TEXAS FOREST SERVICE
The Texas A&M University System

AgriLIFE EXTENSION
Texas A&M System

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To Plant or Not To Plant:

New Timber Stand Drought Risk Assessment

Texas has experienced some tough environmental conditions over the last decade. These conditions have led many to ask the very relevant question, to plant or not to plant. Review the CHECK LIST below to determine if YOU are ready to plant this season. If yes, then make sure to visit with a natural resource professional to discuss planting strategies, specific to your site, that will promote success and productivity. *Note: The ability to predict localized weather conditions with any certainty is very limited. The tools below provide only approximations. The decision to plant or not should be based on ALL points listed below and, ultimately, according to your risk tolerance to loss under extreme weather conditions. There are no guarantees!*

☑ PROFESSIONAL ASSISTANCE: I am working with a qualified forester that uses reputable crews with a proven track records with site preparation, pest control, competition control, seedling care at all times, AND will take the time to plant seedlings correctly.

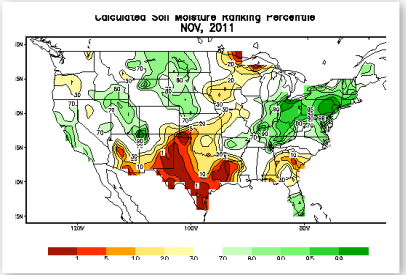
☑ SITE QUALITY: Site is highly suitable for tree production and is not limited by soil type, slope, moisture (too much or too little), soil compaction, or soil nutrition. Poorer sites cause greater stress on newly planted seedlings even in periods of adequate rainfall. Drought and heat can easily desiccate seedlings on poor sites. Poor sites offer little, if any, chance of providing financial gain.

☑ SITE PREPARATION: I have ordered the appropriate seedlings for my site and goals. The necessary site preparation activities to minimize competition, control regeneration pests, and improve site conditions have been done or will soon be done. Cost share applications, if available, have been submitted and approved. Due to the financial investment involved, the site should be well-prepared and all planning done well before planting to provide the best chance of success. If you have not adequately prepared the site, do so next summer prior to planting or consider allowing site to naturally regenerate.

☑ PLANTING: The season of planting may influence seedling survival

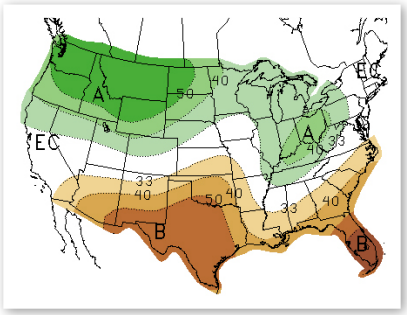
- *Fall Planting* (Lowest risk of loss): Fall planting takes place mid-October through November. Properly planted seedlings have adequate time to establish a substantial root system before droughty summer conditions minimize soil moisture. Containerized seedlings are required which cost more than bare root seedlings but fewer seedlings per acre are needed.
- *Winter Planting* (Moderate risk of loss): Winter planting is done from December to mid-February. Although a good season to plant in times of adequate rainfall, winter planting provides less time for seedlings to establish root system and acclimate to the site than fall-planted seedlings thus increase risk of loss. Either bare-root or containerized seedlings may be used.
- *Spring Planting* (Highest risk of loss): Spring planting ranges from late-February to April 1. Seedlings may not have time to grow the root system required to acquire moisture at greater depths in the soil before the droughty summer months limit soil moisture.

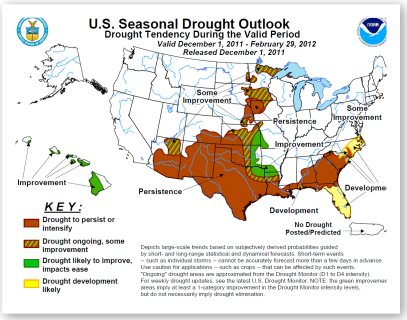
☑ SOIL MOISTURE: The site has sufficient soil moisture at the time of planting to prevent seedlings from desiccating. Often soil moisture is adequate for fall and winter planting starting mid-October. Droughty conditions during the previous summer may limit soil moisture even if some rain occurs during the fall and winter months. The soil moisture and seedling survival relationship still requires more research. However, the Monthly Soil Moisture Percentile map provided in the following link provides a snapshot of current conditions. For example the percentile for November 2011 (image right) was 1 - 10 % of



capacity (red & orange) for much of East Texas. Soil moisture in the range of 30-70% (white) is considered normal. Soil moisture should be above 30% (at the very minimum) to consider planting with minimal risk. If at the time of a Fall Planting soil moisture is too limited, then delay planting until winter to see if conditions improve. If soil moisture is still inadequate in the winter, then postpone reforestation until next planting season. Local soil moistures conditions may be obtained at the local Texas Forest Service or Texas AgriLife Extension Service office. http://www.cpc.ncep.noaa.gov/products/Soilmst_Monitoring/US/Soilmst/Soilmst.shtml

☑ PRECIPITATION OUTLOOK: Forecasts call for sufficient precipitation for the next few months. Weather condition during the spring and summer play a major role in the success or failure of a newly-planted stand. Risk of failure increases dramatically if the 3 month precipitation outlook indicates greater than a 25% chance of below average precipitation over the next 3 months. This risk is worsened if significant rain fall deficits occurred during the previous summer. Use the links below to obtain a 3-month estimates. On the site, select 3-month, and precipitation. The number on the map indicates the probability of that event occurring. For example, the brown area on the map at the right indicates a 40% chance that precipitation during December 2011 - February 2012 will be below average. Delay planting until next planting season if the precipitation outlook for the next 3 months in not favorable. http://www.cpc.ncep.noaa.gov/index.php





☑ LONG-TERM DROUGHT POTENTIAL: Chance of persistent drought is minimal for the next 2 - 3 years. A newly-planted stand may take 3 years to become fully established on the site. Weather condition during that time dictates productivity and survival. In 2011, for example, Texas was anticipating a 25% chance that drought would persist another five years. However, nobody really knows because long-term conditions are much more difficult to predict. Below you will find several sites to visit with both short- and long-term drought predictions. Long-term predictions are far less accurate, but can be a useful tool for planning.

- *US Drought Assessment* (monitor and outlook) http://www.cpc.ncep.noaa.gov/index.php
  As shown in the map (above right) for the period of December 2011 to February 2012, drought in Southeast Texas is anticipated to persist or intensify (brown), while drought in much of northeast Texas is expected to lessen (green)
- *2011 Winter Predictions* http://www.noaanews.noaa.gov/stories2011/20111020_winteroutlook.html
- *Palmer Drought Severity Index* (PDSI) can also be used as a value in the following prediction equation by Zwolinski et al. (1994).

  % survival = 60.74 + 3.49 (PDSI)

  Example: Say that the average PDSI for October - December was -4. So, % Survival = 60.74 + 3.49 (-4) = 46.8 % chance that seedlings will survive the first summer following planting if, and only if, all site preparation, competition control, and seedling care and planting are all implemented as appropriate. PDSI can be found at http://www.cpc.ncep.noaa.gov/products/monitoring_and_data/drought.shtml.

☑ PLANTING RECOMMENDATIONS: If you choose to plant, please make sure to visit with a natural resource professional to discuss strategies specific to your site that will minimize risk. Remember, even in good moisture conditions, great care must be taken to prepare the site, control competition, minimize pests, and ensure that the seedlings are handled with care throughout the entire process. For more information, refer to *New Pine Planting Strategies for the Western Gulf States* at. http://www.sref.info/resources/publications/print_pubs/new-pine-planting-strategies-for-the-western-gulf-states

Zwolinski, J, South, DB, Barber, BL, Edwards, MB. 1995. Drought and survival of loblolly pine seedlings after planting. Proceedings of the Eighth Biennial Southern Silvicultural Research Conference. (Auburn, Alabama, 1-3 Nov. 1994.) USDA-Forest Service General Technical Report. #SRS. Pp.419-423.