

TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE

BERKELEY, CALIFORNIA

SOIL CONSERVATION SERVICE

TN - Agronomy - 9

August 2, 1963

MULCHES for WIND AND WATER EROSION CONTROL

The attached publication by the Agricultural Research Service, ARS 41-84, discusses material and procedures for establishing various kinds of protective mulch substance.

This technical note also presents a report by Frank Brooks covering current trials in Southern California.

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There are many commercial materials available today for use in helping control erosion on critical areas. New products appear frequently. Most of the important ones are described in the following information which has been summarized and is being furnished for general reference use. Additional information will usually be required to develop specifications for any particular job.

Many materials have wind erosion control value, including some of those described here. However, this information is restricted to those used in controlling erosion by water.

The University of California Agricultural Extension Service, Los Angeles County, arranged for a demonstration of a number of erosion control materials. The materials were applied to plots on a fill area with a 1 1/2:1 slope on January 3, 1963. Each plot is one-tenth acre in size, 30 feet wide and 150 feet in length up and down the slope. The following information is adapted from that in newsletters issued by Wayne Morgan and Alvin Baber, University of California Farm Advisors, Los Angeles, California. The company that applied each kind of material is shown, and specific questions on any item should be addressed directly to that company.

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Information presented is intended to be of a general nature, and no endorsement of any product is intended.

Frank L. Brooks, Jr.
Conservation Agronomist

SOIL EROSION CONTROL PRODUCTS

CHECK PLOT

Germain's Erosion Control Mixture (75% purple vetch, 20% common ryegrass, and 5% birdsfoot trefoil) was seeded at 3 1/2 pounds per 1000 square feet. Urea fertilizer (46% N) was applied at 2.3 pounds per 1000 square feet. Seed and fertilizer were raked into the soil. Irrigation water was applied by sprinkler to establish cover.

All other plots (except Troyturf which contains seed and fertilizer) were seeded and fertilized at the same rates as the check plot before the erosion control materials were applied. All plots received the same irrigations.

SOLUTION PRODUCTS

Aquatain - A chemical gelatinous film for control of wind and water erosion, retention of moisture and protection of newly planted seeds. Seed may be applied with material in one application. It is not harmful to established plants, and can be applied by most power sprayers.

Approximate Cost;

Applied by:

Material 1¢ per sq. ft.
Application 1/2 - 1¢ per sq. ft.

Floyd Dimmick Company
1685 Brigden Road
Pasadena, California

Elvanol - A polyvinyl alcohol spray that can be applied to uncovered soil for prevention of erosion. It is nontoxic to established plants. Seed and material may be applied in one operation. It may be purchased in liquid form ready to mix with water and apply.

NOTE: Material must be heated to 170° F. before it will go into solution with cool water for application.

Elvanol (Continued)

Approximate Cost:

Material 1¢ per sq. ft.
 Application 1/2 - 1¢ per sq. ft.

Applied by:

J. Harold Mitchell Company
 2754 E. Walnut Street
 Pasadena, California

Catalin Resin 251 - An aqueous solution which forms a permeable film on areas to be stabilized for protection from wind and water erosion. Seed and material may be applied in one operation.

Approximate Cost:

Material 1¢ per sq. ft.
 Application 1/2 - 1¢ per sq. ft.

Applied by:

Catalin Corp. of America
 14066 South Garfield
 Paramount, California

Catalin Resin 239 - An aqueous solution to seal soil so that water does not enter. Claimed to prevent germination of seeds and to be for use where high winds or heavy rains prevail and no seeding is required.

Approximate Cost:

Material 2¢ per sq. ft.
 Application 1/2 - 1¢ per sq. ft.

Applied by:

Catalin Corp. of America
 14066 South Garfield
 Paramount, California

Erosion Stop - An aqueous solution to be sprayed on hills, slopes, or freshly tilled soil to control erosion from wind or water. Seed and material may be applied in one operation.

Approximate Cost:

Material 3¢ per sq. ft.
 Application 1/2 - 1¢ per sq. ft.

Applied by:

Fiber-Resin Corp.
 170 Providencia Avenue
 Burbank, California

Soil Set - An elastomeric polymer emulsion which will dilute and mix with water to be applied for erosion control. May be applied by a hand sprinkler on a water can, hand pump sprayer, or power sprayer. Material is nontoxic. Seed may be applied with material in one operation.

NOTE: Birds appear to stay away from this material.

Approximate Cost:

Material 2¢ per sq. ft.
 Application 1/2 - 1¢ per sq. ft.

Applied by:

Mico Corp.
 2102 E. Curry Street
 Long Beach 5, California

MULCH PRODUCTS

Sta-Soil - A natural organic compost from a refuse conversion plant. Contains 20 trace elements and other qualities to enrich soil, promote plant growth and minimize soil erosion. Material is applied by a hydro-mulch machine. Seed and fertilizer may be included and applied at the same time.

Approximate Cost:

Applied by:

Material 3¢ per sq. ft.
Application 1/2 - 1¢ per sq. ft.

Sta-Soil Corp.
20035 Redwing Street
Woodland Hills, California

Straw - Bedding straw from stables applied as a mulch for erosion control. Straw is applied manually and punched into soil surface. This may be done by spade, cutaway disc, or sheepsfoot. Seed and fertilizer usually applied after straw.

Approximate Cost:

Applied by:

Material 1/2 ¢ per sq. ft.
Application 1/2 - 1¢ per sq. ft.

Buckspan and O'Neill Company
929 W. Manchester Blvd.
Inglewood 1, California

Straw Manure Compost - Composted material applied manually. Has high organic matter content. Seed applied after compost and raked lightly.

Approximate Cost:

Applied by:

Material 1¢ per sq. ft.
Application 1/2 - 1¢ per sq. ft.

(Not Known)

Sludge - A by-product of sewage disposal plant. Applied by hydro-mulch sprayer. Rate of application not known.

Cost: (Not Known)

Applied by: (Not Known)

Turfiber - A paper fiber mulch for erosion control and quick establishment of ground cover. Seed or stolons, and fertilizer may be included and applied in one operation. Material must be applied with a hydro-mulch machine. Fibrous material minimizes erosion on slopes for 60 to 90 days while cover becomes established.

Approximate Cost:

Applied by:

Material .002¢ per sq. ft.
 Application 1/2 - 1¢ per sq. ft.

International Paper Company
 Special Products Division
 Mobile 9, Alabama

FIBER MAT PRODUCTS

Aspen Excelsior Blanket - Wood excelsior 1" thick covered with cheese-cloth-like cotton fabric. Comes in rolls 48" wide by 48' long. Seed and fertilizer are applied before material. Material is secured to ground with large wire staples. Provides erosion control immediately and until cover is established.

Approximate Cost:

Applied by:

Material 5¢ per sq. ft.
 Application 2 - 3¢ per sq. ft.

Western Wood Excelsior
 8320 Canford Street
 Pico-Rivera, California

Soil Saver - A heavy woven jute mesh. Will hold seed and soil in place on slopes, drainage ways, or other areas of concentrated water flow to prevent erosion during heavy rain storms. Comes in 90 pound rolls, 48" wide and 225' long. Material is overlapped at edges and secured to the ground with large wire staples. Seed and fertilizer are applied after material is applied. Woody plants may be planted through the material by spreading the mesh. Provides erosion control immediately and for one to two years until cover is established.

Approximate Cost:

Applied by:

Material 3¢ per sq. ft.
 Application 2 - 3¢ per sq. ft.

J. Harold Mitchell Company
 2754 E. Walnut Street
 Pasadena 8, California

Troy Turf - A complete ground cover in one jute mat roll. Comes in rolls 54" wide and 90' long. Blanket is 3/8" thick, is methylbromide sterilized and contains seed and fertilizer. A variety of seeds, fertilizers and rates are available to meet various needs. Material is secured to the ground with large nails or wire staples. Provides immediate erosion control.

Approximate Cost:

Applied by:

Material 7¢ per sq. ft.
Application 2 - 3¢ per sq. ft.

Dutco Incorporated
12914 Venice Blvd.
Los Angeles 66, California

SOIL CONDITIONER PRODUCTS

(Included in the demonstration plots)

Aqua-Humus - An organic humus in the lignin state. Releases humic and fulvic acids to the soil when watered, which improves soil and makes nutrients available. Comes in 50 pound sacks. Fertilizer analysis 12-9-6.

Approximate Cost:

Applied by:

Material .002¢ per sq. ft.
Application 1/4 - 1/2¢ per sq. ft.

Mico Corporation
2102 E. Curry Street
Long Beach 5, California

Kingfish - A fish by-product. Flocculates soil and contains 3% phosphoric acid. Material may be applied by hand, pump or power sprayer.

Approximate Cost:

Applied by:

Material .0005¢ per sq. ft.
Application 1/4 - 1/2¢ per sq. ft.

K. C. Mattson Company
5392 Alhambra Avenue
Los Angeles 32, California

OBSERVATIONS ON EROSION CONTROL VALUE

Five weeks after the materials were applied, a 2 1/2 inch rain occurred over a 40 hour period on February 8 and 9.

All organic mat materials gave complete erosion control. These were wood fiber, jute fiber, and jute net material. Stable straw gave excellent erosion control, and a good cover was established from the barley seed present in the straw.

OBSERVATIONS ON EROSION CONTROL VALUE (Continued)

The chemical solution products which prevented erosion during the rain were polyvinyl alcohol, a resin product, and an elastomeric polymer emulsion.

Erosion was very noticeable in the check plot. Slight to considerable erosion occurred in the other plots.

On April first the vegetation on the plots was beginning to turn yellow. An application of nitrogen as urea was applied at 2.3 pounds per 1000 square feet. The plants regained a good green color.

By May 15 a fair to excellent cover had been established on all plots.

Additional observations will be made on these plots during the coming fall and winter.

TWO MATERIALS NOT INCLUDED IN PLOTS

The following items, tho not used in the demonstration, are described for general information:

Mulchnet - A wide weave (2" x 1/2" mesh), twisted paper strand fabric manufactured from kraft paper. It is used for holding mulch materials in place until ground cover is established. It is secured to the ground with large wire staples. Material is 45" wide and comes in 500, 1000, and 2000 yard rolls weighing from 55 to 230 pounds each.

Approximate Cost:

Available from:

Material 1/2¢ per sq. ft.
Application (Not available)

Bemis Brothers Bag Company
2400 South Second Street
St. Louis 4, Mo.

Erosionet - A closely woven (7 x 4 per sq. in.) twisted paper yarn fabric. It is used for stabilizing soil in ditch bottoms generally without mulch where sod is often used. A small amount of straw (3/4 ton per acre or less) may be desirable under the material. It is secured to the ground with large wire staples. Material is 45" wide and comes in 250 and 800 yard rolls weighing 100 and 310 pounds each.

Approximate Cost:

Material 1¢ per sq. ft.
Application (Not available)

Available from:

Bemis Brothers Bag Company
2400 South Second Street
St. Louis 4, Mo.

Ultracheck - A glass fiber blanket for immediate and lasting erosion control on very critical areas. The material is inorganic and won't rot, corrode or deteriorate. It offers no resistance to plant growth and thus vegetation may be established where it is installed. It is not affected by freezing and thawing. May be used for shore protection.

Approximate Cost:

(Not available)

Available from:

Gustin-Bacon Mfg. Company
210 W. Tenth Street
Kansas City 5, Mo.