

**Appendix 1 - Planting rates for seeding and sprigging in Texas, Zone 4B**

| Name  | Variety / Cultivar             | Broadcast or drilled seeding rates are pounds pure live seed (PLS) per acre 3/, 5/, 6/ | Native (N) or Introduced (I) | Season of growth | Adaptation by Major Land Resource Areas 11/ |     |      |      |      | Seeding Guidance          | Soil 9/ |                   |        |                 |      | Comments 10/   |
|---|--------------------------------|--|------------------------------|------------------|---|-----|------|------|------|---------------------------|---------|-------------------|--------|-----------------|------|--|
|   |                                |  |                              |                  | 86B   | 87A | 133B | 150A | 152B |                           | Coarse  | Moderately Coarse | Medium | Moderately Fine | Fine |  |
| <b>Perennial Grasses: 1/, 4/ Bahiagrass</b> | Pensacola, Tifton 9, Argentine | <b>12.0 - 15.0</b>   | I                            | W                | X   | X   | X    | X    | X    | 9/1 - 6/1                 |         | X                 | X      | X               | X    | Best adapted to the high rainfall areas of East Texas and the Coast Prairie. Adapted to a wide variety of soils with pH of 5.5 - 7.0; not recommended on soils with pH > 7.0, or soils with > 40" of sand at the surface unless in areas of >55" annual rainfall. It performs better than coastal bermudagrass on wet soils, but is not as drought tolerant as coastal. Argentine is susceptible to ergot. |
| Seeded Bermudagrass                         | common; hulled                 | <b>2.3 - 6.0</b>   | I                            | W                | X   | X   | X    | X    | X    | 2/15 - 6/1<br>8/15 - 9/30 |         | X                 | X      | X               | X    | Best adapted to well and moderately well drained soils, optimum pH 5.5 - 8.0. Not recommended on deep or very deep sands, or areas flooded for long duration. Less drought tolerant than hybrid bermudagrass.  |
| Seeded Bermudagrass                         | common; unhulled               | <b>3.0 - 8.0</b>   | I                            | W                | X   | X   | X    | X    | X    | 2/15 - 6/1<br>8/15 - 9/30 |         | X                 | X      | X               | X    | Same as comment above  |
| Seeded Bermudagrass                         | Cheyenne                       | <b>3.0 - 8.0</b>   | I                            | W                | X   | X   | X    | X    | X    | 2/15 - 6/1<br>8/15 - 9/30 |         | X                 | X      | X               | X    | Released in 1989 for turf and reclamation, adapted to moderate to well drained soils in the SE and Gulf Coast. Has produced lower yields than other seeded varieties in variety trials at Overton, TX.   |
| Seeded Bermudagrass                         | Giant                          | <b>3.0 - 8.0</b>   | I                            | W                | X   | X   | X    | X    | X    | 2/15 - 6/1<br>8/15 - 9/30 |         | X                 | X      | X               | X    | Adaptation similar to common, wider leaves, slightly higher productivity than common. Stands have tended to thin out over time.  |
| Seeded Bermudagrass                         | Texas Tough                    | <b>3.0 - 8.0</b>   | I                            | W                | X   | X   | X    | X    | X    | 2/15 - 6/1<br>8/15 - 9/30 |         | X                 | X      | X               | X    | Mixture of common hulled, common unhulled, and giant bermudagrass. Adaptation same as common. Most productive seeded variety in 3 year trial at Overton, TX.   |
| Seeded Bermudagrass                         | Ranchero Frio                  | <b>3.0 - 8.0</b>   | I                            | W                | X   | X   | X    | X    | X    | 2/15 - 6/1<br>8/15 - 9/30 |         | X                 | X      | X               | X    | Mixture of Cheyenne and giant. Adaptation same as common. Produced less than Texas Tough and Tierra Verde in variety trials at Overton, TX.  |
| Seeded Bermudagrass                         | Tierra Verde                   | <b>3.0 - 8.0</b>   | I                            | W                | X   | X   | X    | X    | X    | 2/15 - 6/1<br>8/15 - 9/30 |         | X                 | X      | X               | X    | Similar mixture to Texas Tough. Adaptation same as common. Production slightly less than Texas Tough in Overton variety trials.  |

**Appendix 1 - Planting rates for seeding and sprigging in Texas, Zone 4B**

| Name   | Variety / Cultivar          | Broadcast or drilled seeding rates are pounds pure live seed (PLS) per acre 3/, 5/, 6/       | Native (N) or Introduced (I) | Season of growth | Adaptation by Major Land Resource Areas 11/ |     |      |      |      | Seeding Guidance<br><br>Seeding Dates 7/, 8/ | Soil 9/ |                   |        |                 |      | Comments 10/   |
|--|-----------------------------|--|------------------------------|------------------|---|-----|------|------|------|--|---------|-------------------|--------|-----------------|------|--|
|  |                             |  |                              |                  | 86B   | 87A | 133B | 150A | 152B |  | Coarse  | Moderately Coarse | Medium | Moderately Fine | Fine |  |
| Perennial Grasses: 1/, 4/ Hybrid Bermudagrass 2/ | Alicia                      | w/ sprigging machine 12 - 20 Bu/ac (15 - 25 cu.ft.) broadcast 24 - 40 Bu/ac (30 - 50 cu.ft.) | I                            | W                | X   | X   | X    | X    | X    | 1/15 - 6/1<br>8/15 - 9/30                    | X       | X                 | X      | X               | X    | Adaptation similar to coastal, but less winter hardy and recovers slower than coastal after severe winter. Yield is usually less than coastal. Good for erosion control, provides quicker cover than coastal, but forage is usually lower in quality than coastal. Somewhat susceptible to rust.                               |
| Hybrid Bermudagrass 2/                           | Brazos                      | w/ sprigging machine 12 - 20 Bu/ac (15 - 25 cu.ft.) broadcast 24 - 40 Bu/ac (30 - 50 cu.ft.) | I                            | W                | X   | X   | X    | X    | X    | 1/15 - 6/1<br>8/15 - 9/30                    |         |                   | X      | X               | X    | Production is similar or higher than coastal on adapted soils. Cold tolerance similar to coastal. Usually higher digestibility than coastal.   |
| Hybrid Bermudagrass 2/                           | Coastal                     | w/ sprigging machine 12 - 20 Bu/ac (15 - 25 cu.ft.) broadcast 24 - 40 Bu/ac (30 - 50 cu.ft.) | I                            | W                | X   | X   | X    | X    | X    | 1/15 - 6/1<br>8/15 - 9/30                    | X       | X                 | X      | X               | X    | Best adapted to moderately to well drained sandy to loamy soils, but will persist on clayey soils. Moderate cold tolerance.  |
| Hybrid Bermudagrass 2/                           | Coastcross -1 and Tifton 68 | w/ sprigging machine 12 - 20 Bu/ac (15 - 25 cu.ft.) broadcast 24 - 40 Bu/ac (30 - 50 cu.ft.) | I                            | W                | X   | X   | X    | X    | X    | 1/15 - 6/1<br>8/15 - 9/30                    | X       | X                 | X      | X               | X    | Soil adaptation same as coastal, but both lack cold tolerance, which limits their use to coastal areas of Texas. Both have good disease resistance and produce higher quality forage than coastal. Coastcross primarily spreads by above ground stolons, only occasionally produces rhizomes. Tifton 68 only produces stolons. |
| Hybrid Bermudagrass 2/                           | Grazer                      | w/ sprigging machine 12 - 20 Bu/ac (15 - 25 cu.ft.) broadcast 24 - 40 Bu/ac (30 - 50 cu.ft.) | I                            | W                | X   | X   | X    | X    | X    | 1/15 - 6/1<br>8/15 - 9/30                    |         | X                 | X      | X               | X    | Adaptation similar to coastal, but less winter hardy. Short growth habit results in lower total production than coastal, but quality is better than coastal. Best used as pasture not hay.   |

**Appendix 1 - Planting rates for seeding and sprigging in Texas, Zone 4B**

| Name  | Variety / Cultivar       | Broadcast or drilled seeding rates are pounds pure live seed (PLS) per acre 3/, 5/, 6/             | Native (N) or Introduced (I) | Season of growth | Adaptation by Major Land Resource Areas 11/ |     |      |      |      | Seeding Guidance<br><br>Seeding Dates 7/, 8/ | Soil 9/ |                   |        |                 |      | Comments 10/  |
|---|--------------------------|--|------------------------------|------------------|---|-----|------|------|------|--|---------|-------------------|--------|-----------------|------|---|
|   |                          |  |                              |                  | 86B   | 87A | 133B | 150A | 152B |  | Coarse  | Moderately Coarse | Medium | Moderately Fine | Fine |   |
| <b>Perennial Grasses: 1/, 4/</b><br>Bermudagrass 2/<br>Propagated by tops | Alicia, Jiggs, Tifton 85 | 5 -7 bales   | I                            | W                | X   | X   | X    | X    | X    | 5/15 - 6/1<br>8/15 - 9/15                    | X       | X                 | X      | X               | X    | Mature tops are not usually available until the end of May. They must be planted into moist soils and packed immediately after planting.  |
| Hybrid Bermudagrass 2/  | Jiggs                    | w/ sprigging machine<br>12 - 20 Bu/ac (15 - 25 cu.ft.)<br>broadcast 24 - 40 Bu/ac (30 - 50 cu.ft.) | I                            | W                | X   | X   | X    | X    | X    | 1/15 - 6/1<br>8/15 - 9/30                    |         | X                 | X      | X               | X    | Adapted to a wide range of soils, faster establishment and higher production potential than coastal on most soils, especially clayey soils. Forage quality similar to coastal. Cold tolerance may be less than coastal. Jiggs is susceptible to rust. |
| Hybrid Bermudagrass 2/  | Tifton 78                | w/ sprigging machine<br>12 - 20 Bu/ac (15 - 25 cu.ft.)<br>broadcast 24 - 40 Bu/ac (30 - 50 cu.ft.) | I                            | W                | X   | X   | X    | X    | X    | 1/15 - 6/1<br>8/15 - 9/30                    | X       | X                 | X      | X               | X    | Soil adaptation similar to coastal, much less cold tolerant than coastal. It establishes and spreads faster than coastal. Spring growth starts earlier than coastal. Immune to rust.  |
| Hybrid Bermudagrass 2/  | Tifton 85                | w/ sprigging machine<br>12 - 20 Bu/ac (15 - 25 cu.ft.)<br>broadcast 24 - 40 Bu/ac (30 - 50 cu.ft.) | I                            | W                | X   | X   | X    | X    | X    | 1/15 - 6/1<br>8/15 - 9/30                    | X       | X                 | X      | X               | X    | Soil adaptation similar to coastal, but less cold tolerant. Higher production potential, and better forage quality than coastal. Performs better than coastal on sandy soils. Earlier spring growth and later fall growth than coastal                |
| Bermudagrass  | Sod Mulch                | 260 cubic yd/ac  | I                            | W                | X   | X   | X    | X    | X    | Year round                                   | X       | X                 | X      | X               | X    | Bermudagrass sprigs and stolons scraped up with topsoil and spread and packed to a thickness of 2 inches. Usually used on disturbed sites that would be hard to get seed or sprigs established.   |

**Appendix 1 - Planting rates for seeding and sprigging in Texas, Zone 4B**

| Name   | Variety / Cultivar           | Broadcast or drilled seeding rates are pounds pure live seed (PLS) per acre 3/, 5/, 6/ | Native (N) or Introduced (I) | Season of growth | Adaptation by Major Land Resource Areas 11/ |     |      |      |      | Seeding Dates 7/, 8/ | Seeding Guidance | Soil 9/ |                   |        |                 |   | Comments 10/ |
|--|------------------------------|--|------------------------------|------------------|---|-----|------|------|------|----------------------|------------------|---------|-------------------|--------|-----------------|---|--------------|
|  |                              |  |                              |                  | 86B   | 87A | 133B | 150A | 152B |                      |                  | Coarse  | Moderately Coarse | Medium | Moderately Fine | Fine  |              |
| <b>Perennial Grasses: 1/, 4/</b><br>Bluestem big | Earl, Kaw, local harvest     | 6.0  | N                            | W                | X   | X   | X    | X    | X    | 2/15 - 5/1           |                  | X       | X                 | X      |                 | Best adapted to deep loamy fertile upland sites receiving at least 25" of rainfall annually.  |              |
| Bluestem little                                  | Aldous, Cimarron, Native mix | 3.4  | N                            | W                | X   | X   |      | X    |      | 2/15 - 5/1           | X                | X       | X                 | X      | X               | Aldous and Cimarron are best adapted to all upland soils in the Claypan and Southern Blackland areas of Texas.  |              |
| Dallisgrass                                      |                              | 15.0   | I                            | W                | X   | X   | X    | X    | X    | 2/15 - 4/15          |                  |         | X                 | X      | X               | Best adapted to poorly drained loamy to clayey soils, primarily bottomlands in east Texas and Gulf Coast. Ergot can be a problem.   |              |
| Bluestem, yellow                                 | Angleton,                    | 1.0 - 2.0  | I                            | W                |   |     |      | X    |      | 2/15 - 5/1           |                  |         | X                 | X      | X               | Best adapted to moderately well to well drained heavy clay soils of the Gulf Coast that receive 30 inches or more annual precipitation. Very tolerant of alkaline soil conditions.  |              |
| Bluestem, yellow                                 | Gordo                        | 1.2 - 2.0  | I                            | W                | X   |     |      | X    |      | 2/15 - 5/1           |                  |         | X                 | X      | X               | Best adapted moderately to well drained clay soils in Coast Prairie, Rio Grande Plains, and Southern Blacklands that receive 25 inches or more annual precipitation. Optimum pH 5.5 - 7.5.  |              |
| Bluestem, yellow                                 | Kleberg                      | 1.2 - 2.0  | I                            | W                | X   | X   |      | X    |      | 2/15 - 5/1           |                  | X       | X                 | X      | X               | Best adapted to moderately to well drained sites with medium to heavy textured soils in the Eastern Edwards Plateau, Grand Prairie, Rio Grande Plains, Blackland, and coast Prairie areas of Texas that receive at least 20 inches of rainfall. |              |
| Bluestem, yellow                                 | K.R., T-587                  | 1.2 - 2.0  | I                            | W                | X   | X   | X    | X    | X    | 2/15 - 5/1           |                  | X       | X                 | X      | X               | Best adapted to moderately to well drained loamy to clayey soils with 20 inches or more annual rainfall. O.W. T-587 will freeze out north of the Red River. Optimum pH 5.5 - 7.5. K.R. not recommended in 133B or 152B.                         |              |
| Bluestem, yellow                                 | Medio                        | 1.0 - 2.0  | I                            | W                | X   |     |      | X    |      | 2/15 - 5/1           |                  | X       | X                 | X      | X               | Same comment as K.R.  |              |

**Appendix 1 - Planting rates for seeding and sprigging in Texas, Zone 4B**

| Name  | Variety / Cultivar     | Broadcast or drilled seeding rates are pounds pure live seed (PLS) per acre 3/, 5/, 6/ | Native (N) or Introduced (I) | Season of growth | Adaptation by Major Land Resource Areas 11/ |     |      |      |      | Seeding Dates 7/, 8/                                | Soil 9/ |                   |        |                 |      | Comments 10/   |
|---|------------------------|--|------------------------------|------------------|---|-----|------|------|------|---|---------|-------------------|--------|-----------------|------|--|
|   |                        |  |                              |                  | 86B   | 87A | 133B | 150A | 152B |   | Coarse  | Moderately Coarse | Medium | Moderately Fine | Fine |  |
| Perennial Grasses: 1/, 4/ Eastern gamagrass | Jackson                | 10.0   | N                            | W                | X   | X   | X    | X    | X    | 11/15 - 1/1 Not Stratified<br>2/15 - 5/1 Stratified |         | X                 | X      | X               | X    | Adapted to most soils in areas of Texas that receive more than 25 inches of rainfall. Not recommended on deep or very deep sandy soils.  |
| Eastern gamagrass                           | Local harvest          | 20.0   | N                            | W                | X   | X   | X    | X    | X    | 11/15 - 1/1 Not Stratified<br>2/15 - 5/1 Stratified |         | X                 | X      | X               | X    | Adapted to moist well to moderately well drained loamy to clayey sites throughout Texas except for the South Texas Plains.   |
| Indiangrass yellow                          | Lometa                 | 4.5  | N                            | W                | X   | X   | X    | X    | X    | 2/15 - 5/1  |         | X                 | X      | X               | X    | Adapted to soils from sands to clays in areas of Texas that receive at least 22 inches of annual precipitation. Best adapted to loamy soils.   |
| Johnsongrass                                |                        | 10.0   | I                            | W                | X   | X   | X    | X    | X    | 2/15 - 5/1  |         | X                 | X      | X               | X    | Adapted to most soils. Best adapted to clay soils.   |
| Kleingrass                                  | Selection-75           | 1.5 - 2.0  | I                            | W                | X   | X   | X    | X    | X    | 2/15 - 5/1  |         | X                 | X      | X               | X    | Adapted to all areas of Texas, receiving at least 20 inches of rainfall annually. May winter kill in the northern and northwestern counties of the state. Best adapted to loamy to clayey soils in central, eastern, and southeastern Texas. Should not be used as forage for horses, sheep, or goats. |
|   | Verde                  | 1.7 - 2.0  | I                            | W                | X   | X   | X    | X    | X    | 2/15 - 5/1  |         | X                 | X      | X               | X    | Same as above, but larger seeded.  |
| Lovegrass weeping                           | common, Ermelo, Renner | 1.5  | I                            | W                | X   | X   | X    |      | X    | 2/15 - 5/1  | X       | X                 |        |                 |      | Best adapted to sandy soils in areas of Texas receiving 16 inches or more annual rainfall. Moderate cold tolerance.  |
| Lovegrass Wilman                            | common, Palar          | 1.5  | I                            | W                | X   | X   | X    |      |      | 3/1 - 5/1   | X       | X                 | X      |                 |      | Soil adaptation similar to weeping lovegrass. Wilman is less cold tolerant, but more palatable than other lovegrass. Only plant south of the Knox to Fannin County line.   |

**Appendix 1 - Planting rates for seeding and sprigging in Texas, Zone 4B**

| Name  | Variety / Cultivar  | Broadcast or drilled seeding rates are pounds pure live seed (PLS) per acre 3/, 5/, 6/ | Native (N) or Introduced (I) | Season of growth | Adaptation by Major Land Resource Areas 11/ |     |      |      |      | Seeding Dates 7/, 8/ | Seeding Guidance | Soil 9/ |                   |        |                 |  | Comments 10/ |
|---|---|--|------------------------------|------------------|---|-----|------|------|------|----------------------|------------------|---------|-------------------|--------|-----------------|--|--------------|
|   |   |  |                              |                  | 86B   | 87A | 133B | 150A | 152B |                      |                  | Coarse  | Moderately Coarse | Medium | Moderately Fine | Fine   |              |
| <b>Perennial Grasses: 1/, 4/</b><br>Switchgrass | Alamo   | 2.0  | N                            | W                | X   | X   | X    | X    | X    | 2/15 - 5/1           |                  | X       | X                 | X      | X               | Adapted to most soils in areas of Texas receiving at least 25 inches of precipitation annually. Tolerates poor drainage.   |              |
| Switchgrass                                     | Local harvest   | 3.5  | N                            | W                | X   | X   | X    | X    | X    | 2/15 - 5/1           |                  | X       | X                 | X      | X               | Same comment as above  |              |
| Fescue Tall                                     | Kentucky 31, other adapted endophyte infected varieties     | 10.0   | I                            | C                |   |     | X    | X    | X    | 9/1 - 11/30          |                  |         | X                 | X      | X               | Best adapted to bottomland soils and marginally adapted clay, clay loam and loamy upland sites in areas of East Texas that receive at least 40 inches of rainfall annually. It should be allowed to reseed every year to help insure persistence. Tolerates low pH and poorly drained soils. |              |
| Fescue Tall                                     | AU Triumph, Jesup, and other adapted edophyte free varieies | 25.0   | I                            | C                |   |     | X    | X    | X    | 9/1 - 11/30          |                  |         | X                 | X      | X               | Same as above. Jesup can tolerate summer heat better than other endophyte free varieties.  |              |
|   |   |  |                              |                  |   |     |      |      |      |                      |                  |         |                   |        |                 |  |              |
| <b>Perennial Legumes and Forbs:</b><br>Alfalfa  |   | <b>15.0 - 20.0</b>   | I                            | C                | X   | X   | X    | X    |      | 8/15 - 10/1          |                  | X       | X                 | X      |                 | Moderately deep to deep, loamy, well drained soils pH 6.5 or greater with good infiltration and water holding capacity.  |              |
| Engelmann Daisy                                 |   | 15.0   | N                            | C                | X   | X   | X    |      | X    | 9/15 - 11/30         |                  | X       | X                 | X      | X               | Adapted to loamy to clayey upland soils throughout Texas, except extreme eastern TX.   |              |
| Illinois bundleflower                           |   | 1.5  | N                            | W                | X   | X   | X    | X    | X    | 2/15 - 5/1           |                  | X       | X                 | X      | X               | Adapted to most upland and bottomland soils in areas receiving at least 15 inches of rainfall annually.  |              |

**Appendix 1 - Planting rates for seeding and sprigging in Texas, Zone 4B**

| Name  | 70                   | Broadcast or drilled seeding rates are pounds pure live seed (PLS) per acre 3/, 5/, 6/ | Native (N) or Introduced (I) | Season of growth | Adaptation by Major Land Resource Areas 11/ |     |      |      |      | Seeding Guidance | Soil 9/              |        |                   |        |                 | Comments 10/  |
|---|----------------------|--|------------------------------|------------------|---|-----|------|------|------|------------------|----------------------|--------|-------------------|--------|-----------------|---|
|   |                      |  |                              |                  | 86B   | 87A | 133B | 150A | 152B |                  | Seeding Dates 7/, 8/ | Coarse | Moderately Coarse | Medium | Moderately Fine |   |
| <b>Perennial Legumes and Forbs:</b><br>Maximilian sunflower | Aztec                | 3.0  | N                            | W                | X   | X   | X    | X    | X    | 2/15 - 5/1       |                      | X      | X                 | X      | X               | Adapted to a variety of soils, favors well drained sunny sites receiving at least 18 inches of rainfall annually  |
| Perennial peanut  | Florigraze, Arkbrook | <b>40 - 60 bu sprigs</b>   | I                            | W                |   |     | X    | X    |      | 1/15 - 3/15      |                      | X      | X                 |        |                 | Best adapted to well drained sandy to loamy soils with pH between 5.0 and 7.5. Moderate cold tolerance.   |
| Prairie clover purple                                       |                      | 3.0  | N                            | W                | X   | X   |      |      |      | 2/15 - 5/1       |                      | X      | X                 | X      | X               | Grows well on high pH Blackland soils. Can cause bloat.   |
| Prairie clover white  |                      | 2.0  | N                            | W                | X   |     |      | X    | X    | 2/15 - 5/1       |                      |        | X                 | X      | X               | Grows well on high pH Blackland soils. Can cause bloat.   |
|   |                      |  |                              |                  |   |     |      |      |      |                  |                      |        |                   |        |                 |   |
| <b>Annual Grasses:</b><br>Crabgrass                         | Red River            | <b>1.0 - 4.0</b>   | I                            | W                |   |     | X    | X    |      | 2/15 - 5/1       | 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                                  |                      | <b>10.0 - 15.0</b>   | I                            | W                | X   | X   | X    | X    | X    | 3/1 - 8/1        |                      | X      | X                 | X      | X               | Adapted to a wide variety of soils, needs pH of 5.5 or greater. Highly productive and responsive to nitrogen. Nitrate or prussic acid poisoning can occur under some circumstances. |
| Forage Sorghum others                                       |                      | <b>20.0 - 30.0</b>   | I                            | W                | X   | X   | X    | X    | X    | 3/1 - 8/1        |                      | X      | X                 | X      | X               | Same as above   |

### Appendix 1 - Planting rates for seeding and sprigging in Texas, Zone 4B

| Name                                    | Variety / Cultivar | Broadcast or drilled seeding rates are pounds pure live seed (PLS) per acre 3/, 5/, 6/ | Native (N) or Introduced (I) | Season of growth | Adaptation by Major Land Resource Areas 11/ |     |      |      |      | Seeding Dates 7/, 8/                                 | Soil 9/ |                   |        |                 |      | Comments 10/  |
|---|--------------------|--|------------------------------|------------------|---|-----|------|------|------|--|---------|-------------------|--------|-----------------|------|---|
|   |                    |  |                              |                  | 86B   | 87A | 133B | 150A | 152B |  | Coarse  | Moderately Coarse | Medium | Moderately Fine | Fine |   |
| <b>Annual Grasses:</b><br>Grain Sorghum |                    | 20.0   | I                            | W                | X   | X   | X    | X    | X    | 3/1 - 6/1  |         | X                 | X      | X               | X    | Same as above   |
| Millet browntop                         |                    | 20.0   | I                            | W                | X   | X   | X    | X    | X    | 4/1 - 8/1  |         | X                 | X      | X               | X    | Adapted to a wide variety of soils, best on well drained loamy, does not do well on calcareous soils. Grows 0.6 - 1.2 meters tall. Acceptable forage for horses.  |
| Millet foxtail                          |                    | 20.0   | I                            | W                | X   | X   | X    | X    | X    | 4/1 - 8/1  | X       | X                 | X      | X               |      | Adapted to a wide range of soils, best on well drained loamy. Not recommended for horses, can cause kidney and joint problems in horses. Grows 0.3 - 1.75 meters tall.  |
| Millet Japanese                         |                    | 20.0   | I                            | W                | X   | X   | X    | X    | X    | 4/1 - 8/1  |         |                   | X      | X               | X    | Used primarily for wildlife, adapted to wet soils.  |
| Millet pearl                            |                    | 12.0 - 20.0  | I                            | W                | X   | X   | X    | X    | X    | 4/1 - 8/1  |         | X                 | X      | X               | X    | Good for hay or silage, not as drought tolerant as forage sorghum. Adapted to a wide variety of soils, best on well drained loamy, does not do well on calcareous soils. Grows 2.0 - 3.0 meters tall.   |
| Millet proso                            |                    | 15.0   | I                            | W                | X   | X   | X    | X    | X    | 4/1 - 8/1  |         | X                 | X      | X               | X    | Used primarily for wildlife food plots. Adapted to a wide range of soils, best on well drained loamy. Matures in about 60 days after emergence.   |
| Oat                                     |                    | 64.0 - 120.0   | I                            | C                | X   | X   | X    | X    | X    | Prepared seedbed 9/1 -10/15, Overseeded 9/15 - 11/30 |         | X                 | X      | X               | X    | Early fall grazing, ability to germinate in low moisture. Least cold tolerant, limited winter forage, poor drought tolerance once established. Usually planted in mixture. Adapted to deep loam and sandy loams. Performs better on wet soils than other cereal grains. Optimum pH range 5.0 - 7.5. Does not perform well in very wet or very dry seasons. Usually not planted in NE Texas due to lack of cold tolerance. |

**Appendix 1 - Planting rates for seeding and sprigging in Texas, Zone 4B**

| Name                                  | Variety / Cultivar | Broadcast or drilled seeding rates are pounds pure live seed (PLS) per acre 3/, 5/, 6/ | Native (N) or Introduced (I) | Season of growth | Adaptation by Major Land Resource Areas 11/ |     |      |      |      | Seeding Guidance<br>Seeding Dates 7/, 8/             | Soil 9/ |                   |        |                 |  | Comments 10/ |
|---------------------------------------|--------------------|--|------------------------------|------------------|---|-----|------|------|------|--|---------|-------------------|--------|-----------------|--|--------------|
|                                       |                    |  |                              |                  | 86B   | 87A | 133B | 150A | 152B |  | Coarse  | Moderately Coarse | Medium | Moderately Fine | Fine   |              |
| <b>Annual Grasses:</b><br>Rye         |                    | <b>56.0 - 120.0</b>  | I                            | C                | X   | X   | X    | X    | X    | Prepared seedbed 9/1 -10/15, Overseeded 9/15 - 11/30 | X       | X                 | X      | X               | Most drought resistant and cold tolerant of the cool season annuals. Prefers well drained sandy to loamy soils. Optimum pH range 5.0 - 7.5. Early maturity produces the most winter forage.  |              |
| Ryegrass                              |                    | <b>12.0 - 30.0</b>   | I                            | C                | X   | X   | X    | X    | X    | Prepared seedbed 9/1 -10/15, Overseeded 9/15 - 11/30 |         | X                 | X      | X               | Best adapted to areas of Texas that receive more than 25 inches of rainfall annually. It is adapted to a wide range of soils, and it is the best cool season annual grass on poorly drained soils. With adequate rainfall it is usually the most productive of the cool season annual grasses, but most of the production will be in the spring. Optimum pH range 5.5 - 8.0. |              |
| Triticale                             |                    | <b>50.0 - 120.0</b>  | I                            | C                | X   | X   | X    | X    | X    | Prepared seedbed 9/1 -10/15, Overseeded 9/15 - 11/30 |         | X                 | X      | X               | Cross between wheat and rye. Usually yields less than rye, oats, and ryegrass. Optimum pH range 5.0 - 7.5.   |              |
| Wheat                                 |                    | <b>60.0 - 120.0</b>  | I                            | C                | X   | X   | X    | X    | X    | Prepared seedbed 9/1 -10/15, Overseeded 9/15 - 11/30 |         | X                 | X      | X               | Good cold and drought tolerance. Good fall and winter production. Least productive of the cool season forages. Adapted to a wide range of soils. Optimum pH range 5.5 - 8.0.   |              |
|                                       |                    |  |                              |                  |   |     |      |      |      |  |         |                   |        |                 |  |              |
| <b>Annual Legumes:</b><br>Alyceclover |                    | <b>3.0 - 10.0</b>  | I                            | W                |   |     | X    | X    | X    | 3/1 - 4/30   | X       | X                 | X      |                 | Best adapted to Gulf Coast and other areas of high summer rainfall. Well drained sandy soils. Tolerant of low pH. Not competitive with weeds at seedling stage.  |              |
| Bur medic (cleaned seed)              | Armadillo          | <b>5.0 - 8.0</b>   | I                            | C                | X   | X   | X    | X    | X    | 9/15 - 11/30   |         |                   | X      | X               | Adapted to well to moderately well drained soils with pH 6.0 or higher. Cold tolerant south of I-20.   |              |

**Appendix 1 - Planting rates for seeding and sprigging in Texas, Zone 4B**

| Name  | Variety / Cultivar            | Broadcast or drilled seeding rates are pounds pure live seed (PLS) per acre 3/, 5/, 6/ | Native (N) or Introduced (I) | Season of growth | Adaptation by Major Land Resource Areas 11/ |     |      |      |      | Seeding Guidance<br><br>Seeding Dates 7/, 8/ | Soil 9/ |                   |        |                 |      | Comments 10/   |
|---|-------------------------------|--|------------------------------|------------------|---|-----|------|------|------|--|---------|-------------------|--------|-----------------|------|--|
|   |                               |  |                              |                  | 86B   | 87A | 133B | 150A | 152B |  | Coarse  | Moderately Coarse | Medium | Moderately Fine | Fine |  |
| <b>Annual Legumes:</b><br>Clover, arrowleaf | Apache, Meechee, Yuchi, Amclo | <b>8.0 - 10.0</b>  | I                            | C                | X   | X   | X    | X    | X    | 9/15 - 11/30                                 |         | X                 | X      | X               |      | Adapted to sandy to loamy soils with pH 5.5 - 7.0 and good drainage. Late maturity, low bloat potential, good cold tolerance. Apache developed in TX.                          |
| Clover, ball                                | Common, Local harvest         | <b>2.0 - 4.0</b>   | I                            | C                | X   | X   | X    | X    | X    | 9/15 - 11/30                                 |         | X                 | X      | X               | X    | Adapted to loamy to clayey soils with pH 5.5 - 8.0 and fair drainage. Late maturity, low bloat potential, good cold tolerance.   |
| Clover, berseem                             | Bigbee                        | <b>12.0 - 15.0</b>   | I                            | C                | X   | X   | X    | X    | X    | 9/15 - 11/30                                 |         | X                 | X      | X               | X    | Adapted to loamy to clayey soils with pH 6.5 - 8.0 and fair/poor drainage. Late maturity, low bloat potential, poor cold tolerance.  |
| Clover, crimson                             | Dixie, Tibbee, Flame, Chief   | <b>15.0 - 20.0</b>   | I                            | C                | X   | X   | X    | X    | X    | 9/15 - 11/30                                 | X       | X                 | X      | X               |      | Adapted to most soils with pH 6.0 - 7.0 good drainage. Early maturity, medium bloat potential, good cold tolerance.  |
| Clover, persian                             | Abon                          | <b>3.0 - 6.0</b>   | I                            | C                |   |     | X    | X    | X    | 9/15 - 11/30                                 |         | X                 | X      | X               | X    | Adapted to bottomland loamy to clayey soils with pH 6.5 - 8.0 and fair/poor drainage. Medium maturity, high bloat potential, fair cold tolerance.                              |
| Clover, red                                 | Kenland, Cherokee             | <b>10.0 - 12.0</b>   | I                            | C                | X   | X   | X    | X    | X    | 9/15 - 11/30                                 |         | X                 | X      | X               | X    | Adapted to loamy to clayey soils with pH 6.5 - 8.0 and good drainage. Late maturity, low bloat potential, good cold tolerance. Biennial, usually acts as an annual in east TX. |
| Clover, rose                                | Overton R18                   | <b>10.0 - 15.0</b>   | I                            | C                | X   | X   | X    | X    | X    | 9/15 - 11/30                                 |         | X                 | X      | X               | X    | Adapted to most soils with pH 5.5 - 8.0 and good drainage. Medium maturity, low bloat potential, good cold tolerance.  |
| Clover, subterranean                        | Karridale, Denmark            | <b>15.0 - 18.0</b>   | I                            | C                | X   |     | X    |      | X    | 9/15 - 11/30                                 |         |                   | X      | X               | X    | Adapted to loamy to clayey soils with pH 6.0 - 7.3 and fair drainage. Early to late maturity, medium bloat potential, fair cold tolerance.                                     |

**Appendix 1 - Planting rates for seeding and sprigging in Texas, Zone 4B**

| Name   | Variety / Cultivar                      | Broadcast or drilled seeding rates are pounds pure live seed (PLS) per acre 3/, 5/, 6/ | Native (N) or Introduced (I) | Season of growth | Adaptation by Major Land Resource Areas 11/ |     |      |      |      | Seeding Guidance<br>Seeding Dates 7/, 8/ | Soil 9/ |                   |        |                 |      | Comments 10/  |
|--|---|--|------------------------------|------------------|---|-----|------|------|------|--|---------|-------------------|--------|-----------------|------|---|
|  |   |  |                              |                  | 86B   | 87A | 133B | 150A | 152B |  | Coarse  | Moderately Coarse | Medium | Moderately Fine | Fine |   |
| <b>Annual Legumes:</b><br>Clover, subterranean | Clare, Nuba                             | <b>15.0 - 18.0</b>   | I                            | C                | X   |     | X    |      | X    | 9/15 - 11/30                             |         |                   | X      | X               | X    | Adapted to loamy to clayey soils with pH 7.0 - 8.0 and fair drainage. Medium maturity, medium bloat potential, poor cold tolerance.   |
| Clover, white                                  | Durana, Patriot, LA S-1, Regal, Osceola | <b>3.0 - 4.0</b>   | I                            | C                | X   | X   | X    | X    | X    | 9/15 - 11/30                             |         |                   | X      | X               | X    | Weak perennial, adapted to loamy to clayey soils (usually bottomlands) with pH 5.5 - 7.5 and fair/poor drainage. Late/perennial maturity, medium bloat potential, good cold tolerance.  |
| Cowpea   | Iron, Clay, Red Ripper                  | 40.0   | I                            | W                | X   | X   | X    | X    | X    | 4/1 - 6/15                               | X       | X                 | X      | X               | X    | Adapted to well drained soils pH range of 5.5 - 7.0. Drought tolerant. Does not bloat. Red Ripper better adapted to sandier soil than Iron & Clay.  |
| Lablab   | Rongai                                  | 20.0 - 25.0  | I                            | W                | X   | X   | X    | X    |      | 3/15 - 5/1                               |         | X                 | X      | X               |      | Adapted to moderately well to well drained soils pH range of 4.5 - 7.8. Not as drought tolerant as cowpea, does not bloat.  |
| Lespedeza                                      | Kobe, Korean, common                    | 25.0   | I                            | W                | X   | X   | X    | X    | X    | 3/1 - 4/30                               | X       | X                 | X      | X               |      | Adapted to well drained soils throughout East and southeast Texas. Optimum pH range is 5.0 - 6.5. Tends to be squeezed out by vigorously growing warm season grasses in highly fertilized situations. Korean less tolerant of soil acidity. |
| Partridge pea                                  | Comanche                                | 13.4   | N                            | W                | X   | X   | X    | X    | X    | 3/1 - 6/1                                | X       | X                 | X      |                 |      | Adapted to sands and sandy loams receiving > 19 inches of annual rainfall.  |
| Soybean  | Tyrone                                  | <b>50.0 - 60.0</b>   | I                            | W                | X   | X   | X    | X    | X    | 3/1 - 6/1                                |         | X                 | X      | X               | X    | Adapted to well drained soils, pH range is 5.5 - 8.0. Drought tolerant when used for forage. Hay is difficult to cure, and if grazed no regrowth occurs. Best used for silage.  |
| Caley pea, Singletary pea                      | common                                  | 35.0   | I                            | C                | X   | X   | X    | X    | X    | 9/15 - 11/30                             |         |                   | X      | X               | X    | Adapted to loamy to clayey soils with pH 5.5 - 8.0 and fair/poor drainage. Medium maturity, fair cold tolerance. Grazing should be discontinued in late spring to avoid seed toxicity and allow reseeding.                                  |
| Sweetclover                                    | Hubam (white)                           | 12.0   | I                            | C                | X   | X   | X    | X    | X    | 9/15 - 11/30<br>3/1 - 3/15               |         |                   | X      | X               | X    | White (annual) and yellow (weak biennial) sweetclovers are adapted to well drained clay to clay loam, optimum pH range 6.5 - 7.5. The use of low coumarin varieties is recommended to reduce problems associated with this plant.           |

### Appendix 1 - Planting rates for seeding and sprigging in Texas, Zone 4B

| Name                                   | Variety / Cultivar           | Broadcast or drilled seeding rates are pounds pure live seed (PLS) per acre 3/, 5/, 6/ | Native (N) or Introduced (I) | Season of growth | Adaptation by Major Land Resource Areas 11/ |     |      |      |      | Seeding Dates 7/, 8/ | Soil 9/ |                   |        |                 |      | Comments 10/  |
|--|------------------------------|--|------------------------------|------------------|---|-----|------|------|------|----------------------|---------|-------------------|--------|-----------------|------|---|
|  |                              |  |                              |                  | 86B   | 87A | 133B | 150A | 152B |                      | Coarse  | Moderately Coarse | Medium | Moderately Fine | Fine |   |
| <b>Annual Legumes:</b><br>Vetch, hairy | common                       | <b>15.0 - 20.0</b>   | I                            | C                | X   | X   | X    | X    | X    | 9/1 - 10/15          | X       | X                 | X      | X               | X    | Adapted to well drained soils with pH 5.0 - 8.0. Late maturity, low bloat potential, good cold tolerance. Cattle develop muscular problem when grazing vetch, especially when seed are forming. Rotating to a pasture that does not contain vetch will minimize this problem. |
| Winterpea<br>Austrian                  | Granger,<br>Fenn,<br>Melrose | 35.0   | I                            | C                | X   | X   | X    | X    | X    | 9/1 - 10/15          |         | X                 | X      |                 |      | Adapted to loam to sandy loam soils with pH 6.0 - 8.0 and good drainage. Medium maturity, fair/good cold tolerance. Best used w/small grain for silage, does not tolerate grazing very well.  |

### Appendix 1 - Planting rates for seeding and sprigging in Texas, Zone 4B - FOOTNOTES

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

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

3/ PLS = Pure Live Seed. To compute PLS from seed analysis information: Percent PLS = (% germination + % hard [dormant] seed) X % pure seed. 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. **Where a seeding rate range is provided the planner will recommend a rate based on purpose of the seeding, site conditions, site productivity, potential weed pressure, future management planned, etc.**

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/ Seeding rates for row planting (spacing 21 - 40 inch) of any of the species in the Table will be determined by using 1/3 of the broadcast or drilled rate (spacing 20 inch or less).

7/ See Table below for average (70% chance) last freeze and first freeze dates for each Resource Team. Field office personnel should use these dates as a guide, and not initiate planting of warm season species earlier than 2 weeks before the spring date, unless otherwise noted in the Table. Seeding dates for warm season species will not be extended to less than 6 weeks before the fall date, unless otherwise noted in the Table. **Local Field Office personnel may approve planting up to 2 weeks before or after the dates in the Table if local site conditions are suitable for planting, germination, and establishment of the selected species.** Any further variance outside the dates in the Table must be approved in writing from the Zone Office.

8/ The optimum planting depth for sprigs & tops is 1.0 to 3.0 inches, small seeded (>35000 seed per pound) species is 1/8 to 1/4 inch, large seeded species 3/4 to 1.0 inches unless it is otherwise noted for the individual species.

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.

## Appendix 1 - Planting rates for seeding and sprigging in Texas, Zone 4B - FOOTNOTES

10/ Additional information on adaptation is available in species specific NRCS Job Sheets, Texas Cooperative Extension Service publications, Texas Agricultural Experiment Station publications, and from the references listed on the reference sheet.

11/ For species best suited to high saline and/or tidally influence areas see Texas Agronomy Technical Note TX-12.

| <b>County</b>                           | <b><u>Last Spring<br/>Freeze Date</u></b> | <b><u>First Fall<br/>Freeze Date</u></b> | Based on NRCS county weather data |
|---|---|--|-----------------------------------|
| Brazos<br>Grimes<br>Robertson<br>Waller | 2/11                                      | 12/18                                    |                                   |
| Galveston<br>Harris<br>Montgomery       | 2/12                                      | 12/16                                    |                                   |
| Hardin<br>Liberty                       | 2/13                                      | 12/10                                    |                                   |
| Chambers<br>Jefferson<br>Orange         | 1/31                                      | 12/28                                    |                                   |
| Leon<br>Madison<br>Walker               | 2/16                                      | 12/10                                    |                                   |

**Spring last freeze dates**, most restrictive date within the team for 70% occurrence of 28 degrees F.

**Fall first freeze dates**, most restrictive date within the team for 70% occurrence of 28 degrees F.