

Hydroseeding

Definition

Hydroseeding is a mechanical method of applying seed, fertilizer, and mulch to land in one step.

Description and Purpose

Hydroseeding typically consists of applying a mixture of wood fiber, seed, fertilizer, and stabilizing emulsion with hydro-mulch equipment, which temporarily protects exposed soils from erosion by water and wind.

The practice may also be called hydro mulching, hydraulic planting, hydraulic mulch seeding, hydraseeding

Pollutant(s) controlled:

- Suspended Sediments

Pollution Removal Efficiencies:

- Hydroseeding initially reduces sediment generation by 70 to 80% as compared to sediment production off bare slopes.

Companion and Alternative BMPs

- Mulching
- Seeding/Vegetation
- Rolled Erosion Control Products

Advantages and Disadvantages

Advantages:

- Tackifiers can be used with the application to help keep the seed in place
- Provides mulching medium around the seed to hold moisture

Disadvantages:

- Hydroseeding may be used alone only when there is sufficient time in the season to ensure adequate vegetation establishment and erosion control. Otherwise, hydroseeding must be used in conjunction with a soil binder or mulching
- Hydroseeding may be inappropriate in dry periods without supplemental irrigation
- Wood fiber hydraulic mulches are generally short-lived (only last a part of a growing season) and need 24 hours to dry before rainfall occurs to be effective.
- May not be able to access remote areas with hydroseeder

Location

Hydroseeding is applied on disturbed soil areas requiring temporary protection until permanent vegetation is established or disturbed soil areas that must be re-disturbed following an extended period of inactivity

General Characteristics

- Hydraulic planting mulch is the ingredient that makes the technique possible. Water-laden mulch shot from high-pressure hose or spray gun travels farther than seed and water alone. Once the mulch is on the soil surface, it creates a “mat” or blanket that holds the seed in place, retains soil moisture, resists wind and water erosion, and creates a favorable environment for seed germination.
- Mulch materials may be made from wood chips, newsprint, or corrugated cardboard. Some products may include synthetic poly-based fibers or natural agricultural fibers, paper mill sludge, sawdust, slick papers, or some combination of these.
- Each mulch product group has unique performance characteristics and associated costs. Some materials simply perform the mulch function better than others
- Mulch Fiber length is the key to holding power, while germination is most influenced by moisture holding ability and application rates.
- Virtually any fertilizer formulation can be incorporated into the hydroseeding slurry. It is important to use soil testing to determine the appropriate fertilizer for the site.
- A difficult to access site is best fertilized with a long acting or time-release product at the same time it is seeded. An easily accessible site can be fertilized (again) after germination.
- Tackifier is powdered or granular glue, which when added to the slurry, serves to glue the mulch blanket in place, helping it to withstand wind and rain erosion. Steep slopes are best protected with a tackifier, though any site susceptible to erosion (including that caused by the project’s own irrigation) should be a candidate.
- A wide variety of special use products can be incorporated into the hydroseed slurry when conditions dictate. Soil amendments, such as lime and gypsum, or organics such as sludge and humus can be applied right along with the seed and other ingredients. Dyes, surfactants, growth stimulators, fungicides, inoculants, and a host of other liquid, powdered and granular products are also widely available.

Materials

- Cellulose Fiber Mulch
- Fertilizer
- Tackifier
- Hydro – seed mix.

Design Specifications

- To select appropriate hydroseeding mixtures, an evaluation of site conditions shall be performed with respect to:
 - soil conditions
 - site topography
 - season and climate
 - vegetation types
 - maintenance requirements
 - sensitive adjacent areas
 - water availability
 - plans for permanent vegetation.
- Paper Mulch is frequently applied at 1,200-1,500 pounds per acre (approximately 25lbs.-35 lbs. per 1,000 square feet). With a polyacrylamide additive, such rates can be effective. Many contractors avoid using more than 2,000-2,500 lbs per acre of paper mulch, because too much paper mulch tends to crust, and can inhibit germination.
- Wood Mulch is most effective at rates beginning at 2,000 lbs per acre (about 45 lbs. per 1,000 square feet). In very hot conditions, 3,000 lbs (about 70 lbs. per 1,000 square feet) per acre will provide more moisture retention, and will therefore improve the probability of success significantly. A guar based tackifier is also highly recommended to improve the probability of yielding an excellent grass stand.
- Bonded Fiber Matrix rates start at about 3,000 lbs per acre. At 4,000 lbs. per acre (about 90 lbs. per 1,000 square feet), most wood based Bonded Fiber Matrix products provide an excellent probability of achieving total coverage of grass, even when pounded with destructive rains or in very hot conditions.
- Regardless of the quality of the mulch protection, rainfall or irrigation is always necessary to produce a stand of grass.
- Guar tackifier can be used at 25-150 lbs per acre. The standard recommend application rate is 1½ lbs per 1,000 Sq. ft. or about 60 lbs per acre. This product has been the mainstay as a glue additive for hydro-mulching for many years.
- Seed and fertilizer recommendations are dependent upon the location of the area to be treated. See the Seeding/Vegetation BMP on Page # BMP Guidebook for specific seed recommendations
- Hydroseeding can be accomplished using a multiple-step or one-step process.
 - The multiple-step process ensures maximum direct contact of the seeds to soil.
 - When the one-step process is used to apply the mixture of seed, fiber, etc., the seed rate shall be increased to compensate for all seeds not having direct contact with the soil.
- Follow-up applications shall be made as needed to cover weak spots.
- The time allowed between placement of seed in the hydraulic mulcher and the emptying of the hydraulic mulcher tank should not exceed 30 minutes.
- Application of the slurry should proceed until a uniform cover is achieved. The applicator should not be directed at one location for too long a period of time or the applied water will cause erosion.

Construction Guidelines

1. Prior to application, roughen embankment and fill areas by rolling with a crimping or punching type roller or by track walking. Track walking shall only be used where other methods are impractical.
2. Hydraulic matrices require 24 hours to dry before rainfall occurs to be effective

Monitoring

- Hydromulched slopes should be inspected periodically for damage due to wind, water, or human disturbance.

Maintenance

- Repair all damaged areas immediately using hydromulching at the original specifications or straw mulch.
- Supplemental watering may be required

References

IDEQ Storm Water Best Management Practices Catalog, September 2005.
Hydromulching.

Mellon, Michael. *Hydroseeding: Getting All You Paid For*.