HYDRO-GEL® and VITERRA® (SUPER ABSORBENTS) USED AS A PACKAGING MULCH FOR SEEDLINGS STORED AND OUTPLANTED

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ABSTRACT -- As nursery people, our mission is to grow the highest quality seedling possible and to deliver those seedlings to the user in the best possible condition. Packaging and storage of the seedlings are the last stage of the harvest operation and can mean the difference between success and failure of the seedling when outplanted. The use of "super absorbents" help to assure the success of outplanting by maintaining an adequate moisture supply to the root system. Hydro-Gel and Viterra® have been chosen by Hiwassee Land Company as the preferred wetting agents for protecting its seedlings after packaging.

During the 1979-1980 planting season, we began experimenting with the new product called "super slurpers," or acrylate starch, as a seedling mulch in our packaging operation. We liked what we saw. However, there were some problems with the first product during non-refrigerated and prolonged storage (Barnard and Rowan, 1981). That product since has been labeled for short term use and works well at that. Prior to this time, spaghnum moss had been our mulching medium. We had tried others, such as hydro-mulch and peat, but moss seemed to fit our operation best. Moss was a labor-intense product that required tearing apart and shredding and prior soaking. It was also bulky to handle and expensive. For example, a 25 million seedling crop required about 5000 bales at a cost of $25,000 or $1.00 per thousand seedlings (1980 cost). It also posed a potential health hazard by exposing the handlers to the danger of contracting a lymphatic disease called, Sporothrichosis (Skilling, 1983). The introduction of a new product was a welcome sight: It

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is not often a new product is introduced that will be cheaper, easier to use, safer to handle and still continue to be beneficial long after its initial use. The long lasting effect has been particularly important during these last years of deficit rainfall. Cost of the product alone saved us approximately 15 to 16 thousand dollars annually, not to mention labor savings.

Now, let me say here, Hiwassee Land Company is in no way endorsing one product over the other. As new super absorbents have come on the market, we have tried them. We have found them all to be good. They all serve the purpose well. We have simply chosen Hydro-Gels and Viterra® because they seem to suit our operation best. Hydro-Gel®, a fine textured powder, seems to mix easier and quicker than Viterra®, a crystal. Once mixed, they both can be applied with equal ease and with equal "clingability." Quicker mixing means less down time, so Hydro-Gels is used as our packaging mulch and is applied as a spray.

We mix to a consistency of thin applesauce or about 5 to 6 pounds per 100 gallons of water, in bulk rates of 350 gallons. This amount will mulch approximately 275 thousand seedlings. This mix is transferred through a 2 inch pipe using a high volume, low pressure centrifugal Teel pump, model TP895, driven by a 3 phase 1 horsepower Dayton electric motor. The 2 inch pipe supplies up to eight (8) baling stations and is reduced to a 3/4 inch hose at each station. The gel is delivered to the seedlings through a common pistol-grip nozzle. We try to cover the root systems but try not to over-saturate.

Viterra® is used in the field at the same rate or consistency of 5 to 6 pounds per 100 gallons of water and usually mixed in 5 to 20 gallon lots. The seedlings are then dipped by the double handful in the solution. We encourage this use to supplement the nursery application.

I have given you the advantages of using super absorbents. Now let's look at the negative side.

First is safety. Used as we do in the packing shed, excessive application can cause dripping, splashing, and run off. Hydro-Gel ® or any super absorbent on concrete is ultra slippery, so caution must be taken.

Secondly, super absorbents can be uncomfortable to handle during cold weather. We have received some complaints from planting crew.

Finally, it adds bulk to the package or bale in our case. Excessive amounts can add several pounds causing a further safety problem in the field when handling the bales.

In summary, we feel that the use of super absorbents such as Hydro-Gel ® and Viterra ®, when used properly, can and has enhanced the success of the company's regeneration program through better survival and growth, particularly during these last 3 to 4 years of rainfall deficits.

Literature Cited

Skilling, D. D. 1983 Fall Tree Planters notes, Sporotrichosis - A Disease Hazzard for Nursery Personnel and Tree Planters. U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station, St. Paul, Minnesota.

Barnard, E. and Rowan, J. 1981. U.S. Department of Agriculture, Forest Service, reply to 3230 Forestation and Tree Improvement, Wood Fiber and Gelantinized Starch Should be Carefully Evaluated as a Seedling Packing Media.