

**Appendix 1 - Planting rates for drill or broadcast seeding and sprigging in Texas, Zone 5**

<b>PERENNIAL GRASSES</b> <small>1/, 4/</small>																	
Name		Seeding rates are pounds pure live seed (PLS) per acre <small>3/, 6/</small>	Native (N) or Introduced (I)	Season of growth	Adaptation by Major Land Resource Areas						Seeding Guidance Maximum Seeding Dates <small>7/, 8/</small>	Adapted Plants by Soil Groups <small>9/, 10/</small>				Comments	
					78C	80A	80B	84B	84C	85		86A	Coarse	Moderately Coarse	Medium		Moderately Fine
Bermudagrass: Seed	Blackjack	3.0	I	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	Cold tolerant with extended green growth in early spring and fall.
Bermudagrass: Seed	common; hulled	2.3	I	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	Best adapted to well and moderately drained soils. Optimum pH is 5.5 to 8.0. Should not be planted in areas flooded for long time periods and is less drought tolerant than hybrids.
Bermudagrass: Seed	common; unhulled	3.0	I	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	Same as hulled.
Bermudagrass: Seed	Giant, Blend,Tx Tough,Blackjack	3.0	I	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	Adaptation similar to common. It has wider leaves and slightly higher productivity than common
Bermudagrass: Seed	Mohawk (coated)	3.0	I	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	Soil adaptation similar to common. Cold tolerance similar to Midland.
Bermudagrass: Sprig	Alicia	12 bu 2/	I	W		X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	Less winter hardy than Coastal. Provides quicker cover than coastal and is good for erosion control measures. All sprigged bermudas should have a cover depth of one to three inches.
Bermudagrass: Sprig	Brazos	12 bu 2/	I	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	Production may be higher than coastal on adapted soils. Cold tolerance is similar and digestibility is usually higher than coastal.
Bermudagrass: Sprig	Coastal	12 bu 2/	I	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	Best adapted to moderatley to well drained sandy to loamy soils. It has moderate cold tolerance.
Bermudagrass: Sprig	Midland	12 bu 2/	I	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	Best adapted to moderatley to well drained sandy to loamy soils. It has moderate cold tolerance.
Bermudagrass: Sprig	Tifton 44	12 bu 2/	I	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	Soil adaptation is same as coastal, but the cold tolerance is better.
Bermudagrass: Sprig	Tifton 78	12 bu 2/	I	W		X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	Soil adaptation and cold tolerance is similar to coastal, but it establishes and spreads faster than coastal.
Bermudagrass: Sprig	Tifton 85	12 bu 2/	I	W		X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	Soil adaptation is similar to coastal but it is less cold tolerant. It has higher production potential and better forage quality than coastal. See appropriate specialist for other bermuda grass varieties that are adapted in Zone 5.
Bermudagrass: tops	Alicia, Tifton 85	5 - 7 Bales	I	W		X		X	X	X	X	12/1 - 6/1	X	X	X	X	Mature tops are usually not available until the end of May. They must be planted into moist soils and packed immediately after planting.
Bluestem: big	Earl, Kaw, local harvest	6.0	N	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	Well adapted in the entire Zone on loamy and sandy sites.

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					78C	80A	80B	84B	84C	85		86A	Coarse	Moderately Coarse	Medium		Moderately Fine	Fine
Bluestem: little	Cimaron , Aldous, OK Select Germplasm	3.4	N	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	X	Performance has been good on all soil types, except where high salinity, alkalinity or excessive weed competition are problems.
Bluestem: little	Native	3.4	N	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	X	Pastura may not be commercially available.
Bluestem: sand	Woodward, Cottle County Germplasm	6.0	N	W	X	X	X		X			12/1 - 6/1	X	X	X	X		Prefers deep sand to sandy soils.
Bluestem, yellow	Caucasian	1.2	I	W	X	X	X	X	X	X	X	12/1 - 6/1		X	X	X	X	Good forage production and easily established.
Bluestem, yellow	King Ranch, T-587	1.2	I	W	X	X	X	X	X	X	X	12/1 - 6/1		X	X	X	X	Best adapted to moderately to well drained loamy to clayey soils. Optimum pH is 5.5 to 7.5.
Bluestem, yellow	WW-B. Dahl	1.2	I	W	X	X	X	X	X	X	X	12/1 - 6/1		X	X	X	X	Best adapted to well to moderately well drained sandy loam to clay loam. Not adapted to alkaline soils or wet sites.
Bluestem, yellow	Cane	1.8	I	W	X	X	X	X	X	X	X	12/1 - 6/1		X	X	X	X	Drought tolerant. Out yielded Plains in 3 year clipping test in SE Oklahoma.
Bluestem, yellow	Ironmaster	1.8	I	W	X	X	X	X	X	X	X	12/1 - 6/1		X	X	X	X	Same adaptability range as WW-Spar, but should only be used on those soils that are iron deficient.
Bluestem: yellow	Plains, WW-Spar	1.8	I	W	X	X	X	X	X	X	X	12/1 - 6/1		X	X	X	X	Best adapted to loamy soils. Optimum pH is 5.5 to 7.5. See appropriate specialist for other bluestem varieties that are adapted in Zone 5.
Bristlegrass: plains 5/	Kika 648 Germplasm, Native	3.0	N	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	X	Found on sandy to medium textured soils. Palatable, short lived bunch grass. Plant 1/8 to 1/4 inch deep
Buffalograss: burs	Timeless	8.0	N	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	X	Vigorous grower. Out produces other buffalo grass varieties.
Buffalograss: dehulled		3.0	N	W	X	X	X	X	X	X	X	12/1 - 6/1		X	X	X	X	Cover depth is 1/4 to 1/2 inches.
Cottontop: arizona	La Salle, Native	1.2	N	W	X	X	X	X	X			12/1 - 6/1		X	X	X	X	Very palatable. Seed difficult to harvest and may not be commercially available
Dropseed: sand	Borden county Germplasm	1.0	N	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X		Palatability is low, but provides good early grazing under good moisture conditions. Prolific seed producer.
Dropseed: spike	Potter County Germplasm	1.0	N	W	X							12/1 - 6/1	X	X	X			Seed head more contracted. Approximately same height as sand dropseed.
Dropseed: tall		1.0	N	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X		Adapted to clay and clay loam sites. Prolific seed producer.
Eastern gamagrass	Iuka, Iuka IV, Pete	15.0	N	W	X	X	X	X	X	X	X	12/1 - 6/1		X	X	X		Cover depth is 1/2 to 3/4 inches. <b>Row seeding rate is 5.0 pounds PLS per acre.</b> Adapted to most soils that receive greater than 25 inches of annual precipitation. Not recommended on deep or very deep sandy soils.

Eastern gamagrass	Jackson, Medina, San Marcos, Texas Sue, local harvest, PMK24	10.0	N	W	X	X	X	X	X	X	X	X	12/1 - 6/1		X	X	X	Cover depth is 1/2 to 3/4 inches. <b>Row seeding rate is 5.0 pounds PLS per acre</b> Adapted to most soils that receive greater than 25 inches of annual precipitation Not recommended on deep or very deep sandy soils.
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<b>PERENNIAL GRASSES</b> 1/, 4/ (Continued)																		
Name	Variety	Seeding rates are pounds pure live seed (PLS) per acre 3/, 6/	Native (N) or Introduced (I)	Season of growth	Adaptation by Major Land Resource Areas							Seeding Guidance Maximum Seeding Dates 7/, 8/	Adapted Plants by Soil Groups 9/, 10/				Comments	
					78C	80A	80B	84B	84C	85	86A		Coarse	Moderately Coarse	Medium	Moderately Fine		Fine
Fescue, tall	Flecha, Prosper	15.0	I	C	X	X	X	X	X	X	X	9/15 - 11/1			X	X	X	Endophyte free or beneficial endophyte summer dormant varieties
Gramma: blue	Hachita, Lovington,Native	1.5	N	W	X	X	X					12/1 - 6/1		X	X	X	X	It thrives in medium to fine textured soils. Highly palatable all year long and cures well for use as hay.
Gramma: sideoats	El Reno, Haskell, Niner, Vaughn	4.5	N	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	X	Is adapted to a wide range of soil and climatic conditions, but prefers a medium or coarse soil. May become dominant species on shallow calcareous sites.
Green sprangletop	Van Horn	1.7	N	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	X	Is highly palatable. Establishes quickly and provides cover and protection to other species that are slower in establishment.
Indiangrass: yellow	Cheyenne, Lometa	4.5	N	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	X	In precipitation of less than 25 inches, performs better on coarser textured soils. It is also adapted to some finer textured soils if they are subject to overflow from adjacent sites or irrigated.
Johnsongrass		10.0	I	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	X	Cover depth is 1/4 to 1/2 inches. Best adapted to clay soils.
Kleingrass	Selection-75	1.5	I	W	X	X	X	X	X	X	X	12/1 - 6/1		X	X	X	X	Adapted for medium to clay textured soils. Withstands extended periods of hot, dry weather and is an excellent food source for game birds.
Kleingrass	Verde	1.7	I	W	X	X	X	X	X	X	X	12/1 - 6/1		X	X	X	X	Same as above, but has a larger seed.
Lovegrass: weeping	common, Ermelo	1.5	I	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X			Best adapted to sandy soils. Provides excellent protection for both wind and water erosion. Provides protection for small game and is good food source for small birds.
Lovegrass: wilman	common, Palar	1.5	I	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	X	Has outstanding seedling vigor and good seed production. Due to lack of cold tolerance, only plant south of the Knox to Fannin Conty line.
Lovegrass: sand	common, Mason, Bend	1.5	N	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X			Occurs on sandy soils. Has good drought resistance, but lacks persistence under heavy grazing.
Orchardgrass		5.0	I	C						X		8/15 - 11/1		X	X	X	X	Cover depth is 1/2 to 3/4 inches. It is a long lived, bunch grass, that is subject to winter kill if allowed to go into winter in a drought condition.
Panicum: blue		2.0	I	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	X	High forage and seed yields. Grows best on well drained soils. Lacks winter hardiness.
Ryegrass: perennial		4.0	I	C	X	X	X	X	X	X	X	8/15 - 11/1		X	X	X	X	Cover depth is 1/2 to 3/4 inches. Widely used in mixtures for pasture, hay, lawns and erosion control. Not cold tolerant, grows well on heavy soils and tolerates heavy grazing.

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					78C	80A	80B	84B	84C	85		86A	Coarse	Moderately Coarse	Medium	Moderately Fine		Fine
Sacaton: alkali, big	common, Salado, Saltalk, Falfurrias Germplasm	1.0	N	W	X	X	X	X	X	X	X	12/1 - 6/1			X	X	X	Grows well on sites characterized by salt, alkali, drought and occassional cloudburst. Eaten by livestock when it is green, but does not cure as a palatable winter feed.
Sorghum alnum		12.0	I	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	X	Cover depth is 1/4 to 1/2 inches. Is a hybrid between Johnsongrass and a sorghum and is adapted to all soil types.
Switchgrass	Alamo	2.0	N	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	X	Is generally adapted to all bottomland soil textures. If planted, on fine and moderately fine textured soils that receive less than 25 inches of annual precipitation, these sites should be subject to overflow from adjacent sites or irrigated.
Switchgrass	Blackwell, Caddo, Kanlow, local harvest	3.5	N	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	X	Upland type switchgrass with good seedling vigor. Used for range reseeding, pasture planting, waterways and revegetation of disturbed areas.
Texas bluegrass		1.0	N	C	X	X	X	X	X	X	X	8/15 - 11/1		X	X	X	X	
Texas wintergrass		15.0	N	C	X	X	X	X	X	X	X	8/15 - 11/1		X	X	X	X	Found in brushy areas, roadsides and other disturbed sites. Prefers fine calcareous soils.
Vine mesquite		6.0	N	W	X	X	X	X	X	X	X	12/1 - 6/1		X	X	X	X	It is adapted to a variety of soils, but is most commonly found in depressions, swales and flood plains. Is well adapted for use in healing banks and small gullies on medium to heavy soils.
Wheatgrass: tall	Jose, Largo	12.0	I	C	X	X	X	X	X	X	X	8/15 - 11/1	X	X	X	X	X	In areas that receive less than 28" of annual precipitation, use on subirrigated sites, or sites that receives extra runoff. Cover depth is 1/4 to 1/2 inches.
Wheatgrass: pubescent	Luna	11.0	I	C	X	X	X					8/15 - 11/1		X	X	X	X	Has excellent seedling vigor, fast establishment and is a high forage producer. Cover depth is 1/4 to 1/2 inches.
Wheatgrass: western	Arriba, Barton, common	7.0	N	C	X	X	X					8/15 - 11/1		X	X	X	X	Species is best adapted to well drained bottomland, but is commonly found on open plains and hillsides. Preferred feed for some large game species. Cover depth is 1/4 to 1/2 inches.
Wildrye: canada	Lavaca	10.0	N	C	X	X	X	X	X	X	X	8/15 - 11/1		X	X	X	X	Cover depth is 1/4 to 1/2 inches.
Wildrye: virginia		12.0	N	C	X	X	X	X	X	X	X	8/15 - 11/1		X	X	X	X	Cover depth is 1/4 to 1/2 inches.
Windmillgrass: hooded	Mariah Germplasm	0.7	N	W	X	X	X	X	X	X	X	2/1 - 5/1; 9/1-11/1						Plant 1/8 to 1/4 inch deep, planting too shallow is better than too deep
Windmillgrass: shortspike	Welder Germplasm	0.5	N	W	X	X	X	X	X	X	X	2/1 - 5/1; 9/1-11/1						Plant 1/8 to 1/4 inch deep, planting too shallow is better than too deep

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<b>PERENNIAL FORBS, LEGUMES, SHRUBS</b> <small>1/, 4/</small>																		
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					78C	80A	80B	84B	84C	85		86A	Coarse	Moderately Coarse	Medium		Moderately Fine	Fine
Acacia: Prairie	Plains Germplasm	5.0	N	W	X	X	X	X		X	X	X	X		Tough subshrub. Plant 1/2 to 3/4 inch deep with the proper inoculant.			
Alfalfa	Common, Ladak, ranger	20.0	I	C	X	X	X	X	X	X	X	X	X	X	Pounds of commercial seed. Moderately deep to deep, loamy, well drained soil with a pH of 6.5 or greater.			
Awnless bushsunflower	Plateau	2.6	N	W	X	X	X	X	X	X	X	X	X					
Chicory		2.0	I	C	X	X	X	X	X	X	X	X	X	X	Widespread along roadside and disturbed sites. Adapted to variety of sites.			
Crownvetch		6.3	I	W				X	X						Best adapted to soils with a pH of 6.0 or above. Does not tolerate drought well			
Engelmann daisy	Eldorado, Native	15.0	N	C	X	X	X	X	X	X		X	X	X	Adapted to loamy and clayey upland soils through out the Zone.			
Fourwing saltbush		15.5	N	W	X	X	X					X	X	X	Very palatable. Grows best in calcareous or basic soils.			
Gayfeather: dotted		10.0	N	W	X	X	X	X	X	X		X	X	X				
Illinois bundleflower	Sabine, Native	13.6	N	W	X	X	X	X	X	X		X	X	X	Adapted to most of the upland and bottomland sites in the Zone 5.			
Leadplant		4.5	N	W	X		X					X	X	X				
Littleleaf leadtree		7.0	N	W	X		X	X	X			X	X	X				
Maximilian sunflower	Aztec, Native	3.0	N	W	X	X	X	X	X	X		X	X	X	Well adapted to a variety of sites. Prefers well drained sunny sites.			
Menodora: rough, showy		5.0	N	W	X	X	X	X	X			X	X	X				
Orange zexmenia	Goliad Germplasm	3.4	N	W	X	X	X	X	X	X		X	X	X				
Perennial peanut: rhizomes		40 bu	I	W				X	X			X	X	X	Cover depth is 1 to 3 inches.			
Prairieclover: purple	Kaneb, Cuero Germplasm	3.0	N	W	X	X	X	X	X	X		X	X	X	Grows on soils ranging from clay loams to sands. Has moderate drought tolerance.			
Prairieclover: white		2.0	N	W	X	X	X	X	X	X		X	X	X	Grows well on high pH soils. May cause bloat.			
Sesbania: drummond		20.0	N	W				X	X	X		X	X	X				
Velvet bundleflower	Hondo Germplasm	3.0	NW		X		X		X									
Western ragweed		7.5	N	W	X	X	X	X	X	X		X	X	X	Widespread along roadside and disturbed sites. Valuable food source for small game birds.			

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Barley		40.0	I	C	X	X	X	X	X	X	X	8/15 - 11/1	X	X	X	X	X	Cover depth is 1/2 to 1.0 inches. Is sensitive to poorly drained soils. Moderate drought tolerance.
Bromegrass	Matua	10.0	I	C	X	X	X	X	X	X	X	8/15 - 11/1			X	X	X	Adapted to most sites. Can be managed as reseeding annual. Good producer.
Crabgrass	Red River	1.0	I	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	X	Adapted to a wide variety of soils, most productive in areas of high summer rainfall. Forage quality is usually higher than most warm season perennial grasses. Reseeds well.
Forage Sorghum: grass types		10.0	I	W	X	X	X	X	X	X	X	3/15 - 8/15	X	X	X	X	X	Cover depth is 1/2 to 1.0 inches. Nitrate or prussic acid poisoning can occur in some circumstances.
Forage Sorghum: others		15.0	I	W	X	X	X	X	X	X	X	3/15 - 8/15	X	X	X	X	X	Same as above.
Grain Sorghum		15.0	I	W	X	X	X	X	X	X	X	3/15 - 8/15	X	X	X	X	X	Same as above.
Hegari		25.0	I	W	X	X	X	X	X	X	X	3/15 - 8/15			X	X	X	Same as above.
Millet	Browntop	15.0	I	W	X	X	X	X	X	X	X	3/15 - 8/15		X	X	X	X	Cover depth is 1/2 to 1.0 inches. Adapted to a wide variety of soils, but does not do well on calcareous soils. Acceptable forage for horses.
Millet	Foxtail	15.0	I	W	X	X	X	X	X	X	X	3/15 - 8/15	X	X	X	X		Cover depth is 1/2 to 1.0 inches. Adapted to a wide range of soils, but performs best on loamy sites. Can cause kidney and joint problems in horses.
Millet	Japanese	15.0	I	W	X	X	X	X	X	X	X	3/15 - 8/15			X	X	X	Cover depth is 1/2 to 1.0 inches. Used primarily for wildlife and is adapted to wet soils.
Millet	Pearl	15.0	I	W	X	X	X	X	X	X	X	3/15 - 8/15		X	X	X	X	Cover depth is 1/2 to 1.0 inches. Good for hay or silage but not as drought tolerant as forage sorghums.
Millet	Proso	15.0	I	W	X	X	X	X	X	X	X	3/15 - 8/15		X	X	X	X	Cover depth is 1/2 to 1.0 inches. Used primarily for wildlife food plots. Matures in about sixty days after emergence.
Oats		40.0	I	C	X	X	X	X	X	X	X	8/15 - 11/1	X	X	X	X	X	Cover depth is 1/2 to 1.0 inches. Provides early fall grazing but is not drought tolerant.
Rescuegrass		17.0	I	C	X	X	X	X	X	X	X	8/15 - 11/1		X	X	X	X	Adapted to most sites. Can be managed as reseeding annual.

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Rye		40.0	I	C	X	X	X	X	X	X	X	8/15 - 11/1	X	X	X	X	X	Cover depth is 1/2 to 1.0 inches. Provides early fall grazing and prefers sandy to loamy soils.
Ryegrass: annual		12.0	I	C	X	X	X	X	X	X	X	8/15 - 11/1	X	X	X	X	X	It is adapted to a wide range of soils and is only annual grass that will tolerate poor drainage.
Speltz		40.0	I	C	X	X	X	X	X	X	X	8/15 - 11/1		X	X	X	X	Cover depth is 1/2 to 1.0 inches.
Triticale		40.0	I	C	X	X	X	X	X	X	X	8/15 - 11/1	X	X	X	X	X	Cover depth is 1/2 to 1.0 inches. Cross between wheat and rye. Optimum pH range is 5.0 to 7.5.
Wheat		40.0	I	C	X	X	X	X	X	X	X	8/15 - 11/1	X	X	X	X	X	Cover depth is 1/2 to 1.0 inches. Good cold and drought tolerance. Optimum pH range of 5.5 to 8.0.

**Appendix 1 - Planting rates for drill or broadcast seeding and sprigging in Texas, Zone 5**

ANNUAL FORBS, LEGUMES, SHRUBS <small>11, 41</small>																
Name	Variety	Seeding rates are pounds pure live seed (PLS) per acre 3/, 6/	Native (N) or Introduced (I)	Season of growth	Adaptation by Major Land Resource Areas						Seeding Guidance Maximum Seeding Dates 7/, 8/	Adapted Plants by Soil Groups 9/, 10/				Comments
					78C	80A	80B	84B	84C	85		86A	Coarse	Moderately Coarse	Medium	
Barrel medic	Jemalong, Parabinga	6.0	I	C			X	X	X	X	8/15 - 11/1		X	X	X	
Black medic		3.0	I	C			X	X	X	X	8/15 - 11/1		X	X	X	
Bur medic: burs		39.0	I	C			X	X	X	X	8/15 - 11/1		X	X	X	Adapted to well drained soils with a pH of 6.0 or higher.
Bur medic: grain	Armadillo	3.0	I	C			X	X	X	X	8/15 - 11/1		X	X	X	Adapted to well drained soils with a pH of 6.0 or higher.
Button medic		10.0	I	C			X	X	X	X	8/15 - 11/1		X	X	X	
Clover: alyce		20.0	I	C				X		X	8/15 - 11/1			X	X	Best adapted to areas of high summer rainfall. Prefers well drained sandy soils.
Clover: arrowleaf	Amclo, Meechee, Yuchi	10.0	I	C				X	X	X	8/15 - 11/1		X	X	X	Adapted to sandy to loamy soils with a pH of 5.5 to 7.0. Good cold tolerance.
Clover: ball		3.0	I	C			X	X	X	X	8/15 - 11/1		X	X	X	Adapted to loamy to clayey soils with a pH of 6.5 to 8.0. Good cold tolerance.
Clover: burseem	Bigbee	14.0	I	C				X	X	X	8/15 - 11/1		X	X	X	Adapted to loamy to clayey soils with a pH of 6.5 to 8.0. Poor cold tolerance.
Clover: button		10.0	I	C			X	X	X	X	8/15 - 11/1		X	X	X	
Clover: crimson	Chief, Dixie, Tibbee	20.0	I	C				X		X	8/15 - 11/1			X	X	Adapted to most soils with a pH of 5.5 to 8.0. Good cold tolerance.
Clover: hop		3.0	I	C				X	X	X	8/15 - 11/1		X	X	X	
Clover: persian		3.0	I	C					X	X	8/15 - 11/1		X	X	X	Adapted to loamy to clayey soils with a pH of 6.5 to 8.0. Fair cold tolerance.
Clover: red	Cherokee, Kenland	15.0	I	C				X	X	X	8/15 - 11/1		X	X	X	Adapted to loamy to clayey soils with a pH of 6.5 to 8.0. Good cold tolerance.
Clover: rose	Overton R18	10.0	I	C			X	X	X	X	8/15 - 11/1		X	X	X	Adapted to most soils with a pH of 5.5 to 8.0. Good cold tolerance.
Clover: subterranean	Denmark, Karridale	12.0	I	C				X	X	X	8/15 - 11/1		X	X	X	Adapted to loamy to clayey soils with a pH of 5.5 to 7.5. Fair cold tolerance.
Clover: white	LA S-1, Osceola, Regal	5.0	I	C				X	X	X	8/15 - 11/1		X	X	X	Adapted to loamy to clayey soils with a pH of 5.5 to 7.5. Good cold tolerance.
Cowpeas	Clay, Iron,	40.0	I	W	X	X	X	X	X	X	3/15 - 8/15	X	X	X	X	Pounds of commercial seed. Cover depth is 1/2 to 1.0 inches. Adapted to well drained soils with a pH of 5.5 to 7.5. Drought tolerant.
Guar		15.0	I	W	X	X	X	X	X	X	3/15 - 8/15	X	X	X	X	Pounds of commercial seed. Cover depth is 1/2 to 1.0 inches. Adapted to well drained soils with a pH of 5.5 to 7.5. Drought tolerant.
Lablab	Rio Verde, Rungi	15.0	I	W			X	X	X	X	12/1 - 6/1		X	X	X	
Lespedeza	bicolor	20.0	I	W				X	X	X	3/15 - 8/15		X	X		

**Appendix 1 - Planting rates for drill or broadcast seeding and sprigging in Texas, Zone 5**

ANNUAL FORBS, LEGUMES, SHRUBS <sup>1/, 4/</sup> (Continued)																		
Name	Variety	Seeding rates are pounds pure live seed (PLS) per acre <sup>3/, 6/</sup>	Native (N) or Introduced (I)	Season of growth	Adaptation by Major Land Resource Areas						Seeding Guidance Maximum Seeding Dates <sup>7/, 8/</sup>	Adapted Plants by Soil Groups <sup>9/, 10/</sup>				Comments		
					78C	80A	80B	84B	84C	85		86A	Coarse	Moderately Coarse	Medium		Moderately Fine	Fine
Lespedeza	common, Kobe	20.0	I	W					X	X	X	3/15 - 8/15	X	X				
	Korean	25.0	I	W					X	X	X	12/1 - 6/1	X	X	X		Adapted to well drained soils with a pH of 5.0 to 6.5 on east side of Zone.	
	Serecia	35.0	I	W					X		X	12/1 - 6/1	X	X			Adapted to clay or loam soils. Will grow where aluminum toxicity is a problem for other plants. Prefers a pH of 5.0 to 6.5.	
Partridge pea	Comanche, Lark, Native	13.4	N	W	X							12/1 - 6/1	X	X	X	X	Prefers sand and sandy loam sites.	
Purplebean	DQ Pea, Siratro	27.0	I	W					X	X	X	12/1 - 6/1			X	X	X	
Sesame		5.3	I	W	X	X	X	X	X	X	X	3/15 - 8/15			X	X	X	
Singletary pea		35.0	I	C	X	X	X	X	X	X	X	8/15 - 11/1			X	X	X	Adapted to loamy to clayey soils with a pH of 5.5 to 8.0. Fair cold tolerance. Will tolerate soils with poor drainage.
Sunflower		5.0	N	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	X	
Sunflower	Perodovic	15.0	I	W	X	X	X	X	X	X	X	12/1 - 6/1	X	X	X	X	X	Pounds of commercial seed.
Sweetclover: annual		10.0	I	C	X	X	X	X	X	X	X	8/15 - 11/1	X	X	X	X	X	Adapted to well drained clay to clay loam, optimum pH is 6.5 to 7.5.
Sweetclover: biennial		10.0	I	C	X	X	X	X	X	X	X	8/15 - 11/1	X	X	X	X	X	Adapted to well drained clay to clay loam soils. Optimum pH is 6.5 to 7.5.
Vetch: hairy		20.0	I	C	X	X	X	X	X		X	8/15 - 11/1	X	X	X	X	X	Adapted to well drained soils with pH of 5.0 to 8.0. Has late maturity, low bloat potential and good cold tolerance.
Winterpeas: austrian		35.0	I	C	X	X	X	X	X		X	8/15 - 11/1	X	X	X	X	X	Adapted from loam to sandy loam soils with pH of 6.0 to 8.0. Best used with small grain for silage. Does not tolerate grazing well.

## Appendix 1 - Planting rates for drill or broadcast seeding and sprigging in Texas, Zone 5

### FOOTNOTES

1/ Species are listed by common name and where applicable by released cultivar or variety. Planting rates are shown either as by PLS or commercial rates.

2/ Conversion factors: 3.5 bushels of tops = 1 bale; 7 bushels of sprigs = 1 bale; 1.25 cubic feet = 1 bushel; 15 pounds = 1 bushel.

3/ PLS = Pure Live Seed. To compute PLS from seed analysis information: Percent PLS = (% germination + % hard [dormant] seed) X % purity. Seeding rate in PLS pounds divided by % PLS will give you the bulk seeding rate needed to get the right amount of pure live seed.

4/ Local harvest may be used when seeding species of unknown or common variety, or natural stands. Local harvested seed should have its geographic origin within 200 miles north, 300 miles south, 100 miles east and 200 miles west of the site where it will be planted. It is also desirable that locally harvested seed be used on soils of the same texture as soils where seed was harvested.

5/ The TZ (tetrazolium salt) test can be used for the germination factor in figuring PLS if the dealer furnishes the seed tag or other proof the test was run by a reputable seed lab.

6/ Drill planting is defined as rows spaced less than 20 inches apart. Row planting rates will be 1/3 of drill rates.

7/ The optimum planting date for warm season perennial grasses, legumes and forbs is 1/15 - 4/15 and 9/1 - 10/15 for cool season perennial grasses, legumes and forbs. The optimum planting date for warm season annuals is 4/1 - 6/1 and 9/1 - 10/15 for cool season annuals.

8/ The optimum planting depth for all species is 1/8 to 1/4 inch unless it is otherwise noted for the individual specie.

9/ Soil groups are based on the following textures:**Coarse** - Coarse sand, Sand, Fine sand, Very fine sand, Loamy coarse sand, Loamy sand, Loamy fine sand and Loamy very fine sand;**Moderately Coarse** - Sandy loam, Coarse sandy loam and fine sandy loam;**Medium** - Very fine sandy loam, Loam, Silt loam and silt;**Moderately Fine** - Clay loam, Sandy clay loam and Silty clay loam;**Fine** - Sandy clay, silty clay and clay.

10/ **For site and practice specific guidance on all grass plantings, refer to the appropriate pastureland suitability group, practice standard and other technical guidance. Some species listed in this planting table are not adapted to and should not be used for all grass plantings. Please consult the appropriate Zone or Field specialist on species that may not be applicable to all grass plantings. Seeding and sprigging rates are single rates only. If circumstances warrant a double seeding or sprigging rate, it must be approved by the appropriate field or Zone specialist.**