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# RANGE CONSERVATION - TECHNICAL NOTES

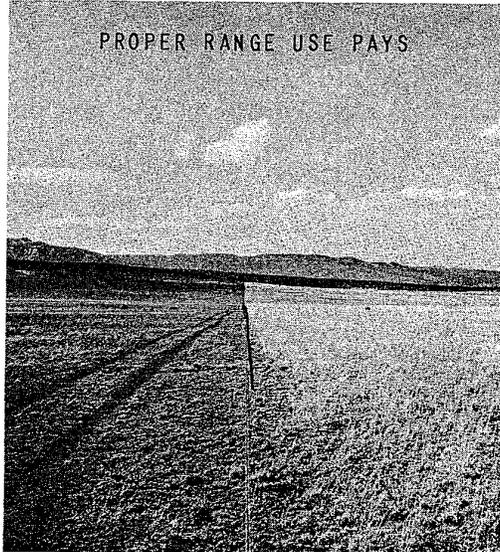
AERIAL CHEMICAL PLANT CONTROL



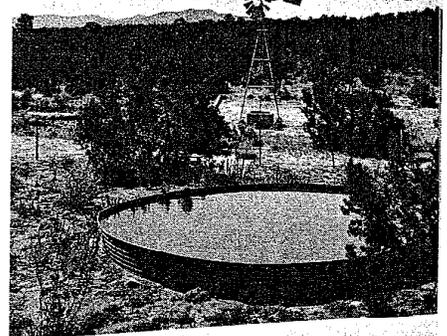
CHAINING PINON JUNIPER



PROPER RANGE USE PAYS



GOOD LIVESTOCK WATERING



CHOLLA CONTROL



U. S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
NEW MEXICO

NOTE NO. 51

March 15, 1972

RE: RANGE - Range Interseeding

(Excerpts from Range Interseeding in Nebraska, by C. M. Schumacher, Former Plant Materials Technician, USDA, SCS, Lincoln, Nebr., Journal of Range Management, Volume 17, Number 3, May, 1964.)

## Status of Range Interseeding in Nebraska

Before evaluating the status of range interseeding, it is important that the purpose and limitations of this method be understood. The purpose of range interseeding is to re-establish native grasses in spaced rows on lands where the erosion hazard is too great, or where for other reasons it is impractical to establish a cover crop. This method of seeding is not intended as a substitute for drilling in non-competitive stubble, but it is a method for use on lands where complete seedbed preparation is impractical. Under optimum conditions, range in poor condition class or cultivated land can, by the full seeding

AC's - 1

DC's - 1

Area Range Conservationists - 1

Adjoining & Western States - 1

RTSC - Portland - 5

D. M. Whitt, Director, Plant Science Div., Washington, D.C. - 2

method, be converted into range in the good or excellent condition class within three to five years. With the interseeder, the optimum result in this same length of time is the establishment of spaced rows of grass that will raise the overall range condition class to fair or good. Several more years of careful management are necessary to raise the condition to good or excellent. However, when compared with the many years of careful grazing management required to permit natural entry of climax grasses on such land, the alternative of interseeding gains favorable attention.

There are now 21 range interseeders in Nebraska. All of these machines are built essentially like the original machine designed by Cox. Some are tractor-mounted and some are tractor-drawn, and all machines are either two-row or three-row units. Some modifications have been made in type of planting unit or seed hopper, but there has been no change in the basic planting principles. All of the range interseeders in Nebraska are in Sandhill counties or in counties that include Sandhill outliers.

The range interseeding method is admirably suited for re-introducing climax dominant grasses in order to hasten natural succession. Dominants can spread from spaced rows on lands where no other seedbed preparation has been attempted. In December 1961, a survey was made of 46 such interseedings made in Nebraska since 1958. The grass stands on 74 percent of these were rated good or excellent, 15 percent were rated fair, and only 11 percent were rated poor. This success ratio is practically identical to the success ratio of full seedings made during the same period with a grass drill on prepared seedbeds. Grass stands on 172 drill seedings were rated as 12 percent poor, 15 percent fair, and 73 percent good or excellent. The high success ratio of range interseeding has given this method the status of an accepted practice.

#### Conclusions From Five Years Observation

RANGE SITES - The range interseeding machine, as well as the method, is best adapted to Sand and Sandy range sites. Interseeding on Silty sites, though more difficult to accomplish, has been nearly as successful. Unless soil moisture conditions are very favorable, it is difficult to properly plant on clayey and clay soils. If wet, these soils tend to stick on the depth bands and prevent the furrow opener from functioning properly. If dry and hard, the furrow opener fails to penetrate. An advantage of this method of seeding, on most sites, is that all vegetative cover and weed seed on and in the surface soil is pushed away from the drilled seed. This feature, on soils subject to crusting, places the seed in an area that is more apt to crust than if it were protected by a mulch cover. Some interseedings on Clayey and Clay sites have been lost because a crust formed on the soil surface and prevented emergence of the seedlings.

**RANGE CONDITIONS** - This method is best suited to go-back fields or other ranges in poor condition. If remnants of the climax dominant grasses are sufficiently distributed so that resting alone will bring about range recovery in a reasonable time, then there is no justification for range interseeding. Observations as well as ecologic theory indicate that range interseedings can succeed and persist on ranges only if the between row cover is lower successional than the seeded ecotypes. For example, on a Sandy site in the 20-inch precipitation zone, seeding little bluestem (*Andropogon scoparius*) in perennial weeds or blue grama (*Bouteloua gracilis*) will succeed; whereas, when little bluestem is seeded into a natural stand of little bluestem, the seedlings will fail to survive. This is not a method to use on barren sandy fields or blow-outs because blowing sand is likely to bury or expose the seed or seedlings.

**FURROW TYPE** - The best furrow has straight sides, a flat bottom, a top width of eight to ten inches, and a depth of two to three inches. Such a furrow can be made with a 14-inch lister bottom when it is functioning properly. The furrow made with a 10-inch lister bottom is too narrow for good results. Furrows that are too shallow, less than two-inches, will generally result in skips in the row. The too-shallow furrow does not kill all of the perennial competitors, nor does it push all of the annual weed seed out of the furrow. Furrows that are too deep result in the seed or seedlings being too deeply covered by action of wind or water. A lister bottom that rides on the point presents a serious problem because the operator, in attempting to make the furrow wide enough, will make it too deep. Figure 4 illustrates the proper type of furrow for this purpose.

**FURROW SPACING** - Furrows spaced 40 inches apart appear to give best results. They provide sufficient space for the displaced soil to fall between the furrows. Attempts have been made to use narrower row spacing so that the seeded grasses can more quickly cover the area between the rows. Generally a narrower row spacing results in excessive ridging of soil between the furrows or in the sacrifice of furrow width.

**SEED PLACEMENT** - The double-disk furrow opener with depth bands set at 3/4-inch will result in seed placement at various depths to a 3/4-inch maximum. This is a desirable safety feature as seed placed at varying depths does not all germinate at the same time. Some seed on the ground surface behind the packing wheel is no cause for concern. If much seed is not covered, it may be necessary to drag a chain behind the packer wheel to get better coverage.

**SEED SELECTION** - The kind and quality of seed planted is a vital factor in the success or failure of range interseeding. A proper mixture of climax dominant grasses that once occupied the site should be selected. These grasses can spread between the rows and make a full stand. Many climax dominant grasses are rhizomatous and these regularly are first to enter the undisturbed vegetation adjacent to the seeded furrow. Just as important as selection of species is the selection of variety, or strain,

of the species used. The strain selected must be at home on the particular site on which it is seeded or it will not be an effective competitor with volunteer vegetation. This is still a limiting factor in some sections of Nebraska where seed of locally adapted climax grasses is not yet available. Quality of seed used (purity and germination) should be average or above. Mechanical difficulties of seeding are reduced if seed is of high quality with all leaves and stems removed. Seedling establishment is enhanced if the seed used is large, properly cured and processed, and of high germination.

**MANAGEMENT** - When locally adapted dominant grasses have been established, the range can be managed to encourage the processes of secondary plant succession. Periods of protection from grazing are essential. Stocking must be carefully regulated as livestock usually will graze the new seedlings before grazing the vegetation between the rows. The range manager must use the seeded grasses as the key plants in the determination of proper use until the seeded furrows have sufficient old growth of previous years to greatly reduce their attractiveness to livestock. Once fully established, 50 percent by weight of these key plants can be grazed. They will increase and the range condition will improve.