

# TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

*Hydroseeding and Hydromulching  
(Abstracted from U.C. Davis Research Reports)*

TN - Agronomy - 28

Berkeley, California  
April 1973

Recent data on "hydroapplication" of seed, fertilizer and organic mulches to soil has immediate practical value to conservationists who make recommendations for critical area treatment. The research was conducted and reported by the Department of Agronomy, University of California, Davis. Pertinent information abstracted from the reports follow:

## Reference 1

Five mulch materials were hydromulched onto a stepped or serrated slope near Applegate during November 1971, following seeding and fertilizing. The mulches included washed and screened dairy waste, ground paper mulch (recycled newsprint), commercial wood fiber, rice hulls (whole and ground) and barley straw ground to pass one-fourth inch mesh.

The dairy waste was applied at 2- and 4-ton dry weight per acre. Paper mulch was applied at 0.5 and 1 ton rates. One-half ton rates were used for the hulls, straw and wood fiber. An organic adhesive "Verydal Super" at 80 lb./A was compared with "no adhesive" on dairy waste and straw mulched plots. All materials were applied in water at 3,000 gallons per acre using a "Spray Baby" hydroseeder.

All materials excepting the barley straw were easily applied with the hydro-seeder and no differences in erosion between treatments were discernible. The results indicated two tons of dairy waste per acre was excessive. More than the 0.5 ton of rice hulls used is needed, perhaps as much as two tons for effective coverage. The Verydal Super did not improve plant establishment or mulch retention.

In this particular test plant stand was not improved by any of the mulches. The 8-inch serrations kept seed in place and subsequent rains gave stands even where no mulch was used. The 4-ton maximum application of dairy waste tended to smother the stand. Other rates and mulches used did not interfere with stand establishment.

The paper mulch was mostly gone after four weeks and three inches of rainfall. Other mulches persisted satisfactorily.

Reference 2

Experiments were conducted to determine the amount of damage caused to seeds by a hydroseeder using a 3 x 3-inch Garman Rupp self priming centrifugal pump and a Model 2500/1B Bowie hydroseeder using a gear pump with rubber covered gears. Agitation in the first machine was by recirculating the slurry through the centrifugal pump. Agitation in the Bowie tank was by paddle.

Topar pubescent wheatgrass was used in conducting the tests, both with and without wood-fiber mulch. Seed germination was reduced to 10% by one hour and to 1% by two hours.

No significant damage occurred in the "Bowie" tank in one hour. Two hours reduced germination to about 60%. Wood fiber had no apparent effect.

Based on this experiment, hydroseeders with gear pump and paddle agitation are to be preferred, with seed time in the tank kept to practical minimums. Machines with recirculating centrifugal pumps should not be used without wood fiber, and seed time in the tank should be limited to 20 minutes. No more than 1,200 pounds of wood-fiber per acre should be intermixed with seed because the mulch separates much of the seed from mineral soil, greatly reducing chance of establishment. Separate seeding followed by mulching is preferable when circumstances permit. Hand broadcasting with a breast seeder should not be ruled out when only hydroapplicators with centrifugal pumps are available, and the area to be seeded is accessible for hand broadcasting.

Reference 3

Work was conducted at the Hopland Field Station with subclover seed to determine if inoculant can be held effectively on legume seed during hydroseeding. The seed was pellet-inoculated with four times the supplier's recommended rate of Rhizobium bacteria, using the UC system of pellet inoculation with gum arabic as an adhesive and ground calcium carbonate for coating. The results indicated that the pellets would withstand up to 30 minutes in a slurry circulated by a self-priming centrifugal pump type hydroseeder and retain sufficient Rhizobium bacteria for successful inoculation of the subclover.

Marvin F. Hollingshead, State Conservation Agronomist

References: University of California Agronomy Reports

1. Report No. 39, New Mulch Materials Tested for Hydroseeding, Burgess L. Kay, July 6, 1972
2. Report No. 43, Hydroseeding Limitations and Alternatives, Burgess L. Kay, August 6, 1972
3. Report No. 44, Pellet-Inoculated Legume Seeds are O.K. in Hydroseeding, Burgess L. Kay and Milton B. Jones, August 17, 1972