Grazing Management for Annual Forages
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Cool Season Annual Forages

What are the potential cool season annual forages?

Oats
- Are ready to graze when 4" tall
- Grows rapidly, so continuous grazing with an appropriate stocking rate may be better than a grazing system
- Keep the height of the oats between 4 – 8" inches tall to keep it in a vegetative state
- Begin with a stocking rate of 2 acres/animal and increase the stocking rate as the growth increases
- Don't let the oats get too tall or it will not produce the optimum number of tillers
- Tolerant of light frosts, but more sensitive to the cold than other small grains
- Accumulate nitrates at the early growth stages
- Add turnips to increase the forage quality
- If adding turnips, plant only 1/8" deep

Rye
- Tolerant of light frosts
- Re-growth superior to other cereals
- Can be grazed early in the spring
- Production is similar to wheat for grazing

Wheat
- Similar to oats in forage yield
- Less susceptible to cold injury
- Forage quality is high
- Plant wheat for grazing 2-3 weeks earlier than wheat for grain
- Grazing can begin when there is 8 - 10" of growth. This ensures that root development is adequate
- Wheat for grazing should be planted at rates 50 –100% higher than wheat for grain (dryland should be no more than 50%)
  - With limited irrigation water, seed at 112-120 #/ac. Expect production of 2000# dry matter / acre.
  - With average irrigation water, seed at 180# / ac. Expect production of 3000# dry matter / acre.
  - With dryland wheat in western Nebraska, expect production of 500# dry matter per acre.
- Wheat for grazing removes more soil nutrients than wheat for grain.
- Wheat forage at 25% crude protein will contain 80# of Nitrogen per ton of dry matter. Soil tests and a fertility program adapted to growing wheat forage is essential.

Triticale

- Cross between wheat and rye
- Growth habits similar to wheat
- Some varieties have been developed specifically for grazing
- Forage yields are higher than forage yields for wheat
- Spring crude protein values are similar to wheat (20 – 25%)
- In southwest Nebraska, triticale for grazing should be planted in late August to mid-September
- Seeding rate for grazing on irrigated land should be 75 to 100 pounds/ac
- Nutrient management is essential for optimum production
- Complete soils tests to determine the level of N, P, K and secondary nutrients needed
- Grazing can begin when there is 8 – 12” of growth

Spring annual forage production is highly variable and depends upon soils, rainfall or amount of irrigation applied, and grazing management. If the plants are not grazed too heavily or too soon, the amount of production can be quite high.

Summer Annual Forages

What are the potential summer annual forages?

Sudangrass

- Has small stems, tillers extensively and makes rapid regrowth, which makes it ideal for grazing
- Produces less than most other summer annuals
- Hybrid sudangrasses are more productive; *Piper* and *Wheeler* are the most popular varieties in Nebraska
- Can plant when soil temperatures remain above 60 degrees
  - With limited irrigation water, plant at a rate of 20# / acre. Expect production of 4000# dry matter / acre production.
  - With average irrigation water, plant at a rate of 25# / acre. Expect production of 6000# dry matter / acre production.
  - In dryland situations, plant at a rate of 10# / acre only if there has been relatively abundant June moisture. Expect production of 1000# dry matter / acre production.

Sorghum-sudangrass Hybrids

- High forage yields
- More than 50% of the production is stem
- Not as palatable as sudangrass or hybrid pearl millet
- Better suited for silage or green chop than for grazing

Forage Sorghum (Cane, Sweet Sorghum or Sorgo)

- High Yields
- Stems are thick and unpalatable
- Limited growth ability
- Prussic Acid producer
- Better suited for silage than for grazing

Hybrid Pearl Millet

- Leafy plant with high forage quality
- Do not plant until soil temperatures reach 70 degrees
  - With limited irrigation water, plant at a rate of 10# / acre. . Expect production of 1000# dry matter/acre.
  - With average irrigation water, plant at a rate of 20# / acre. Expect production of 6000# dry matter/acre.
  - In dryland situations, plant at a rate of 10# / acre only if there has been relatively abundant June moisture. Expect production of 1000# dry matter/acre.
- More drought resistant than Sudangrass
- Regrows rapidly; yield is similar to Sudangrass
- Sensitive to overgrazing
- Do not allow to be grazed closer than 8”, or regrowth will be severely limited

- Suited to both grazing and haying

Foxtail Millet

- Low Quality
- Low Palatability
- Relatively poor forage yields
- Shallow rooted and easily pulled from the ground when grazed
- Primary use is as an emergency hay or silage crop
- Does not root securely in the ground, so is not recommended for grazing

Planting Summer Annuals

When should summer annuals be planted?

- Planting before the soil temperature reaches 70 – 75 degrees will reduce seed germination and emergence. Sudangrass may be planted at 60 – 65 degrees.
- Hybrid pearl millet and foxtail millet seed are less tolerant of cool soil temperatures than other summer annuals.
- Time the seeding so that forage is available when it is needed.
- Allow 4 – 6 weeks after planting before summer annuals can be used.
- Stagger planting dates to aid rotational grazing.

What should the seeding rate be for grazed summer annuals?

- Hybrid pearl millet and forage sorghum should be planted at 10-20 pounds /ac.
- Foxtail millet should be planted at 15-30 pounds /ac.
- Sudangrasses and sorghum-sudangrass should be planted at 20-25 pounds /ac.
- Use the lower rates for dryland and the higher rates for irrigated.
- These are higher than average rates, but this will help producer finer stems which is desirable for grazing.
- Only 65 – 70% of seeds normally emerge.

What kind of fertility program is needed?

- Nutrient requirements are similar to grain sorghum to produce optimum forage or hay production
- 30 – 40 pounds of nitrogen per acre for each expected ton of dry matter production should be applied
- Split applications reduce the potential for nitrate or prussic acid toxicity
- Base phosphorus, potassium and other nutrient applications on soil test results

Grazing management of summer annuals

What kind of grazing management program should be used?

- The objective of a annual forage grazing program is to keep the plants in a vegetative state and to prevent seeding

- Sudangrasses and hybrid Pearl millet should not be grazed until they are 18" tall
- Sorghum-sudangrass hybrids should not be grazed before they are 20-24" tall

- The ideal situation would be to graze the pasture to 6-8", move on to another pasture, resting the pasture until the forages regrow to at least 18"

- Do not graze the forage closer than 6-8" or the amount of regrowth will be significantly reduced

- If the grass gets higher than 36", remove the cattle and hay or cut silage

- The most efficient use of summer annual pastures is to use a rotational grazing system.
  - Subdivide the pasture into 3 or more areas
  - Stock with enough cattle to graze the plants down to a 6 – 8" stubble in 10 – 14 days
  - Move the cattle to the next area
  - The number of days will vary with the rapidity of regrowth

- Staggering 3-4 plantings that are 10-14 days apart will help set up a natural grazing rotation. Plant 2 areas to sudangrass early and 2 areas to hybrid pearl millet later. In 5-6 weeks the first area will be ready and you will be able to rotate every 7-10 days.

- With a rotational grazing system, summer annuals can provide 90 days of high quality forage

- Each acre can supply forage for 2 – 6 yearling steers or 0.8 – 4 cow/calf pair

- Forage production will vary greatly with the species of grass, size of cattle, soil type, fertilization, soil moisture and grazing management

- Irrigation will produce yields at the upper end of the scale with a good fertility program and grazing system

Livestock Poisoning Potential

What concerns should I have regarding nitrate toxicity?

- Horses should not consume high amounts of sorghums, sudangrasses or foxtail millet; if sorghums, sudangrasses or foxtail millet are major components of their diet horses may develop kidney problems or bladder paralysis
- When under stress, summer annual forages can accumulate nitrates to toxic levels. Stresses that cause nitrate accumulation are drought, shade, frost or temperature extremes
- Nitrates normally are highest in young plant growth
- Mature sorghum and sudangrass may have high nitrates
- Levels are highest in the lower 1/3 of the plant stem
- If there are environmental stresses, analyze sorghum and sudangrass before feeding

Should I be concerned about Prussic Acid Poisoning?

- Some summer annuals will produce cyanide or prussic acid under certain growing conditions
- Sorghums and sudangrasses may be a problem, but the potential varies widely with the variety
- Toxic levels are not a problem with pearl millet and foxtail millet
- Cyanide is concentrated in young actively growing leaves
- Prussic acid poisoning is a potential when cattle are grazing new shoot growth at the end of a summer drought or after the first frost
- If the soils are high in nitrogen and low in phosphorus and potassium, the plants may have a high cyanide concentration

Example rye-pearl millet rotation

How have area ranchers been using annual forages in a rotation?

Following is an example of an actual rye-pearl millet rotation that is being used in southwest Nebraska:

- Drill rye 1st week in September at rate of 2 bu/ac
- Apply 50# phosphorus, 80# nitrogen and sulfur based on soil tests at planting time
- Irrigate as needed
- 600 head of 600# calves on 270 acres
- Winter calves on rye (November 1 – Jan 1). Dates are approximate based on rye growth.
- Mid-April, stock at 3 head/acre, increase to 4 head/acre in May, and reduce to 2 head/acre in June.
- Additional 120# nitrogen is applied through pivot. This is applied in April and May.
- Graze out by July 1
- Till to kill the rye
- Drill pearl millet at 20-25#/acre in early July

- Graze or hay. If hayed, it is hayed by late August.