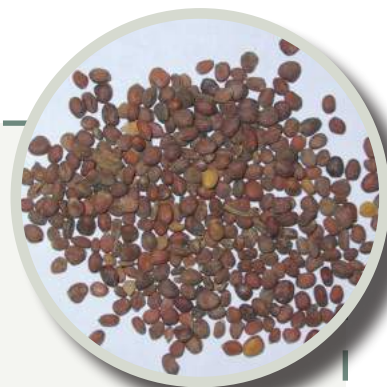
**Days to germination:** 5–7

**Main Usage:** Grazing, forage

**Height at maturity:** 2'–3'

**Length of stand:** Annual

**Reproduces by:** Seed



## Appin

- Vigorous establishment and quick maturity, 60-100 days
- High leaf production
- Multiple grazings, leaves and tubers
- Mixes very well with oats
- Plant late summer/early fall
- Multiple growing points for quick regrowth



## Barkant

- Vigorous growth turnip from Barenbrug
- High bulb yield and top growth
- High sugar content and winterhardiness



## Pasja

- Hybrid forage brassica with early maturity, 50-70 days
- Turnip/Chinese cabbage hybrid developed in New Zealand
- High leaf/bulb ratio
- Tolerates heat better than other forage turnips
- Can yield up to 4 t/A dry matter



## Jackpot

- Low growing bulb for protection from grazing animals
- Excellent regrowth after grazing
- High forage yield
- Works well as a cover crop or a forage



## Purple Top

- High-quality, high bulb yielding turnip
- Grow with the “globe” exposed providing easy access to the entire plant
- Can utilize in summer or fall
- Used for livestock or wildlife
- Mixes with cereal grains well, especially oats

# SUCCESSFULLY PLANTING SMALL SEEDS

Good forage stands can really demonstrate the differences in field preparation. Let's dive into this a little bit. In the right year, just about anything will work when planting small seeds; however, in a challenging year it pays to do a good job planting small seeds. The failure rate can be high. The most important thing is that small seeds need good seed to soil contact at the proper depth. The good contact allows the seed to absorb moisture, germinate, and establish roots into the soil. Seeding depth is just as important because small seeds need to germinate and start photosynthesis soon after emerging. Most forage seeds don't have the energy that a corn seed has. So alfalfa seedlings can come out of  $\frac{1}{4}$ " of soil, not 2" like a corn plant can.

Loose seedbeds cause two problems for small seeds. One is uneven emergence due to poor seed to soil contact. Not all of the seeds will absorb moisture at the same rate, which will cause uneven emergence. Even worse is that they can't absorb enough moisture to germinate. An uneven forage stand provides excellent areas for weeds to fill in the holes and take over. A thick seeded and growing stand of forages is a great form of weed control. The other problem loose seedbeds provide is poor seeding depth. Ideally forages need to be seeded between  $\frac{1}{4}$ " to  $\frac{1}{2}$ " depending on the soil type. Planting small seeds deeper than the recommended depth reduces the stand. This is due to uneven emergence or no emergence because the seedling runs out of energy before it can start capturing sunlight.

When seed is broadcast or planted with a conventional grain drill, some farmers talk about using a disc or harrow to "scratch" the seed in. I have yet to see a disc that can move  $\frac{1}{4}$ " to  $\frac{1}{2}$ " of soil. Many times this action buries the seed too deep. A better alternative is a packer or a Brillion seeder. Conventional drills without press wheels work well with a packer pulled behind them.

Another common cause of a poor seedbed is the use of a rototiller. The tillers are very good at burying weeds and residue. However, they can leave the seedbed too loose. It is best to make sure to use a packer to firm the soil up after using the tiller.

No-till seedings work well if the forage seed can be placed shallow enough. Many no-till drills are made for larger seed placement, so special attention and setup needs to be done when planting forages. Get off the tractor and check seed rate and depth. Another key to no-till is effective, planned weed control. Too much residue will cause shading issues, hairpinning in the seed slot, and poor depth control.

A few rules of thumb for planting small seeds:

- Firm seed bed is being able to walk on the soil and sink in no more than  $\frac{1}{2}$  inch.
- It is better to see 10-15% of the seed on the soil surface. That means you are not burying it too deep.
- If you can't find any seed on the soil surface, shallow up the planting depth.
- Don't just drive the tractor, get off and check out what is going on.
- Take your time, forage seed and lost time are both expensive.

# Warm-Season Grasses

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At Cisco, we pride ourselves in being able to supply all of your seed needs. Warm-season or “Native Prairie Grasses” are no exception. Warm-season grasses have many uses including wildlife, forage, conservation, and beautification. Generally these grasses are slow to establish, but are very persistent once they have established. May and June are ideal months to seed warm-season grasses. They can be drilled with the proper drill, frost seeded, or broadcast with a carrier. It is important to have good seed/soil contact. *CISCO* is also able to blend these grasses to fulfill any desired mixture. We offer the following warm-season grasses:

- Big Bluestem (7-10 lbs. per acre PLS)
- Blue Gramma Grass (2-3 lbs. per acre PLS)
- Buffalograss - 6-8 lbs. per acre alone
- Canada Wild Rye - 10-12 lbs. per acre alone
- Illinois Bundleflower - 2-3 lbs. per acre
- Indiangrass - 6 lbs. per acre
- Little Bluestem - 6 lbs. per acre PLS
- Partridge Peas - 10-15 lbs. per acre
- Riverbank Wild Rye - 15-20 lbs. per acre
- Sideoats Gramma - 3-4 lbs. per acre alone
- Switchgrass, Cave-in Rock (Tall Variety) - 5-8 lbs. per acre PLS
- Switchgrass, Dacotah - 5-8 lbs. per acre PLS
- Virginia Wild Rye - 8-10 lbs. per acre alone



# Did You Know?



*CISCO* has a demo plot in Bristol, IN. This demo plot is always open to all our dealers and their customers to come check out. We have 275 plots planted on our farm. We have cover crops, alfalfas, forages, turf grass, wildflowers, and more. You name it, we have it!



From the cross section of US 20 & State Road 15, you will head north on State Road 15 about 2 miles. Turn left (west) on County Road 14. You will stay on this road for about 1.5 miles, and then the *CISCO* Demo Plot will be on your left-hand side.

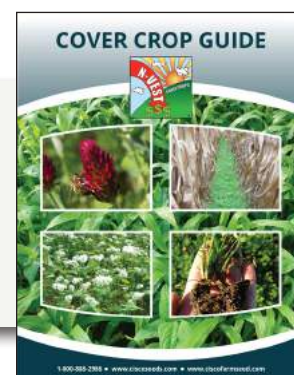


A second demonstration plot is planned for a late August 2020 planting around the Cambridge City, IN area. This will give you a chance to come and see our forage seed variety line up.



Our *CISCO* Farm Seed website is dedicated solely to the “small seed” part of the farming operation, namely hay, pasture, and cover crops. *CISCO*'s two full-time agronomists, as well as our dedicated sales force, post valuable information and news to our blog regularly. [[www.cisconfarmseed.com](http://www.cisconfarmseed.com)]

*CISCO* also offers a guide focused solely on cover crops. Our Cover Crop Guide is packed full with informative articles regarding soil health and the benefits of cover crops. It also gives characteristics for specific crops and N-Vest® mixes. Ask for a copy, or find a digital version at [www.ciscoseeds.com](http://www.ciscoseeds.com).











# **CISCO** SEEDS

