



Project Summary

Texas Department of Transportation

0-5212: Comparison of Alternative Seed Mixes to Standard TxDOT Specifications

Background

This project surveyed available native grass species and tested selected varieties as part of a mix under roadside conditions to determine which, if any, may be desirable additions to the current seeding program. The project also investigated the effects of increased seeding rates of selected grass species and the effect of higher rates of compost-derived nitrogen fertilizers on plant growth and nutrient leaching.



Outdoor Plot Preparation

What the Researchers Did

For the native seed mix comparison the research team assembled alternative seed mixes comprised entirely of commercially available native plant seed. The seed mixtures were tested on soils representative of the general soil types (clay and sand) and pH as found in west, south, east, and north Texas. The current standard mixtures used for testing were from the Texas Department of Transportation (TxDOT) districts representative of the following regions: Austin (central and west Texas), Corpus Christi (south Texas), Lufkin (east Texas), and Abilene (north Texas). See the project's final technical report (0-5212-1) for all-native and standard TxDOT seed mixes.

The research team also compared the standard TxDOT seeding rates to two increased seed rates by installing each seed mix to soils imported from various districts using the increased seed rate. See the project's final technical report for the two increased seed rates and the standard TxDOT seeding rate.

Research Performed by:

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For both seed studies (all-native vs. TxDOT standard and the increased seed rate vs. TxDOT standard), indoor greenhouse trials and outdoor test plots were utilized to conduct the tests. The following data were collected from all test plots:

- total percent vegetation cover at 60 days, 90 days, 120 days, and 12 months, after installation;
- individual species height and overall plot height;
- individual species total percent coverage; and
- photographic documentation at the time of installation and at each data-collection period.

This project looked at the following fertilizer/compost applications to determine if there was any harmful leachate runoff:

- 13-13-13 TxDOT Standard Fertilizer Formulation - Applied at 300 lb/acre (39 lb nitrogen/acre)
- 23-0-3 TxDOT Standard Fertilizer Formulation - Applied at 100 lb/acre (23 lb nitrogen/acre)
- 6-3-0 Organic Compost-derived Fertilizer - Houactinite surface-applied at 4000 lb/acre (240 lb nitrogen/acre)

What They Found

Based on test results, the research team does not recommend the inclusion of an all-native seed mix as part of TxDOT practice for the following reasons:

- When compared to the TxDOT standard mixes, the all-native seed mixes established lower percent vegetation cover, or showed no significant difference, during the test period as well as a slower germination rate in 17 out of 18 test applications.
- While there were many individual native seed species that produced well, almost all of these particular seeds species are already included in the current TxDOT standard seed mix.

Runoff from the two standard fertilizer applications and the organic compost-derived fertilizer application all fell within the acceptable limits for irrigation water. In all cases, the allowable parts-per-million were below accepted levels for irrigation water. Only total dissolved salts were high in the drinking water category. Based on these results, the higher levels of nitrogen application of the Houactinite and the addition of compost to the topsoil do not pose a problem for runoff water quality.

What This Means

The research team has determined that current TxDOT vegetation establishment practices (including seeding) mirror the most widely accepted standards of practice used by agencies, programs, and practitioners throughout the United States. Applied as general rules and fundamental practice, they have been well-suited to meet the vast majority of vegetation establishment needs.

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