TECHNICAL NOTES

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HAND CRIMPING STRAW MULCH ON CRITICAL AREA PLANTING SITES PROVIDES SUPERIOR RESULTS

Anchoring straw mulch on critical area planting sites by crimping or "punching" the straw into the soil with hand implements has exhibited improved germination and seedling establishment in the Lake Tahoe Basin. Hand crimping straw mulch may be selected as an anchoring alternative where availability or access by equipment, or cost are limiting factors. In certain circumstances, hand crimped straw may also be selected as a mulch alternative to hydromulching or erosion control blankets.

Critical Area Planting Practice Specifications 342A and 342E in Section IV of the Field Office Technical Guide identify various mulch anchoring methods including crimping. Also included are application of tackifying agents or overlying nets. The fundamental difference between crimped straw mulch and other anchoring methods is that the straw not only creates a soil and moisture conserving layer on the soil surface, but is also incorporated into the soil mimicking a surface horizon with interstitial root structure.

A well crimped straw layer will also result in a vertical "canopy" of stems perpendicular to the soil surface, providing a conduit for rainfall to more readily enter the soil. This may be an important factor on sloping sites where rainfall is apt to travel downslope on the soil surface rather than percolate into the soil. The resulting increase in soil moisture provides a more hospitable environment for germination and seedling establishment.

On unstable slopes greater than 2:1 (two feet vertical to one foot horizontal), such as cut banks or where high winds can be a factor, the stability of crimped straw can be greatly increased by application of a tackifier. This technique has been successfully used on road cuts with slopes up to 1.5:1 in decomposed granitic (DG) soils. Seeded sites which typically would be stabilized with plastic nets over straw, or erosion control blankets are now treated using this technique in the Lake Tahoe Basin. The observed success of this practice has been dramatic, with an increase of several fold in germination and establishment over sites treated with nets and blankets.

Hand crimped straw can provide beneficial economic results over hydraulically applied tackifiers, netting, or erosion control blankets. The capital cost for materials, equipment, and labor for installation of those materials may often preclude their use on projects where cost is a limiting factor.

Prepared by Soil Conservationist Jerry Owens and Civil Engineer Kenneth Christensen, USDA Natural Resources Conservation Service, South Lake Tahoe Field Office and Dave Dyer, Manager, NRCS Lockeford Plant Materials Center, Lockeford, California

Observed time/labor requirements for crimping straw versus installation of an erosion control blanket are approximately the same per unit area. Direct seeding followed by application of an erosion control blanket averages $0.40 to $0.85 per square foot depending on the scale of application.

Direct seeding with an application of straw mulch which has been anchored by both crimping and tackifying averages $0.14 to $0.25 per square foot on large projects in the Lake Tahoe Basin. Site preparation which includes seed, fertilizer and blown straw mulch has an average cost of $0.07 to $0.18 per square foot. A single laborer working at a real cost to a contractor of $40 per hour, has been observed to crimp approximately 1000 square feet an hour on loose DG road cuts. This accounts for an additional $0.04 per square foot to the project cost. Application of a tackifying agent over crimped straw can account for another $0.03 per square foot to the cost of a critical area planting project.

The observed improved results on critical area planting sites where straw mulch was anchored by crimping alone or crimping and tackifying, along with a reduced bottom line on project cost indicates this practice to be the method of choice where applicable. Critical Area Planting Practice Specification 342A describes application procedures and Drawing 342A-1 displays the procedure in pictorial format.

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