

SUMMER ANNUAL PRODUCT GUIDE



Summer Annual Portfolio & Placement

| | | Harvest Management | | | | |
|---|--|--|------------------|-----------------|---------------|-------------------|
| | Summer Annual Options | Maturity | Days to Maturity | Harvest Stage | Sugar Content | Protein Potential |
| 1-Cut Forage Sorghum Hybrids | GW400 BMR 6 (male sterile) | Medium | 85-95 | soft dough/boot | 10-14% | 8-11% |
| | <i>Dry stalk genetics allows plant to reach 65-70% moisture at soft dough stage</i> | | | | | |
| | <i>Dual purpose - multiple harvest in boot stage OR full season harvest in soft dough</i> | | | | | |
| | GW2120 | Medium | 85-90 | soft dough/boot | 14-18% | 7-10% |
| | <i>Male sterile hybrid with increased sugar content = improved digestibility</i> | | | | | |
| <i>Tall, high biomass hybrid - suitable for bulk tonnage, cover crop, & wildlife/wildlife screens</i> | | | | | | |
| Multi-Cut Sorghum x Sudangrass Hybrids | SS 711 BMR BD | 50-60 days 1st cut | boot stage | | 12-16% | 14-16% |
| | <i>Brachytic dwarf, meaning shortened internodes for increased leaf-to-stem ratio (& increased harvest height flexibility)</i> | | | | | |
| | <i>Well suited for grazing or ensiling</i> | | | | | |
| | <i>Quick to germinate with strong regrowth</i> | | | | | |
| | SS 833 BMR | 45-60 days 1st cut | boot stage | | 10-15% | 12-15% |
| | <i>Broadly adapted, dry stalk hybrid with reduced plant moisture content at harvest</i> | | | | | |
| | <i>Great in grazing or silage scenarios; & its finer stalks make dry hay production possible</i> | | | | | |
| | <i>Rapid establishment and regrowth</i> | | | | | |
| | SS 912 BMR PPS | 60-90 days 1st cut | 4-6' | | 12-16% | 12-15% |
| | <i>Widely adapted hybrid, with photoperiod sensitivity - will not head until day length is less than 12 hours, 20 minutes</i> | | | | | |
| | <i>Maintains forage quality throughout the growing season</i> | | | | | |
| | <i>PPS hybrids allow for a wider harvest window & greater overall flexibility</i> | | | | | |
| | SS 105 Delayed Maturity | 55-85 days 1st cut | 4-6' | | 12-16% | 12-16% |
| | <i>Delayed maturity trait keeps hybrid from heading out for up to 90 days</i> | | | | | |
| | <i>Well suited for grazing & baleage</i> | | | | | |
| <i>Ideal for full-season 1-cut schedules, & when managing weather-delayed harvests</i> | | | | | | |
| SS 340 Conventional | 45-60 days 1st cut | boot stage | | 12-15% | 14-16% | |
| <i>Quick growing conventional hybrid with sweet stalks and juicy leaves</i> | | | | | | |
| <i>Excellent vigor & rapid regrowth</i> | | | | | | |
| <i>Increased tolerance to foliar diseases</i> | | | | | | |
| Other Multi-Cut Forages | CISCO SummerFlex BMR Sudangrass | 45-60 days 1st cut | late boot stage | | 8-12% | 14-18% |
| | <i>Dry stalk straight sudangrass, best utilized for making dry hay (but can also be grazed or green chopped)</i> | | | | | |
| | <i>Thin-stemmed, with excellent regrowth</i> | | | | | |
| | Piper Sudangrass | 45-60 days 1st cut | late boot stage | | 8-12% | 14-18% |
| | <i>Conventional sudangrass suitable for hay, silage, grazing, and post-cereal grain cover crop</i> | | | | | |
| | Sweet Summer BMR Pearl Millet | 40-50 days 1st cut | late boot stage | | 6-8% | 16-20% |
| | <i>Benefits of BMR (increased performance & digestibility), without the risk of prussic acid during stress - i.e. drought, frost</i> | | | | | |
| | <i>Generally tolerates a wider range of soil environments & fertility management</i> | | | | | |
| | Tifleaf 3 Conventional Pearl Millet | 40-50 days 1st cut | late boot stage | | 6-8% | 16-20% |
| | <i>Increased protein & digestibility vs. sorghum sudangrass, but lower dry matter yields</i> | | | | | |
| Summer Delight Teff Grass (coated) | 35-50 days 1st cut | late boot stage | | 5-8% | 12-16% | |
| <i>Fine-stemmed & rapid regrowth grass perfect in dry hay environments for horses & cattle (but can be grazed, ensiled, or wet wrapped)</i> | | | | | | |
| <i>Great option for horses needing low sugar content hay</i> | | | | | | |
| <i>Requires a firm seedbed and good fertility</i> | | | | | | |
| | Wilder Grain Sorghum | Matures in about 95-100 days, reaches about 3-4' in height | | | | |

| Best Fit (Attributes & Placement) | | | | | | | Recommended Planting Populations | | | |
|--|--------------|---------|-------------------|--------------|----------------|-----------------|----------------------------------|------------------|--------------|-----------------------------|
| Dairy Pasture | Beef Pasture | Dry Hay | Wet Hay (Baleage) | Silage Yield | Silage Quality | Safe for Horses | N LBS/A Planting | Approx. Seeds/LB | Dryland | Irrigated / + Precipitation |
| NR | NR | NR | NR | best | best | no | 60-75 | 13-15K | 4-6 lbs/AC | 5-7 lbs/AC |
| NR | NR | NR | NR | better | good | no | 40-50 | 16-19K | 5-8 lbs/AC | 6-10 lbs/AC |
| best | best | good | best | good | best | no | 50-60 | 15-20K | 30-45 lbs/AC | 35-45 lbs/AC |
| best | best | better | best | better | best | no | 50-60 | 14-18K | 35-50 lbs/AC | 40-50 lbs/AC |
| best | better | good | best | best | better | no | 50-60 | 14-18K | 35-50 lbs/AC | 40-50 lbs/AC |
| better | best | good | best | good | good | no | 50-60 | 15-20K | 25-40 lbs/AC | 40-50 lbs/AC |
| good | good | good | good | better | good | no | 50-60 | 19-25K | 35-50 lbs/AC | 50-60 lbs/AC |
| better | better | better | better | good | good | no | 50-75 | 25-35K | 25-40 lbs/AC | 35-50 lbs/AC |
| better | better | better | good | good | good | no | 50-75 | 30-45K | 25-40 lbs/AC | 35-50 lbs/AC |
| good | best | better | better | good | better | yes | 40-50 | 50-60K | 10-12 lbs/AC | 10-15 lbs/AC |
| good | better | better | better | good | good | yes | 40-50 | 50-60K | 10-12 lbs/AC | 10-15 lbs/AC |
| NR | NR | best | better | good | good | yes | 50-75 | 600-650K | 8-12 lbs/AC | 10-12 lbs/AC |
| Widely adapted hybrid with great standability & tolerance to weather degradation | | | | | | | 60-100 | 13-16K | 5-15 lbs/AC | 5-15 lbs/AC |

Ensuring a Good Start

Fertility Considerations

Nitrogen (N) - In most Midwestern environments, forage sorghums need approximately 1 to 1.25 LBS of nitrogen (N) for every day of forecasted growth. At those levels, nitrate poisoning concerns should be minimal (see page 4). Keep in mind, before adding any commercial nitrogen, levels contributed from existing crop residue should be considered.

- To manage nitrates effectively and safely, it's best to only apply the needed N for each cutting. Subsequent N applications will therefore be needed to maximize yield for additional harvests.
- Nitrogen/sulfur ratios of 5:1 are important to make certain nitrogen is best utilized.
- Pearl millet – nitrogen amounts of .8 to 1 LB of N per day are adequate.
- Teff grass – plan on 50-60 LBS of actual N at planting, and 20-30 LBS before any additional growth cycles.



Phosphorus (P) & Potassium (K) - For forage sorghums and pearl millet, keep both P & K levels like what a corn silage crop would require in the same environment.

- Teff grass – fertilize stands similar to that of 2 to 4 DM ton annual yield cool season grass stand (approx. 50 LBS P2O5; and 140 LBS of K2O for most of the Midwest).

Herbicide Options

Always read herbicide labels before applying any pesticides, & be cognizant of grazing/feed restrictions.

There are many herbicides labeled for use on grain sorghum, however options are much more limited with forage hybrids. Furthermore, pesticide labels can be increasingly difficult to determine exactly what type of sorghum they apply for. The best plan for weed control in forage sorghum is using pre-emergent herbicides – like atrazine and S-metolachlor. When using herbicides that contain S-metolachlor, and/or pre-mixes combining metolachlor and atrazine – like Dual II Magnum, Bicep II Magnum, and Warrant – the sorghum seed will need to be treated with a safener (which allows the use of Group 15 herbicides without seed or crop injury). Those safeners (Concep, Screen, etc.) are available on most of the hybrids we offer. Depending on region and soil types, atrazine may be the only clear choice for broadleaf control. When considering post applications, 2,4-D can be used early post (with limited control). There are no post grass control herbicides labeled today for conventional forage sorghum and/or sorghum sudangrass.

Other considerations:

- Pearl millet is mentioned on very few herbicide labels (mesotrione and saflufenacil pre-emerge; 2,4-D, dicamba, and fluroxypyr post). In some cases, herbicide companies are more specific and list only certain types of millet and thus, may not apply to all “millet” species.
- Teffgrass/teff has zero options for labeled weed control, however research has been done that shows certain herbicides labeled for general grass pastures (would also be suitable for teff). Those herbicides would be limited to post broadleaf brands.
- Essentially, weed management strategies for summer annual grasses should include providing every resource possible to encourage quick germination and establishment.



Managing Seasonal Disorders

Managing Nitrate Levels

Summer annuals can accumulate elevated nitrate levels anytime the uptake of applied or existing nitrogen surpasses the plant's ability to utilize it effectively. The concern is magnified during periods of drought or other stress. High nitrate levels can kill livestock. But it can be managed:

- 1 Avoid excess applications of nitrogen and consider split treatments to decrease accumulations.
- 2 During periods of slow growth due to drought, lower temps, or even prolonged cloudy weather, avoid harvest by 1 to 2 weeks.
- 3 Nitrates are concentrated lower in the stalk, so raising the cutting height will naturally lessen the risk.
- 4 Because animals typically consume plants from the top, grazing livestock could still be at risk the longer they're exposed to potentially toxic stands. Stay observant, as warning signs may not show quickly.
- 5 Hungry livestock, pregnant and/or lactating animals are not as tolerant of high nitrates concentrations.
- 6 If harvesting dry hay, understand elevated levels will not dissipate.
- 7 Ensiling reduces nitrate levels. Bacterial metabolism during ensiling can lower nitrate concentrations by 40-60%.
- 8 Feed high in nitrates can be diluted and fed in combination with lower protein forages. If there's any concern, nitrate levels can be tested anywhere forage quality testing is performed.

Prussic Acid Concerns

Prussic acid (or cyanide) is produced by any forage sorghum when plants are stressed, normally from drought, early regrowth, or frost/freeze events. Like nitrates, prussic acid poisoning can be avoided with proper management:

- 1 **REGROWTH** – prussic acid is higher in new growth, so grazing should not occur until stands are at least 18 to 24 inches in height.
- 2 **FROST** – remove livestock from pasture before a frost or freeze event and keep animals off those stands for a period of at least 10 to 14 days. After a killing frost, toxic levels lessen after 2 to 3 weeks, and will continue to decrease after ensiling.
- 3 Ensiling reduces prussic acid levels, so storing for a period of 30-35 days generally reduces the risk.

Unlike nitrates, storing dry hay for 30 days allows the prussic acid levels to dissipate. Note: livestock grazing on pearl millet (especially later in the year following cold weather and frosts) are not subject to prussic acid poisoning like sorghums. Storing hay or silage for at least 30 days generally dissipates the concern.
- 4

Like nitrates, if there's a concern, the easiest recommendation is to get forage tested. Prussic acid poisoning is not a concern when utilizing pearl millet.



Harvest Considerations

Proper harvest management is crucial when utilizing summer annuals. Besides employing grazing animals, growers today are harvesting summer annuals as dry hay, baleage, and silage. Obviously, dry hay works best where less moisture and humidity are in play, while baleage offers far more flexibility across a wider geography. Wrapping forage as baleage improves fermentation and increases palatability, while ensiling helps to limit risk when it comes to managing prussic acid and nitrate concerns. We encourage growers to follow the tips below to reach their summer annual forage goals.

Grazing

Do not allow grazing initially on pearl millet or forage sorghums – or after regrowth – until plants are at least 20 to 24” in height.

Shorter grazing intervals are best for forage sorghums and millets. Graze for 1 week, rest for at least 2 to 3 weeks. Remember, remove livestock when stubble heights reach 8”.

Do not graze teff grass. Teff’s shallow root system makes it easy for animals to dislodge plants completely.

Mechanical Harvest

Keep cutting heights to 6 to 8” to encourage quicker regrowth and quicker drydown (as stubble will allow more air movement under the swath); wide windrows are crucial to speed up drying as well.

Crimping stems by utilizing mower conditioners speed up drying times too.

Wheel traffic caused by multiple passes for harvest and fertilizer applications will negatively affect regrowth. For this reason, some producers insist on 30” rows or consider following the same “sacrificial” tracks during the growing season.

Timing

Harvesting before heading is key to boosting protein levels. Energy levels increase as heading begins.

Forage sorghums and pearl millets should be harvested between 60-72% moisture to maximize both yield and quality.



| | Grazing | | | Hay or Baleage | | |
|----------------------|-----------------------------|---------------------|--|---------------------------|------------------|----------------------|
| | Minimum Grazing Height | Maturity at Grazing | Min. Stubble Height* | Mechanical Harvest Height | Proper Maturity | Min. Cutting Height* |
| Sorghum x Sudangrass | 20-24” | Early Boot Stage | 6-8”; ideally leaving 2 nodes on the stalk | 30-40” | Boot Stage | 6-8” |
| Straight Sudangrass | 24-28” | Early Boot Stage | | 30-40” | Late Boot Stage | 6-8” |
| Pearl Millet | 18-24” | Early Boot Stage | | 30-40” | Late Boot Stage | 5-6” |
| Teff Grass | Not recommended for grazing | | | 24-36” | Early Boot Stage | 4-5” |