



Forages for Beef Cattle Production in South Texas

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South Texas has a rich history of farming and livestock production and ranches in the region south of I-10 and west of Highway 77 tend to be larger acreage than the average ranch in Texas. This is primarily due to the semi-arid environment (27 inches annual average rainfall) which necessitates large acreage in order to produce enough forage to sustain cattle in the hot, arid summer months (warmest months are June to September). Ranches are primarily cow-calf operations and most land owners balance livestock and wildlife production. Because of the warm climate, the primary forage production occurs during the warm-season (March to September). Soil texture ranges from clay to sandy-clay to sandy-loam and pH is typically neutral to alkaline (average pH of south Texas is 7.5). Although these soils are rich in nutrients, alkaline (>7 pH) soils bind nutrients, especially iron, so that they are unavailable to the plant. Therefore, iron deficiency chlorosis is a common problem in south Texas and this should be considered in the selection of plant species to be planted on a given soil type. There is a range of adapted grass species for these soil types; however, care should be taken to select legumes, which are tolerant of iron chlorosis because legumes have narrower adaptation criteria. The more adapted a forage species is, the less management input required to maintain that given forage. This proceeding summarizes the various options for introduced and native forages suited to beef cattle production in South Texas.

The goals and vision you have for your ranch should dictate whether you plant introduced or native forage and where forages will be planted. Figure 1 summarizes introduced forages which are adapted to the temperature and rainfall typical of South Texas. There are two primary times that forages grow, warm-season forages are planted in spring and grazed in the summer and this season is the primary season for livestock systems in South Texas. The alternative is forage that is planted in the fall and grazed through the late winter and early spring months which are cool-season forages. Once the timing of forage is determined, the longevity of forage helps to further determine which forage is ideal for a given objective. Perennial forages will persist year-after-year or management may dictate that an annual forage is desirable. After timing and longevity are decided, the type of forage may be determined. Grasses are most productive, however, warm-season grasses may not provide enough nutrition for lactating cows, especially first-calf heifers. Breeding seasons can be adjusted to ensure that the highest quality forage is available during lactation. Alternative forage with lesser yield but greater nutritive value is forbs, which include legumes. Figure 2 summarizes native forages adapted to South Texas and list all known available germplasm at the time of publication. Specific details regarding key forages are listed below the figures.



Figure 1. Decision Tree: Introduced Forages for South Texas

c.l. clay loam; loam with 20-30% clay
l. loam; 40% clay and silt, 20% sand
s.l. sandy loam; loam with 50-70% sand

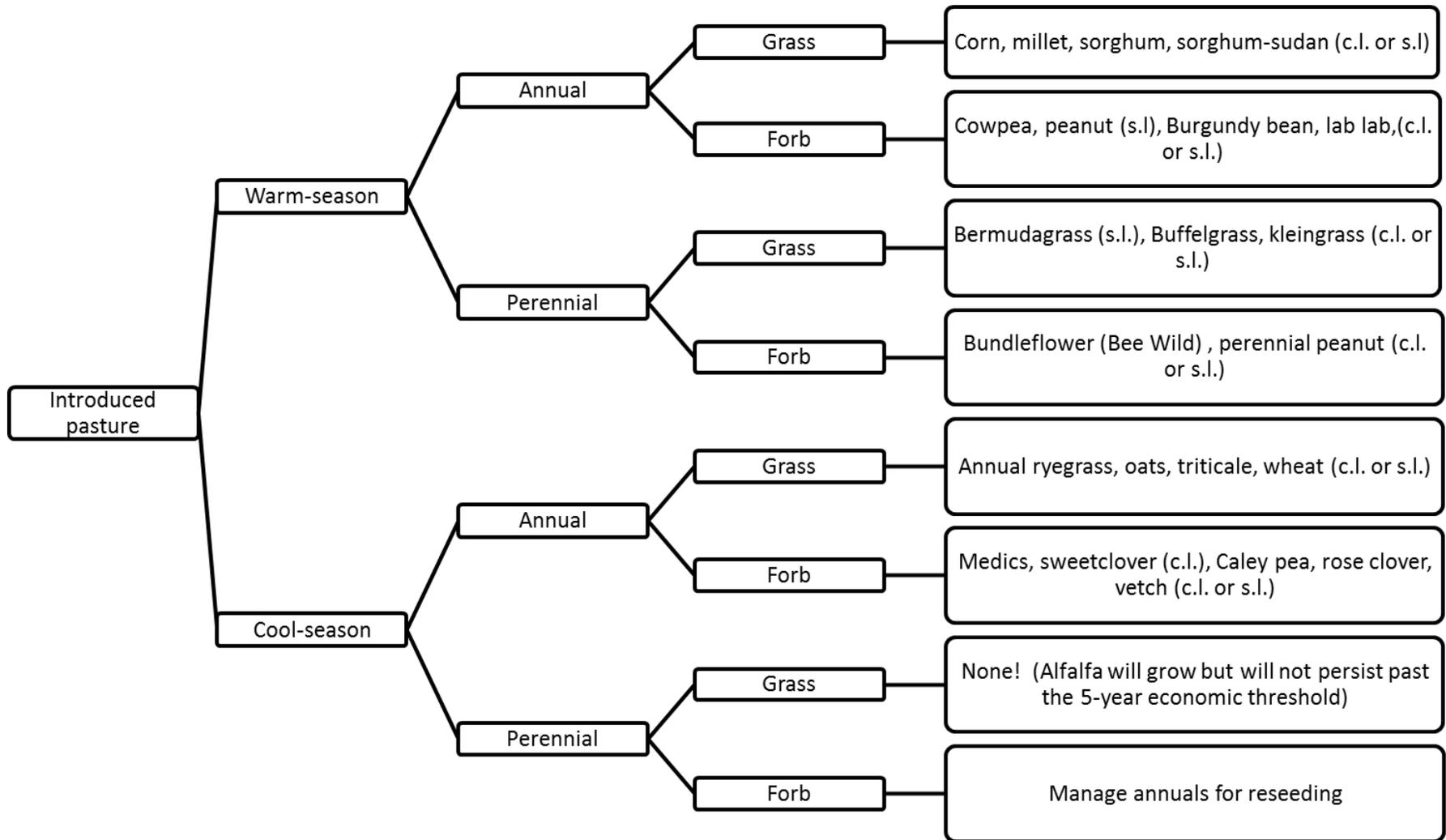
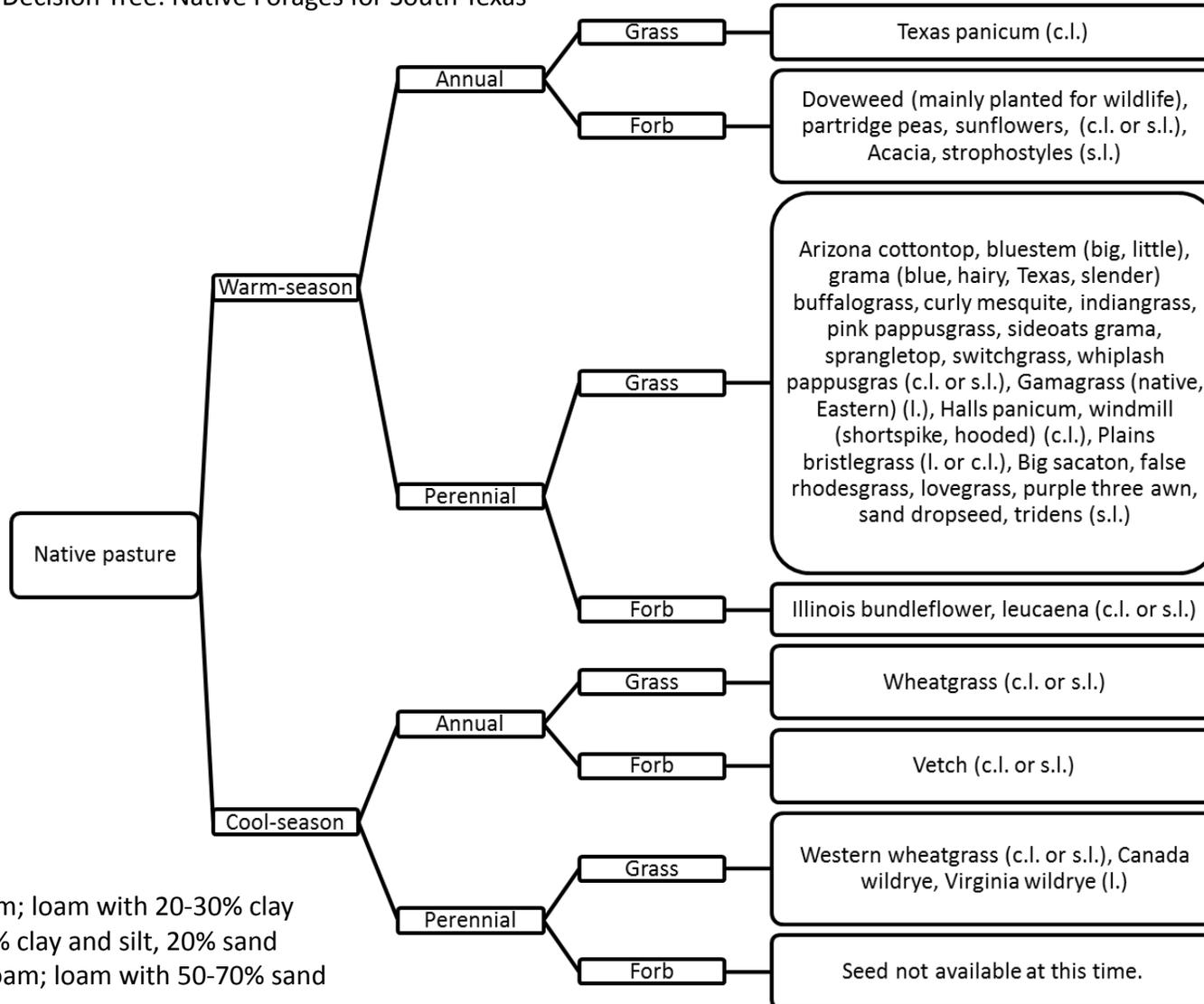


Figure 2. Decision Tree: Native Forages for South Texas



Introduced Warm-Season Forages

Grasses

Annuals

Sorghums, Sudangrass, and Sorghum × Sudangrass Hybrids (*Sorghum bicolor*): These are primarily planted for hay, haylage, or silage, but are sometimes grazed. Nitrate or prussic acid problems when harvested after drought or the first frost. Residue from sorghum harvest is acceptable for livestock when chemical labels allow.

Perennials

Bermudagrass (*Cynodon dactylon*): This perennial can be cultivated from seed or sprigs and is commonly grown for hay. Confined to the eastern part of south Texas unless irrigated. Requires large N inputs unless cool-season legumes are utilized as part of the system. Among hybrid cultivars ‘Tifton 85’ is higher yielding and greater forage quality than ‘Coastal’ even though this grass appears stemmier. ‘Jiggs’ has shown susceptibility to leaf diseases, but is still commonly managed in South Texas. Seed mixtures are a more economical alternative to sprigged hybrids, however, yield will be slightly less.

Kleingrass (*Panicum coloratum*): Adapted to the northern part of south Texas where at least 25 inches of rain falls annually. Kleingrass is more productive than bermudagrass under low fertility inputs and is more drought tolerant than bermudagrass. However, kleingrass cannot be grazed/hayed as low to the ground as bermudagrass and is a ‘bovine only’ grass due to the potential of kleingrass toxicosis.

Buffelgrass (*Pennisetum ciliare*): Historically this grass was one of the most widely grown introduced grass in the region because of its drought tolerance. Planting dehulled seed will improve establishment success. Both ‘Laredo’ and ‘Pecos’ cultivars are blight tolerant, and Pecos is suspected to have greater cold tolerance. This is an excellent option for beef cattle, however, it is invasive in arid regions so care (cultural practices) should be taken on the ranch where it is grown.

Legumes

Annuals

Cowpea (*Vigna unguiculata*): Also known as black-eyed peas, this is a widely adapted legume and ‘Iron and Clay’ grows well with slight susceptibility to iron deficiency chlorosis.

Lablab (*Lablab purpureus*): Is a perennial that is grown as an annual in south Texas because it lacks cold tolerance. This is an excellent option for wildlife plots. Currently, ‘Rongai’, ‘Tecomate’, and ‘Rio Verde’ are available cultivars.

Perennials

Bundlflower (*Desmanthus* sp.): ‘BeeWild’ is widely planted in wildlife food plots. This hardy perennial is a blend which establishes quickly and is a preferred browsing species for wildlife.

Perennial peanut (*Arachis glabrata*): Sprig planted and a lengthy establishment period. Good for grazing or hay production and quality is similar to that of alfalfa.

Introduced Cool-Season Forages

Grasses

Annual ryegrass (*Lolium multiflorum*): Because of the warm winters and limited rainfall, annual ryegrass performs best on cultivated land versus overseeding onto existing perennial warm-season grass pastures. Matures later than the small grains so it will provide 4 to 6 weeks longer grazing season in the spring.

Oats (*Avena sativa*): Preparation should begin early for planting oats as they are most productive when the seed bed is well prepared. Oats are early maturing and require more water than the other small grains. When overseeded with 10-15 lb/ac of annual ryegrass the grazing season can be extended (Ocumpaugh, 1988).

Triticale (x *Triticosecale* Wittm.): Extremely drought tolerant and cultivars with disease resistance are available. This hybrid is an excellent option for grazing.

Wheat (*Triticum aestivum*): This is the least productive for forage production; however, grazing and then harvesting the grain is a popular practice.

Legumes

Burr medic (*Medicago polymorpha* and *M. minima*): ‘Armadillo’ is adapted to central and south Texas. Naturalized plant with excellent reseeding potential. ‘Devine’ little burr medic will tolerate alkaline soils and produces more than other medics in the northern boundary of the region.

Sweetclover (*Melilotus alba* cv. Hubam and *M. officinalis* cv. Madrid): Hubam has white flowers and grows taller than the yellow-flowered Madrid. Coumarin causes a bitter taste, but animals will adapt to this low palatability forage over time. Grows well in south Texas’ alkaline soils and is a good option for interseeding with oats or other annual cool-season grasses.

Caley pea (*Lathyrus hirsutus*): Tolerates heavy clay soils.

Rose clover (*Trifolium hirtum*): Tolerates alkaline soil as long as the site is well drained. Productive in low rainfall areas as compared to other clovers.

Vetch (*Vicia*): Many types available, including some natives. This forage legume will tolerate a wide range of soil types, including alkaline, clay soils. It is a climbing legume and is not the most tolerant of grazing pressure.

Alfalfa (*Medicago sativa*): More risk than clovers or medics because of cotton root rot and it usually requires irrigation in south Texas.

Native Warm-Season Forages

Native seed is sown as seed mixtures which include early successional plants which quickly establish ground cover to prevent weeds and then allow for establishment of a greater number of species in a stable, long-term plant community.

Grasses

Annuals

Texas panicum (*Panicum texanum*): Early successional species which is recommended in mixtures to establish cover quickly.

Perennials

Arizona cottontop (*Digitaria californica*): Excellent forage, but not as tolerant of grazing as bluestems.

Big (*Andropogon gerardii*) and little (*Schizachyrium scoparium*) bluestem: Stable ecosystem species which is preferred by livestock. Commonly the dominate grasses of rangelands in the region.

Curly mesquite (*Hilaria belangeri*): Spreads through stolons and is commonly a dominate species, especially on clay, alkaline soils.

Indiangrass (*Sorghastrum nutans*): A very tall growing grass that is less dense when grazed. It is a good forage grass, but as a bunchgrass it provides cover for wildlife when it is protected from grazing.

Switchgrass (*Panicum virgatum*): Early in the growing season this species provides excellent forage quality, later in the season it matures and cattle will not graze if given other options. The seed provides wildlife food.

Shortspike and hooded windmill grass (*Chloris* spp.): Early successional species which is recommended in mixtures to establish cover quickly.

Legumes

Annuals

Partridge pea (*Chamaecrista fasciculata*): Early successional species with a long growing season. Produces high seed yield for wildlife.

Perennials

Leucaena (*Leucaena* sp.): 'K-636' is a very well adapted cultivar because it is a native in the humid subtropical region of far south Texas. Difficult to establish from seed and transplanted seedlings are recommended. Therefore, establishment is expensive. Mimosine toxicity can be a problem; however, this is prevented when adapted animals are grazed or remedied with an oral inoculant of rumen fluid from an adapted animal. There is limited grazing of leucaena in Texas and locating rumen fluid for inoculation may be difficult.

Native Cool-Season Forages

Grasses

Western wheatgrass (*Pascopyrum smithii*): Requires a higher moisture environment and will outcompete other species. An excellent forage option.

Canada (*Elymus canadensis*) and Virginia (*E. virginicus*) wildrye: Excellent for beef cattle grazing. Tends to grow in moist, shaded areas.