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Managing Annual Winter Grasses in South and Southwest Texas

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Winter annual pastures in South and Southwest Texas provide high-quality forage for cattle, sheep and goats when native and bermuda grass pastures are dormant. They offer high nutritional value from the time they start growing until heading in spring.

Because establishing winter pastures is costly, they are best suited for a stocker cattle system or high-profit animals. Small grains provide more nutrition than dry pregnant cows need. For maximum economic return, use winter forages for livestock with high profit potential.

Properly managed winter annuals are next to legumes in producing consistent high protein and highly digestible forage. Without proper management, they do not reach their full potential. Such decisions as irrigation management (if available), planting date, cultivar selection, fertilizer applications and grazing management greatly affect production.

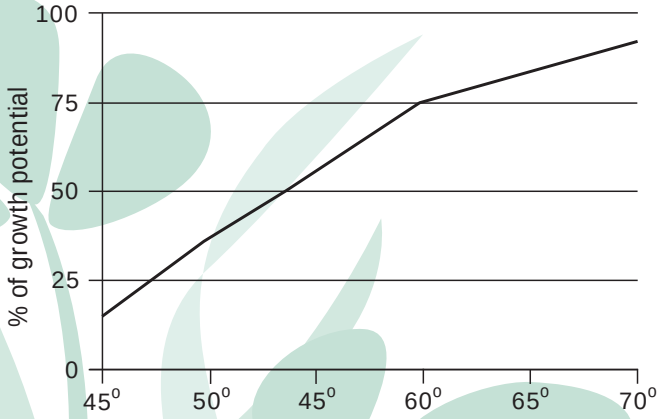
Without healthy plants producing at maximum potential, forage (and grain) production is reduced and animal gains may be disappointing.

Planting considerations

Temperature

Although small grains are cool-season plants, they do require temperatures warm enough for the plants to maintain growth. When average temperatures drop below 50 degrees, plant processes and growth begin to slow. If early grazing is needed, begin planting in early October to make use of fall rains, to graze by mid-November under good growing conditions. Earlier planted oats or wheat may try to head out before the onset of winter if not grazed. Armyworms can be a problem in early-planted small grains.

Figure 1. Growth of winter forage at various temperatures.



Cultivar selection

Annual winter grasses include oats, barley, rye, wheat, triticale and annual ryegrass. Rye (Elbon rye) and oats generally provide the earliest grazing, but they also mature first, followed by wheat, barley and ryegrass. Because ryegrass matures late, it provides 4 to 6 weeks of extra grazing in the spring.

Wheat and oats have for many years been the small grains traditionally planted in southwest Texas. They offer the advantage of a grain crop har-

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Table 1. Characteristics of winter annual forages.

Forage	Advantages	Disadvantages
Oats	Early fall grazing	Poor cold tolerance
	High forage quality - gains	Poor disease tolerance in many cultivars
	Germinates under limited moisture	
Ryegrass	Most popular cool-season grass	Limited fall grazing
	Can be seeded by surface broadcast	Poor winter grazing in cold weather
	Few bloat problems	Contamination of fields for other small grains
	Late maturing - long spring grazing	
Wheat	Good cold tolerance	Least productive cool-season grass
	Can be grazed or grained	Low disease tolerance
	Drought tolerant	Bloat and grass tetany problems
	"Beardless" cultivars available	
Rye	Most drought tolerant	Early maturity - early termination
	Most cold tolerant	Unpalatable at boot stage
	Rapid fall growth	Can become infested with ergot (poisonous)
Barley	Saline tolerant	Lower forage quality
	Good drought tolerance	Awns (beards) on seed can cause sore mouth problems

vest in addition to livestock grazing. However, such plant diseases as Barley Yellow Dwarf Virus and new races of leaf rust in wheat and oats can reduce production considerably. Also, oats may freeze if a warm period is followed by very low temperatures and grazing is greatly reduced, leaving the producer looking for feed.

Where rainfall or irrigation is available, mixing ryegrass with oats or wheat offers considerable advantages over either one planted alone. Reduce oats or wheat by 50 percent and plant 10 to 15 pounds of ryegrass per acre.

Table 2. Comparable characteristics of winter pasture crops under irrigation or adequate rainfall.

	Oats	Wheat	Ryegrass	Rye	Triticale
Fall[1]	Excellent	Fair	Good+	Good+	Good
Winter[1]	Fair	Good	Good	Good	Good
Spring[1]	Good	Good	Excellent	Fair	Good+
Late spring[1]	Poor	Poor	Good	Poor	Fair
Winter hardiness	Poor	Fair	Good	Excellent	Good
Disease tolerance	Poor	Fair	Excellent	Good	Fair
Grazing quality	Excellent	Excellent	Excellent	Excellent	Excellent
Hay quality	Good	Good	Excellent	Good	Good
Planting rate (lbs / acre)	75 - 100	75 - 100	15 - 25	75 - 100	75 -100

[1] Production Times: Fall, October-December; Winter, January-February; Spring, March-April; Late spring, May-June.

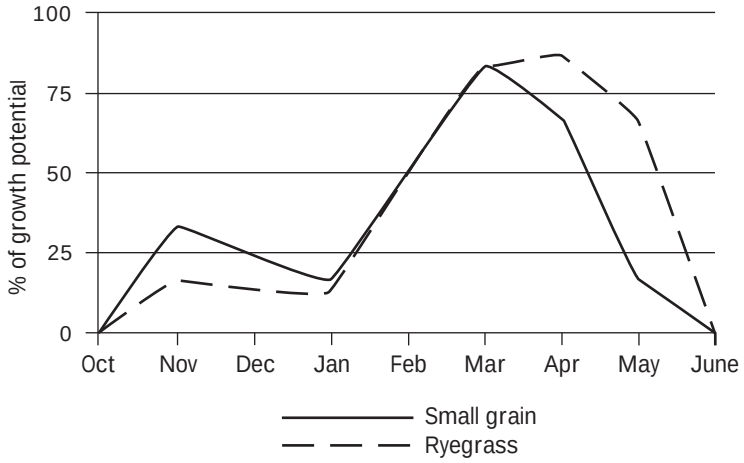
Many annual ryegrass cultivars are available for purchase and are suitable for southwest Texas. Although many ryegrass cultivars perform similarly, gulf ryegrass is best adapted to wet, humid conditions. TAM 90 (developed by Texas A&M University), is more disease tolerant in humid regions.

Ryegrass seed is small and planted shallower than larger seeded small grains. In areas under irrigation or receiving frequent rains, ryegrass seed can be sown broadcast on top of the soil with good success. Ryegrass also requires more frequent rains or irrigation to establish a stand. It is not as susceptible to diseases, and bloating problems are almost eliminated. Ongoing research has shown that ryegrass produces as much forage as other small grains and higher quality forage. It is becoming a preferred forage for winter grazing where it is adapted.

A disadvantage of ryegrass is lack of fall grazing. Most of the forage is produced in spring, after February until early May if water is available. However, when seeding rates are increased to 25 to 30 pounds of seed per acre, early forage production increases greatly over the standard planting rate of 15 pounds per acre. Another alternative is a mixture with wheat or oats as suggested above.

Producers should not plant ryegrass in a field if they plan to use the field for small-grains production later. ***Ryegrass is a very good seed producer and will become a weed in small-grain fields when grain production is desired.***

Figure 2. Forage production rates of ryegrass and small grains.



Fertility

Testing a soil sample is the best way to determine which nutrients are adequate, which are lacking and at what amounts. With a soil analysis, a fertility program can be structured to add the insufficient nutrients. Without the analysis, nutrients may be wasted and add to ground or surface water pollution, or be insufficient for maximum production.

Nitrogen and water

Just as in animals, nitrogen is the critical element of amino acids and proteins in plants. Without enough nitrogen, plants cannot produce new growth. Although the other elements are important, nitrogen is the only one that actually causes the plant to grow.

A good rule to remember is that it takes 0.36 pounds of nitrogen to produce 10 pounds of forage to produce 1 pound of gain in livestock. Fifteen inches of water will produce about 4,500 pounds of dry matter, which will use 165 pounds of nitrogen and will yield 450 pounds of gain in livestock.

Grasses generally use nitrogen (N), phosphorus (P) and potassium (K) in a 4-1-3 ratio. Although many soils in southwest Texas are medium to high in phosphorus, producers may need to add more to fields under intensive management. Potassium (K) is generally very high in most South Texas soils, and additional amounts are seldom needed. However, do not guess, soil test.

This fertility program is suggested for maximum production in fields to be irrigated and grazed heavily:

- Use 80-40-0 at planting;
- Add 60 pounds of nitrogen in late December or early January; and
- Apply 80 more pounds of nitrogen in early March just before early spring growth for maximum forage or grain yields.

For dry land production, apply about 75 to 100 pounds of nitrogen and 20 to 30 pounds of phosphorus. Additional rain raises the potential for more forage and the need for more fertility if grazed intensively.

Phosphorus

Good seed-bed preparation includes providing enough nutrients for early growth. Phosphorus is essential for early root development, particularly in cold soils during fall and winter. Phosphorus is less available to plants in cold soils. If phosphorus is limited, tillering can also be reduced.

Recent research by Hagen Lippke at the Uvalde Research and Extension Center shows the importance of adequate phosphorus for maximum winter forage production. In the Uvalde area under irrigation, ryegrass production is most profitable with about a 250-40-0 total fertility rate.

Equally important is where the phosphorus is placed in the soil. For optimum return of phosphorus, place it 5 to 8 inches deep. Travis Miller, an Extension specialist in small grains, conducted phosphorus tests across Texas with varying rates and placements. He found that forage yields, especially early growth, were increased from 50 to 400 percent just by proper placement of the phosphorus.

The forage and grain yields responded better in dry years when fertilizer with P was banded 5 to 8 inches deep than in fields fertilized with P in the upper 2 to 3 inches or broadcast on the soil surface. In dry years, root development in the dry, top part of the soil is limited and roots do not absorb shallow-incorporated P. Grain yields increased an average of 15 percent.

Phosphorus moves very little in soils under the best of conditions. In dry soils, P does not move at all. If P is spread on the soil surface or even shallow incorporated 2 to 3 inches deep, the plant absorbs very little of it because very few active roots are in that region.

Placing phosphorus deep puts it in a region of active root absorption — increasing uptake. In addition, banding phosphorus reduces the soil-to-fertilizer contact, so that less P is tied up by calcium and more is available for a longer time.

Grazing management

Consider the plant first when deciding on a grazing management plan. Plant leaves capture sunlight and convert it into energy. Without leaves, the plant cannot create energy. If the leaf area is reduced radically, plants start robbing the root system to replace the foliage. Moisture, fertility and the size of the plant above ground determine the size and depth of a plant's root system.

The root system starts to die if plants are not allowed to maintain sufficient foliage to develop or regrow after grazing. Without adequate foliage, growth spirals downhill, with shallow roots unable to absorb nutrients and water, and too little foliage to carry on photosynthesis to generate energy for additional growth.

Before turning livestock on the field, forage should be:

- At least 6 to 8 inches tall;

- 4 to 6 weeks after emergence; and
- Well tillered and well rooted.

To maintain enough leaf area for continued growth, do not allow animals to graze forage to below 3 to 4 inches. Rotational grazing is preferred, although it requires more management than continuous grazing. Managers must decide:

- How many animal units a rotation can maintain;
- When to move to another pasture;
- When and how much additional nitrogen to apply;
- When and how much additional water to apply;
- Whether to allow peak-hour grazing (i.e., 2 hours in the morning and 2 hours in the afternoon) only;
- Whether to drylot animals during wet periods to reduce plant injury; and
- How long to rest pastures before grazing.

Different growing conditions give each pasture different growth rates, forage accumulation and carrying capacity. It is important to balance the stocking rate with the amount of forage available. Formulas and techniques are available to estimate forage.

Grazing and grain

If the market price for wheat or oat grain is high, a producer may decide to harvest the field for grain. Removing livestock at the proper time — before jointing — is critical to prevent grain yield losses.

Before jointing, the growing point of wheat is below the soil surface. When the stems begin jointing, the head or growth point rises above the ground. Grazing can reduce yields if the animals remove the growing point (head). Primary tillers usually have the largest heads; yields are reduced the most when they are removed.

No matter how favorable environmental conditions are or how much forage is available, excessive grazing reduces grain yield, especially if developing seed heads are grazed. It is also essential to leave a reasonable amount of green leaf area on the plant to produce energy to fill the individual grains.

Summary

Winter annual pastures can provide an abundance of high-quality forage. Producers can earn the most profits when they use best-management practices that optimize water, fertility, variety and grazing management.

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