ALGIN MULCH FOR SEED SPOTS

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Small-scale tests are being undertaken at the Petawawa Forest Experiment Station to determine the feasibility of using Keltex FF, an industrial grade of an Algin derivative, as a mulch to improve the micro-environment of seed spots on exposed sites where high surface temperatures and drought often limit germination and establishment.

Algin products which are derived from seaweed have many industrial uses in the form of colloidal suspensions and gels. Keltex FF has received considerable attention as an aid in fire control (1), (2) and (3), and is available in quantity at a cost of about \$120.00 per 100 pounds. Keltex-thickened water combines readily with very small quantities of calcium chloride to produce an instantaneous gel that clings easily to all surfaces, builds up a thick layer of water which absorbs more heat energy, and leaves a plastic-like film when the water finally evaporates. A mulch of this nature may be useful in conserving soil moisture and reducing surface temperatures during the critical period of germination and early establishment of tree seedlings.

Tests in 1961 indicated that Keltex-thickened water alone, without the calcium chloride additive, was not a satisfactory mulch; for the solution was absorbed into the surface soil and formed an almost impervious, cemented surface. The addition of a 0.5 per cent calcium chloride solution to Keltex-thickened water produced a satisfactory clear gel which had a consistency of thick pancake batter that could be applied readily to seed spots (Figures 1 and 2). Field tests with red pine (*Pinus resinosa* Ait.) showed that the mulch, in concentrations of up to 3 per cent Keltex by weight, had no chemical or physical inhibiting effect on germination and establishment. Unfortunately, weather was so favourable during the test that no significant differences in germination and growth were apparent between various treatments. On plots receiving only natural precipitation, moisture evaporated from the mulch leaving a very light parchment-like residue (Figure 3). Evaporation from this residue was intensified as the new germinates forced it off the surface (Figure 4) until, finally, the new seedlings were exposed to full light (Figure 5). On plots that were watered daily, seeds germinated under the continuously moist gel and developed satisfactorily through the gel that gradually deteriorated and became absorbed into the soil (Figure 6).

More extensive field trials are planned to determine whether the gel will have a sufficiently favourable effect on germination and survival under severe conditions of drought and temperature to warrant practical application.

REFERENCES

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