

Geotech® at Westvaco

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Nursery bed stabilization to reduce seed and seedling losses due to water and wind erosion has long been a subject of trial and error. Due to strong winds at planting time, and occasional heavy spring rains, we incorporated Geotech into our 1987 cultural operations. We were excited about the stabilization qualities of this water-resistant co-polymer resin. Tree Planters' Notes 40(2): 3-4 ; 1989.

Westvaco has used the full gamut of different mulches and even no mulch. Years ago pine straw was used, and it probably remains one of the most efficient stabilizers of seedling beds. However, due to cost, availability, time, etc., we moved on to what we thought were better things.

We used hydromulch for several years and experimented with every type of hydromulch we could purchase. Hydromulch did a satisfactory job with wind erosion, but left a lot to be desired on water erosion. It also contributed to sand splash, and bred a hybrid ailment we refer to as "sanulch." Sanulch is a combination of sand and mulch forming on the young seedlings' stems and needles, resulting in slow growth and/or mortality. We tried no mulch after seeding

Presented at the Southern Forest Nursery Association meeting, Charleston, SC, July 25, 1988.

and had surprisingly good results with 4 years of data. Planting deeper and planting early seems to be the key.

Bed washing due to heavy rains remained a problem. We then tried pine nuggets. This material has admirable qualities, but it also comes with a high price tag in our area, costing four times the price of sawdust. Even with nuggets, some minor bed edge deterioration was still evident.

This brings us to Geotech® (Borden, Inc.) a water-resistant co-polymer emulsion designed for control of various types of surface erosion (1). Geotech cures to an invisible film that forms a crust with the surface soil. This crust prevents slope or surface deterioration due to wind, rain, or irrigation.

Design and Applications

We modified our 800-gallon Finn Hydromulcher to apply Geotech. We took the nursery bed splashboard off and built a double-hinged triple-spray boom capable of spraying three beds at a time. The boom line itself is 1-inch galvanized pipe with fifty-one #8020 tee-jet nozzles on 12-inch centers in a diamond pattern with one cut-off valve for each section and a pressure gauge on each hinged section end.

Spraying pressure should be maintained at approximately 40

pounds/square inch. Nozzles should be used without screens. We also disarmed the paddle wheel agitator to keep foaming to a minimum. The bypass continued to operate, keeping the solution in suspension. You must have some agitation continuously. If you use a hydromulcher that has any age associated with it, be sure you sandblast or clean the inside of the tank thoroughly, and paint. If you do not, you will spend many hours in unproductive nozzle cleaning.

Like everyone else, we keep changing and modifying our operations and equipment. By the time you read this report, we will probably be using a hydraulic pump or jack shaft PTO to drive our pump rather than the four-cylinder gasoline engine now on the unit.

Geotech is somewhat messy on equipment if not cleaned off immediately. It adheres to the air intake screen, etc., making the engine run hot. We also plan to use drop nozzles instead of stationary nozzles on bed edges. Installing a line filter would be beneficial.

Our primary objective last year was to control wind erosion in our most wind-vulnerable fields. We applied Geotech at two rates: at approximately 1:12, (40 gallons Geotech mixed with 480 gallons water) and 1:9 (55 gallons Geotech mixed with 495 gallons water). The total volume

of solution should be about 550 gallons/acre regardless of Geotech rate. The higher rate retained the bed structure for a longer period of time. We plan a compromise between the two this year.

We mix Geotech in the field using a 4-inch quick-release water line from the irrigation pump and a transfer pump in 55-gallon drums, which are loaded on a 5-ton flatbed truck. The transfer pump pulls Geotech directly out of the drums into the Finn machine. A screen attached to the intake line of the transfer pump acts as a filter. Fill-up, wash-off, and nozzle checks take about 10 minutes per load. We treat approximately 1 ½ acres per tank and spray at 3 miles/hour, immediately after seeding on a bed with no mulch. We wait 2 hours before irrigating or applying herbicide to allow Geotech time to cure.

Summary

Geotech was applied on 75% of our seedbeds last year with very good results and will be applied on 100% this year. It did not affect germination nor bed temperatures, and seedling survival increased several percentage points. It also eliminated sand splash. At this point, there appear to be no ill effects on soil characteristics. We will continually monitor for such effects.

A few words of caution: *be careful of seed placement!* Seed should be covered lightly with approximately ¼ inch of soil. This is somewhat deeper than some of us have planted in the past. Before applying Geotech, make sure the bed is moist—not wet and not dry. Ground temperature should be 55 °F or above. If applied under the correct conditions, it is possible to get ¼-inch penetration, with

? inch being the norm. In conclusion, Geotech was superior to sawdust for wind and water erosion in our nursery. This is based on only 1 year's results, but we plan to stay with Geotech applications in the future.

Literature Cited

1. Borden Chemical. 1986. *Geotech* EA-11044 Data Sheet.