



# RANGE SCIENCE REPORT

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## RENOVATING AND RESEEDING MOUNTAIN RANGE AND PASTURE WITH NO-TILL METHODS

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Pasture and range can be successfully renovated or reseeded without the traditional plowing, fallowing, discing and planting. No-till equipment has been used in the mountainous regions of Northern California to rejuvenate old pastures, improve rangeland, and seed field crops. There will still be specific situations when the traditional plowing and seeding are needed but frequently no-till techniques can be an attractive and economical alternative.

### KEYS TO SUCCESS

Regardless of the application, two key points are of primary concern with no-till methods.

1. Conservation of moisture and
2. Competition

No-till seeding will conserve moisture because the soil is not disturbed by plowing or discing. This should result in more dryland seeding successes. Competition **MUST** be controlled by chemicals or management with no-till seeding because the weed control of plowing and discing is bypassed.

### PASTURE

No-till can be useful for pastures:

1. where preferred clovers or grasses are not present;
2. where traditional renovation is virtually impossible due to rocky terrain, unfavorable drainage problems or other physical limitations; or
3. where a short term rejuvenation is desirable due to operational constraints such as cash flow, increased animal feed demands, or cutbacks in other grazing areas.

Pastures that are extremely sodbound or decreasing in productivity must be plowed or rototilled. New pastures from virgin ground can be seeded with conventional drills since they will need to be plowed.

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## **Addition of Clover**

Clovers can be directly seeded into existing pastures to increase the amount of clover in a grass-clover pasture. No-till seeding should be done about 30-60 days later than a conventional seeding in the northeastern counties or mountain counties. Generally this varies from late March in unusually warm locations to May or even June in the higher, colder elevations. The ground will need to be firm enough to support a medium size tractor and a no-till drill. The later seeding will permit the ground to warm up. Seeding rates can vary from 2-3 pounds up to 10 pounds of seed per acre. The choice depends on the density of clover desired and the time to reach the desired mixture of grass and clover. A starter fertilizer containing phosphorus and possibly sulfur, and only small amounts of nitrogen in the monoammonium form, should be banded with the seed. Depending on availability, triple superphosphate or single superphosphate fertilizer would be acceptable starter fertilizers without nitrogen. If a starter fertilizer with nitrogen is used fertilizers like 11-48 or 16-20 or other monoammonium forms would be satisfactory.

When clover is seeded in the spring, a glyphosate (Round-Up tm) application may be needed to reduce weed competition. Unless they are suppressed, the existing grasses will grow quickly and shade out the new clover. When used at a rate of 1 pint per acre in 10 gallons of water, Round-Up has suppressed the early season growth in mountain pastures permitting the seeded clovers to establish. Some successful introductions of clover have occurred without the suppression of the existing grass, but the success rate has been less than when the grass is suppressed.

The preferred practice after a spring clover reseeding is to cut hay instead of grazing with livestock. Typically the newly seeded clover will be significantly lower in height than the grass and will not be cut. After the grass is removed by haying the clover will grow rapidly. The pasture can then be managed in the traditional way.

A second alternative for reseeding clover into existing pasture is to wait until after the first cutting of hay to do the no-till seeding. This has some advantages due to warmer soil temperatures resulting in quicker germination and growth, less shading by grass, a full first cutting of hay and frequently no need for chemical suppression of the grass. The later seeding may not be feasible in pastures with limited amounts of water, long duration between irrigations or unusually hot, windy conditions.

## **Addition of Grass to Pasture**

Addition of adapted grasses to existing pastures or alfalfa fields with no-till has been successful, however at times there have also been failures. When reseeding grass into an existing pasture the same principles used to reseed clovers apply, with even more emphasis placed on controlling existing grass. Some of the variation in success may relate to the susceptibility of the existing grass to chemical control permitting the newly seeded grass to get established. The low seedling vigor of most cool season grasses also contributes to reduced

grass seeding success. Round-Up at 1 pint per acre in 10 gallons of water has been the herbicide of choice. In sedge and rush infested pastures 2,4-D would be the chemical of choice. Paraquat is sometimes useful where competition is limited, but Round-up or 2,4-d are usually preferred.

When herbicides are used in the reseeding process, care must be taken to complete the reseeding or severely reduced yields and/or establishment of undesirable annuals will result.

**Grasses and clovers can be mixed** and seeded by no-till at the same time into existing pastures with success. The same methods as outlined above apply.

#### RANGELAND

The same varieties and seeding rates used in conventional rangeland seeding can be used in no-till seeding. Competition from weeds is an especially important concern. Nontillage improves overall moisture conditions for germination.

The species of weed determines the recommended herbicide. For broadleaves only, 2,4-D is recommended. Round-Up has out-performed Paraquat for mixed weed species. Use one pint per acre of Round-Up in 10 gallons of water.

No-till seeding should be done with the contour of the slope since the shallow drill rows may persist for several years becoming potential erosion sites. Rocks the size of a cowboy hat and brush do not pose a problem for the New Zealand Duncan No-Till Seeder, the rangeland drill and other types of no-till seeders. The John Deere Power-Till has not proven as practical on rocky, brushy range sites. The shallow drill rows produced during seeding should not be covered with soil although small thin pack wheels that firm the drill row without covering the seed are beneficial.

No grazing is usually recommended the first season after planting with perhaps some light fall grazing permitted in particularly good stands. The following spring grazing should be deferred until completion of seed head formation, and then grazing can be nearly normal.

#### GENERAL RECOMMENDATIONS

Seed is more frequently planted too deeply with most no-till seeders, but the seed needs to be planted INTO the soil and not just laid on top; it is better to error on the side of too shallow rather than too deep.

Due to the lack of plowing or discing, the soil does not warm up quickly. The colder soil temperatures will slow germination. Therefore do not be in a hurry to seed in the spring. Give the soil a chance to warm up. This will also permit more annual weeds to germinate making them susceptible to chemical control. After planted seeds have germinated we are much more limited in the choice of chemicals to control weed competition.

The application of herbicides for weed control can be made just prior to seeding or after seeding but before seed germination. Round-Up can be applied during the same pass as no-till seeding, but it should be avoided if conditions are dusty. Soil particles (dust) in the air and on the plant surface tend to inactivate Round-Up. After seeding, the planted seed is not susceptible to Round-Up until after it has germinated, i.e., frequently 7 days or more.

Fertilizer can be applied through the no-till drill. Experience has shown no significant improvement with fertilizer on either pasture or range seedings. Since the fertilizer cost represents a major portion of the total cost, no-till seeding without fertilizer is the most practical choice. In any case, rates of nitrogen should be limited to 50 pounds per acre of actual nitrogen.

Frequently, no-till seeding costs as much as conventional seeding. The advantages still go to no-till because of moisture conservation and the avoidance of ripping up heavily sodden, rocky pastures.

Equipment, seed varieties and herbicides are changing rapidly. Local conditions vary. Contact your University of California Cooperative Extension Farm Advisor for more specific recommendations.

To simplify information, trade names of products have been used. No endorsement of named products is intended, nor is criticism implied of similar products which are not mentioned.

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