

Dryland Pasture Erosion Control

**establishment of perennials for forage on sloping land
needs minimum seedbed preparation and reduces erosion**

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A good dryland pasture stand can be obtained on sloping or hilly range land with a minimum of seedbed preparation—and without undue loss of top-soil.

Erosion is one of the primary obstacles in establishing dryland pastures on scattered areas of tillable land in mountainous range country. Varying degrees of steepness make the farming of such land difficult and expensive. However, an annual rainfall of 20" to 40" on some of these good soils makes ideal conditions for the growth of long-lived perennial grasses and legumes.

A field test in San Mateo County—where the index of erosion is said to be the highest in the United States—showed that it is practicable to obtain good pasture stands on sloping or hilly land.

The rainfall pattern in San Mateo County is such that dryland pastures are, by necessity, planted in the early fall months for survival through the following summer. The usual seedbed preparation—plowing, disking, rolling, and seeding—forms many small ditches which result in a considerable loss of topsoil during the following rainy season and before the pasture species form sufficient sod to prevent such erosion. Much of the natural fertility of mountainous areas has been lost because of erosion on many soils. One of the best ways of restoring fertility and preventing further erosion is by establishing pasture species of a grass-legume mixture.

Seedbed Preparation

In no recorded instance has a pasture been established without some seedbed preparation. To learn what minimum seedbed preparation could establish a good stand of perennial pasture species a field trial was established October 15, 1950, on a 20-acre field of so-called weak soil.

After many years of growing field peas and hay crops, much of the topsoil was

lost. An oat hay crop had been removed August 1950 and followed by cattle grazing. The soil was relatively loose and free of weeds. The cattle had grazed most of the residue.

Seedbed preparation consisted of pulling a light harrow behind a jeep to stir the soil slightly—and to break the crust that had formed in parts of the field—so sufficient loose soil to cover the seed would be left. The harrow filled some of the depressions left by the cattle hooves and scattered the droppings.

The field was seeded with 10½ pounds of seed per acre in October, 1950, using a double ringroller commercial pasture seeder and the pasture mixture listed below:

GRASSES	Lbs. per acre
Alta fescue	3
Orchardgrass	1½
Hardinggrass	1
Perennial ryegrass	1
Total grasses	6½ lbs.
LEGUMES	
Narrowleaf Birdsfoot trefoil (upright)	1
Broadleaf Birdsfoot trefoil (prostrate)	½
Subterranean clover (midseason)	1½
Bur clover	1
Total legumes	4 lbs.

Annual ryegrass was not included since it was present.

Erosion was negligible that season—1950–1951—but because of the heavy rainfall—41"—the pasture made relatively slow growth the first year.

Cattle were turned in early in the spring to reduce competition from the native annuals. After grazing the plants to approximately 4" in height, the cattle were removed for the remainder of the summer months. This permitted some of the plants to produce seed which provided new seedlings with the fall rains. The second season—1951–1952—the rainfall was 36" and the pasture developed into an excellent stand. Undoubt-

edly it will become more productive in the following years.

Land that has been cropped in previous years to flax, peas, oats or barley—and is fairly free of weeds—ordinarily is in excellent condition for pasture seeding. No further tillage is needed if the surface soil is fine and loose to a depth of 1" to 2".

If the surface soil has been beaten down, pocked, crusted, or eroded, a very light disking or heavy harrowing to a depth of 2" to 3" is all that is needed.

Where the land has been clean cultivated and no volunteer stands of wild oats or ryegrass will occur, a nurse crop can be seeded on the steeper slopes. Oats seeded at 25 to 35 pounds per acre are an excellent two-purpose nurse crop. The oats will germinate and grow with the first fall rains to form an early sod which will keep erosion to a minimum. Also, the oats furnish good early grazing for livestock.

To fully establish the perennial species of pasture plants, cattle should be turned in to graze the following spring which will reduce the annual plant competition. Enough cattle should be turned in so the pasture will be grazed in a minimum number of days. Calves or yearlings should be used for grazing when the land is dry.

After grazing the plants to a height of 3" to 4" the cattle should be removed for the remainder of the year unless the annual plants recover sufficiently to produce further feed. If such is the case, the cattle can be turned in again to reduce plant competition.

The first year should be devoted to establishing the perennial species of plants and the reduction of erosion with its resulting conservation of top-soil. The amount of feed produced the first year should be of secondary consideration.

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Left: Close-up of prepared seedbed—note remaining plant residue. October 1950, San Mateo County. Right: Second year growth following seeding. May 1952, San Mateo County.

