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The Use Of Emulsified Asphalt For Mulching

This is an excerpt from a presentation made by H. Fred Waller for the Asphalt Institute at the 1995 Annual Meeting of the International Erosion Control Association in Atlanta, Georgia.

Although the primary use of asphalt has always been in highway and airfield pavement mixtures, there are many other uses for this versatile material. These uses include water treatment basins, aeration basins, fish breeding ponds, water storage basins, liners and caps for sanitary landfills, sludge beds and asphalt mulching. Asphalt emulsified in water with an emulsifier makes an excellent mulching agent.

An asphalt emulsion consists of three basic ingredients: asphalt, water and an emulsifying agent. In some instances the emulsifying agent contains a stabilizer. It will hold a slurry containing mulch, seed, fertilizer and water in place until the seed can germinate.

When applied in field situations, the water evaporates from the emulsion, leaving the residual asphalt. In the case of hydro-seeding, the residual asphalt is in the form of a light coating on the mulch (straw or hay) to hold it in place until the seed can germinate. There are two ways of using emulsified asphalt for mulching. One is to apply the asphalt alone, in a spray film, on the seeded areas. The other is to use the liquid asphalt as a "tie-down" for straw or hay mulch.

Asphalt Spray Mulch

As a spray, the asphalt emulsion is applied to the seeded area in a thin film of asphalt spray. This thin film has three beneficial effects:

First, it holds the seed in place against the eroding forces of wind and rain.

Second, because of its dark color, it absorbs and conserves solar heat during germination.

Third, it tends to hold moisture in the soil, promoting rich and speedy plant growth.

As the seedlings emerge from the soil, the thin film of asphalt shrinks and permits them to poke through without hindrance. Eventually the thin asphalt film disintegrates or dissipates within the soil mass.

In preparing the seeded area, all ridges and holes should be leveled and filled. Otherwise, distribution of the asphalt will not be uniform. If there are holes, the asphalt may flow and form puddles, slowing seed germination. After preparing the area, seed and fertilizer are spread—either by machine or hand. After seeding, the sower sprays the area at the prescribed application rate. The asphalt can be applied by hand, through a spray nozzle, or with a distributor bar attached to an asphalt distributor truck.

The asphalt commonly used in mulch spray applications is asphalt emulsion (SS-1, CSS1, or MS-2). It is usually applied at a rate of 0.15 to 0.30 gallons per square yard, depending upon the soil and the slope of the area being treated. The rate of application is important. Too much asphalt may seal the soil, delaying growth, while too little asphalt may not hold the soil against erosion by wind and water.

Asphalt Mulch Tie-Down

There are two common methods for "tying down" straw and hay mulch with asphalt. We'll call them Method A and Method B. Method A involves spreading the straw or hay over the area, then blanketing it with an asphalt fog spray. Method B employs a mechanical blower which blows the mulch simultaneously with the asphalt, fertilizer and seed.

The asphalt tie-down method has a number of advantages over the practice of actually tying-down the mulch with wooden pegs and twine. Very little hand labor is required and the seeded areas do not experience the damaging effect of men and machines tracking about the slopes.

Method A: After the area has been prepared, straw or hay is usually applied by a blower. When the mulch is in place, the seed is mixed with water and fertilizer and the mixture sprayed by hydraulic applicator. The liquid asphalt emulsion is then sprayed over the seeded mulch, locking it into place.

The asphalt may be sprayed over the mulch in a variety of patterns-a saw-tooth pattern or a checkerboard pattern. The most common method, however especially in high winds, is the application of the asphalt in a solid pattern with a specially designed single-spray nozzle-or in certain cases, a specially designed spray bar. The asphalt is applied at the rate of 0.10 gallons per square yard and the mulch is spread at 1.5 to 2 tons per acre. When a larger mat of mulch is used, the application rate should be increased proportionately.

Method B: After preparing the area for seeding, and after spreading the seed and fertilizer, the mulch and asphalt are placed in a single, blended application. A special blower with twin jets ejects the materials simultaneously. This method has two advantages: It applies both in a single operation-reducing the cost and speeding the work-and it bonds the hay or straw to the seeded area more effectively.

Various agencies specify certain asphalt materials for use in the tie-down method, but experience has proven that any type of liquid asphalt thin enough to be blown from the sprayer equipment is satisfactory.

Due to its ability to cover large areas in a short time, hydraulic seeding is the most popular method for mulch applications. Asphalt emulsion can be used as a tackifier in this operation with assurance that there is no danger of environmental contamination. Seeding and mulching contractors agree that emulsified asphalt is a superior material that will hold the mulch in place until the grass germinates.

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