

Stubble Mulch

as a protective measure against erosion of grainland in California

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STUBBLE MULCH, as used in this article—except in connection with wind erosion—concerns land steep enough to erode, which usually is steeper than a 2% or a 3% incline.

The following list of natural phenomena are more or less common to all grain-producing areas:

1. Bare cultivated soil erodes more than stubble-mulched soil, because a larger percentage of the rainfall usually runs off.

2. Soil cultivated the stubble-mulch way permits rainfall to soak in faster, thus usually reducing runoff and resultant erosion.

3. A stubble-mulch surface is resistant to wind erosion.

4. Fertility problems may be associated with stubble-mulch tillage. Sometimes this list includes a statement to the effect that stubble mulch reduces surface evaporation. Whether or not this statement holds when applied to a practical stubble mulch is open to question.

In Northern California

In the northern part of the state, where they have midwest type of weather, stubble-mulch farming has been accepted rather generally. No serious problems have developed.

Stubble is plowed with a modified moldboard plow or worked with a chisel in the spring. Weeds are controlled in the summer by a rod weeder or light disking, and planting is done in the fall. Stray spreaders are being generally accepted. No lessening in yield or quality has been noted.

Sacramento-San Joaquin Valleys

In the grain-producing areas of the Sacramento-San Joaquin valleys stubble mulch farming is being accepted.

The disk appears to be replacing the moldboard plow for the initial working and the rod weeder is increasing in use for summer weed control.

In several sections there is a marked tendency to increase the length of the two-year summer-fallow system to include one or two years of pasture. This change is very desirable and is being encouraged. In the past farmers have sold

their stubble for pasture. Now, with the addition of pasture in the rotation, a livestock enterprise is combined with grain farming. Such a setup should result in increased operating efficiency.

Central Coastal Counties

In one of the central coastal counties burning the straw was an accepted practice about 15 years ago. The reason for this was that if straw were plowed under, the following crop would be reduced. Serious soil erosion was resulting.

Successful System

The following successful system to prevent erosion and produce crops at the same time has been worked out recently.

Disk the stubble in the fall of the crop year after the first rains, usually in early December. This disking mixes the straw with the surface four to six inches of soil. Disk again during March to kill the weeds. Control weeds as necessary during the summer with a rod weeder. Plant to grain in the fall after the first rains and a good crop results.

If the initial disking is done in March, instead of the preceding December, the crop will be reduced. The explanation is that the straw being worked into the soil in the fall decomposes enough during the winter so that the following crop is not affected by a lack of nitrogen, whereas the straw does not decompose to the same degree when spring disked.

One difficulty with this practice is that the fallow preparation on one part of the farm coincides with seeding on the balance of the farm.

Possible To Modify

This system is being widely accepted—straw spreader, disking, rod weeding, and no erosion. It is probable that this practice may be modified to suit local conditions in other areas where crop reduction resulting from stubble mulch may be a factor.

Mojave Coastal Margin

Grain is produced in a rather limited area in the foothills on the coastal margin

of the Mojave Desert. The soil is light enough to be susceptible to wind erosion, but water erosion also is a problem in this area.

A system of strip cropping that has proven very successful was developed in this area. Most of the strips are on the contour with alternate strips being summer fallowed and cropped.

No difficulties in crop production have been attributed to working the straw as a stubble mulch. The practice appears to be satisfactory and consequently it is used extensively.

Southern California

In southern California soil erosion is quite serious in grain-producing areas. The soil for the most part is sandy and quite erosive. In addition, rainfall of high intensity occurs rather frequently.

Stubble mulch appears to be gaining in popularity, but the practice has not become too widespread. It is probable that some modification of the successful practice described above for the coastal counties can be used with success in southern California.

Development Continuing

A demonstration farm in Riverside County, which is the southern grain-producing area, has the primary purpose of developing implements and a system of culture to produce an effective stubble mulch.

State-wide tests with legumes in the grain rotation are under way to see if the fertility level of the soil can be improved without using commercial fertilizers.

Work on water infiltration and surface evaporation is being carried on under varying stubble-mulch conditions. It is expected that these and other technical phases of the work will continue to receive more attention.

Substantial progress has been made in adapting stubble-mulch farming to local conditions. It appears that local technical improvements will continue to expand and perfect the practice.

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