

## The Effect of MH30 on Grass and Pines

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The Beech Creek Seed Orchard near Murphy, N. C., presently covers 240 acres. It is in an area of rolling land with 5 to 30 percent slopes. Because of the topography it was necessary to establish a heavy grass cover. Problems of shading and crowding of ramets developed. In addition the tall grass made it difficult to see the smaller ramets and stakes, therefore some were lost when mechanical equipment was used in the orchard work. Mechanical equipment and some hand labor was tried to reduce the grass cover around the ramets, but these operations proved quite expensive. What was needed was a method to reduce the cost.

In addition it was felt that a method was needed to reduce the height of the ramets, without reducing the production of viable seed. If this could be done, there would be considerable savings in the cost of orchard treatments, such as spraying for insects and diseases, cone collection, mowing, etc.

With these problems in mind I contacted U.S. Rubber to get any information they might have available on the effectiveness of maleic hydrazide (MH30) as a growth retardant

MH30 had been used for over eight years as a growth retardant of grass. (1) There was a wide range of results from the different tests on grasses. They ranged from no control through the killing of the grass. A majority of the tests, however, showed some degree of height control.

In some of the tests with conifers, Trandeen, (2) obtained a shortening of internodes and distance between whorls of Christmas trees: Rai and Hamner, (3) found that growth of scotch and jack pine was inhibited two weeks after spraying but effects were less pronounced at the end of the summer.

From this information it was decided to set up an operational area for grass height control. An acre of fairly level bottomland site was selected. It was covered with a heavy stand of Kentucky 31 fescue except for small patches of white dutch clover and a small patch of sedge grasses. The area was treated with a spray mix of: 4 pounds acid equivalent of MH30 in 50 gallons of water. The mixture was applied, using 3-gallon pressure type hand sprayers. The spraying was done the last of May,

and at a time when no rain was forecasted for over twenty-four hours. This gave favorable conditions for the absorption of the MH30 by the grass. Because MH30 is soluble in water, rain will reduce the effectiveness of the chemical by washing it off the plants. A check was made in July to see what effect the MH30 had on the treated area. The treated grass averaged about 18 inches tall; the untreated was over 36 inches tall. The treated grass had very few seed heads while the untreated grass had a heavy seed crop. In addition the treated grass had heavier and thicker leaves. This was probably due to the action of MH30 which inhibits cell division, but will allow cell growth.

The MH30 appeared to have no effect on either the clover or the sedge grasses.

In April 1966 an application of MH30 was made along the unplanted stake rows for grass height control. The mixture was applied at the same rate as had been used previously, in a band about three feet wide along each row. A trailer mounted Berkly pump, developing 35 PSI, was used to spray the area. No attempt was made to saturate the area.

Some of the sprayed area was planted with shortleaf, Virginia and white pine ramets in June and July. There were no visible effects on these trees. Hoffman, et al. (4) found that plants took up very little maleic hydrazide from the soil under a normal spray program.

As on the previously treated area the treated grass was shorter and had very few seed heads. The treated areas also had a darker green appearance than the untreated areas. The reduction in the number of seed heads helped reduce the amount of new grass coming in around the ramets during the latter part of the summer. This will be of considerable help this year as we plan to reduce the depth of our mulch due to our rodent problem.

In July, I sprayed some Virginia pine and white pine seedlings with a mixture of 4 pounds acid equivalent MH30 in 50 gallons of water. The spray was applied to the drip point. Two weeks later a check was made to see what, if any, the effects were. There appeared to be no effect on the white pine but the branch tips on the Virginia pine were

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killed back for three or four inches.

A check this spring showed some of the Virginia pine were beginning to produce new shoots but the recovery was erratic. The spring check of the white pine showed some killing of the branch tips with no apparent new growth. A check made the last of May showed some Virginia pine had been killed.

Two different methods of MH30 spray applications were made in May of this year. The first spray application was made directly to the shortleaf pine and white pine crowns. The second spray application was made to the grass around the base of the seedlings. No attempt was made to keep the spray from getting onto the seedlings. The mixture was the same (4 pounds acid equivalent in 50 gallons of water) as had been used previously.

After two weeks no effect has been observed.

#### Summary

Maleic hydrazide has given satisfactory results as a growth retardant for grass on the Beech Creek seed orchard. It not only reduces the heights of the grass but also reduces its ability to produce seed.

When used on pines in limited tests, MH30 killed back the branch tips on Virginia pine and white pine. Further testing is needed to find out if this chemical could be used effectively as a growth retardant in seed orchards.

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