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Crop Considerations for Reduced Water in the Middle Rio Grande Region – 2025 Update

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With water allocation uncertainty for the MRGV region due to ongoing droughts and low snowpack, many questions have arisen as to which crops will give the greatest yield potential for hay and pasture fields in a short-water year, and how to manage alfalfa under such conditions. This guide seeks to inform growers of the pros and cons of various crop options when grown with “less-than-ideal” irrigation.

Spring Crops (March to June)

Cool-season small grains are commonplace in the MRGV forage production systems. These include primarily spring-planted **oats**, but there are also some acres of **spring wheat** and **triticale**, and **spring barley** planted each year. All of these small grains have the potential to produce considerable tonnage under normal irrigation allocations in the region. Yields of up to 5 tons/ac are possible in a well-irrigated and fertilized field. Nutritive value of small grains is excellent and hay made from these crops can be used to feed almost all classes of livestock.

Planting of these crops generally occurs between March 1 and April 1, depending on location within the valley. Often, planting will coincide with the normal first irrigation allocations in March. Most small grains require at least 45-50°F soil temperatures for proper germination, and most can tolerate light freezing conditions. Oats require closer to 50°F for good germination, and all small grains germinate better above 55°F. Soil temperatures (4” depth) at the NMSU Agricultural Science Center at Los Lunas have averaged (max+min/2) 52.6°F over the last week. We are in or nearing soon the planting window for spring-planted small grains, depending on location (north vs. south) within the MRG valley. (NOTE: It should be noted that while weather and soil temperature variations may be significant from the most northern stretches of the district to the most southern, variation may be minimal moving from north to south within a narrow distance (e.g., less than 50 miles). Annual weather fluctuations greatly affect this as well.)

The main limitation (after water) of spring-planted small grains is summer heat. Once temperatures start reaching into the 90’s, small grains begin to shut down and will move rapidly into ‘reproductive’ stages of development (i.e., seedhead elongation/emergence). Late planted crops (April 5 or later) may not produce much vegetative material prior to seedhead emergence, and tonnage can be drastically reduced.

Ideal irrigation period: Mid-March to mid-June

Alfalfa Management & Spring-Planted Alfalfa (Risky)

While some farmers may be tempted to plant alfalfa in the spring due to uncertain water allocations for late-summer plantings, this is a risky prospect if water is not available through the rest of the summer. Small alfalfa seedlings will still need water during the hot summer months simply to stay alive and develop a deep root system. If water is cut off early in the summer, significant stand loss can occur.

Weakening alfalfa stands can be ‘thickened up’ by planting oats into the existing alfalfa for, at the very least, a decent yielding first cut in the spring.

Alfalfa (established at least 1 year) will undergo a drought-induced dormancy if it is not irrigated for long periods of time. While this is certainly not ideal for production and farm income, long-term crop damage may not be as great as expected. Research has shown that alfalfa can tolerate extended periods of no irrigation, will go dormant, and can resume normal growth later in the season or in subsequent years after ideal water conditions return. Consider the alfalfa harvest and irrigation management information provided below from: *Managing Alfalfa During Drought*, NMSU Circular 646, available at: (<https://pubs.nmsu.edu/circulars/CR646/index.html> or <https://forages.nmsu.edu/publications.html>)

“The goal in alfalfa drought harvest management is maintenance of leaf area for photosynthesis—this provides continuous energy to sustain plant functions without depleting root reserves, so that the alfalfa can survive. If harvesting top growth is economically feasible, cuttings should be scheduled to minimize plant stress. During periods of drought, if growth is sufficient, the alfalfa should be allowed to reach at least 10% bloom before harvesting, enabling plants to better handle the dry weather and cutting stresses. At the same time, a stubble height of at least 6 inches should be left to maintain energy for regrowth. Harvesting all leaf material will cause the plant to use even more of its energy reserves for regrowth. Maintaining a minimum 6-inch stubble will minimize the drain of root energy, saving it for future needs such as winter survival. Drought-stressed alfalfa will initiate flowering earlier than non-stressed alfalfa. Plants will, therefore, be shorter with less leaf growth to help replenish root energy needed for regrowth. Although leaf growth is restricted compared to a non-drought year, stem growth is even more restricted, leading to a higher leaf-to-stem ratio and, therefore, higher quality of the more mature alfalfa forage. Consequently, delaying harvest to greater than 10% bloom does not lead to a quality reduction in drought-stressed alfalfa as it does for alfalfa that is watered well.

Alfalfa uses water more efficiently during the spring when temperatures are more moderate. If water is available but limited in supply for seasonlong irrigation, yields will be maximized by concentrating the water on the early cuttings and then terminating irrigation to allow the alfalfa to enter drought-induced dormancy. Irrigation termination for more than one cutting will reduce total annual yield, and recovery will be delayed until the second or later regrowth after drought-induced dormancy is broken. Consequently, if water becomes available later in the season, producers should consider irrigating as soon as possible as many acres as can be fully irrigated for the remainder of the season—if water will be available for that long— after harvesting the standing crop on that acreage. If the water will only be available for the current cutting, irrigate as many acres as possible at the typical full irrigation rate for that location. Any remaining acreage that cannot be adequately irrigated should be allowed to remain dormant and managed to minimize drought stress.”

Grass Pastures & Hayfields

Unfortunately, perennial grass forages do not have the drought-tolerance mechanism that alfalfa does. While tall fescue (our predominant grass forage) is a hardy cool-season perennial, it is very likely that it will suffer a severe hit with an extended period of no irrigation water in the summer. Producers/graziers should limit use of these grasses during drought and no irrigation. In addition to not having good drought tolerance, in most cases, the cool-season grasses are also more susceptible to crown damage if exposed to sunlight. So, I would recommend taking a very early cut, if at all, and irrigate a couple of times afterward before shut off to get canopy cover for crown protection, which should also help with soil moisture conservation. It might be best to apply limited irrigation only this spring to help the grasses adjust to no irrigation and not cut. This would probably be the best preparation for summer slump/dormancy. It is recommend not to graze because grazing is not uniform removal of vegetation and causes more plant damage than cutting.

Warm-season perennials such as bermudagrass and bluestems and many natives (e.g., grama, buffalograss) will fare much better during drought than fescue, orchardgrass, bromes, etc. These grasses

will also take advantage of any monsoonal moisture better than the cool-season grasses and should be maintained at a 3-4 inch canopy for crown protection and moisture conservation.

Summer Crops (May to October)

Warm-season annual forage crops include species such as teff, millets (pearl), and sorghums (or sudan)*. These are rapidly growing crops (teff slower) that can produce a lot of forage in a short amount of time. Nutritive value is generally high if harvested at the proper stage of maturity.

Soil temperatures should be in the 60-65°F range (average T° over 7 days) prior to planting. In addition, none of these crops can tolerate freezing temperatures. Mid-May is generally considered safe for planting these crops across most of the region (sooner in the southern reaches compared to the far northern area). We advise checking the 5- or 10-day weather forecast for potential low temps that could set back germination time or seedling growth.

Moderate- to high amounts of forage (hay or pasture) can be produced in 60 to 90 days of growth. Yield order is as follows: sorghum/sudan > pearl millet > teff. Sorghums and pearl millets can produce as much as 4 to 6 tons/ac in 60 days. Teff yields are more moderate at 3-4 tons/ac if cut multiple times throughout the summer (1.0-1.5 tons/ac per cut). To optimize yield with quality, sorghums (sudans) and pearl millets should be harvested at the boot stage of maturity prior to seedhead emergence. Hay drying will be easier at this stage as well. At least 60 days is needed for good yields for warm-season annual forages.

Stressed sorghum and millets can accumulate toxic compounds such as nitrates (sorghum and millet) and prussic acid (sorghum). These crops should be tested prior to grazing or feeding hay to ruminants, especially if drought stressed and if fertilized with moderate- to high rates of nitrogen fertilizer. *At this time, sorghum forages are not recommended for horse pasture or hay feeding.

Ideal irrigation period: Mid-May to mid-September; Very risky if irrigation isn't available most of summer

Summary

If water is available in March to May, then spring oats or other spring small grains may be an option if temperatures remain moderate. However, I would expect yield reductions for hay operations, particularly if weather turns off hot and dry and no water is available later in the summer. A grazing scenario might be more plausible, as small grains can be grazed at 4 to 6 inches of growth.

Cuts of alfalfa and grass should be such to maintain as much leaf area near the ground as possible. I would advise against planting alfalfa or grass in the spring with any uncertainty of irrigation water the rest of the summer (especially early summer). Depending on late-season water allocations (i.e., good monsoon season), late-summer plantings in August/early September might be possible.

For more information on forage management under drought and limited water scenarios, visit:

<https://forages.nmsu.edu/publications.html>



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