New Frontiers in Colorado Agriculture

PUBLISHED BY
COLORADO STATE SOIL CONSERVATION BOARD
JUNE, 1954

NEW FRONTIERS IN COLORADO AGRICULTURE

Published by
the
COLORADO STATE
SOIL CONSERVATION BOARD

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F O R E W O R D

The statement is often made that there are no longer any new frontiers. But there are! This booklet is dedicated to the new frontier in agriculture, to the new and different frontier, whose conquest is as important to us in our time as was the conquest of the wilderness in the Nineteenth Century.

State and other government experiment stations are learning more and more about land use, new methods of production, new controls for insect and plant diseases, new and improved uses of fertilizers, improved water use, and new and improved varieties of grasses, legumes and crops. This work is exploring the new frontier.

Pioneering on the new frontier is, like always, a job for hardy men, men who love the land.

The people of Colorado are making progress on the new frontier; progress in the conservation of land, grass and timber resources, and in the preservation and better use of water.

Fellow pioneers of the rancher and farmer are the State Extension Service, the local soil conservation districts, the State Land Board, State Engineer, State Department of Education, Colorado Water Conservation Board, State Game and Fish Commission, Colorado Soil Conservation Board, and other state agencies; the Soil Conservation Service, U. S. Forest Service, Farmers' Home Administration, Agriculture Stabilization and Conservation Agency, Bureau of Land Management, Bureau of Reclamation, and other Federal agencies; the State Bankers' Association, the press, the radio, and the farm and livestock commodity organizations and associations.

All due credit is acknowledged Fellow Explorers and Fellow Pioneers!

* * * * * * *

EXPLORING

The experiment stations are continuously striving to find solutions to important agricultural problems. Through sound research has come new farming techniques, new crop varieties and numerous other developments which have aided in bringing about better land use, better crop production, better livestock and greater income to the farmer.

* * * *

Thousands of acres of alkaline soils in the San Luis Valley and surrounding areas could be affected by the outcome of research by the Bureau of Reclamation, the Colorado Experiment Station, the soil conservation districts, the Soil Conservation Service and the Agricultural Research Service. Scientists are attempting to reclaim waste soils by using chemicals and proper irrigation practices to counteract alkali. Already, dramatic contrast can be noted as the result of using drainage and various soil amendments.

A good stand of grain obtained from formerly unproductive land.

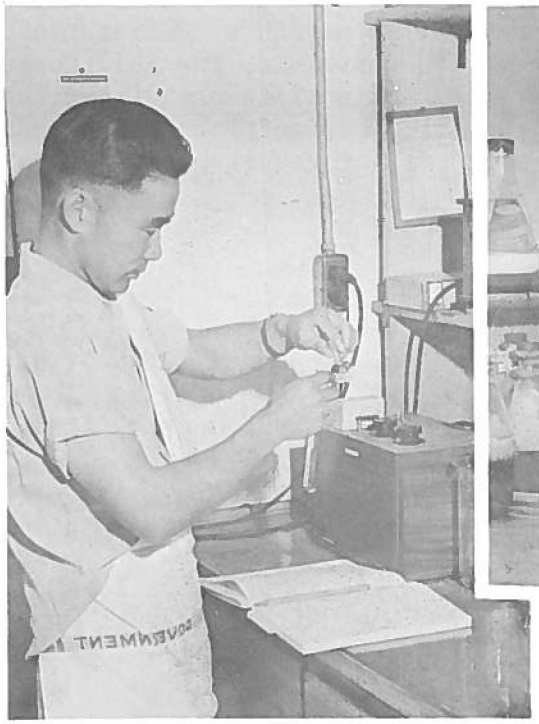
Gypsum was used to counteract alkali.

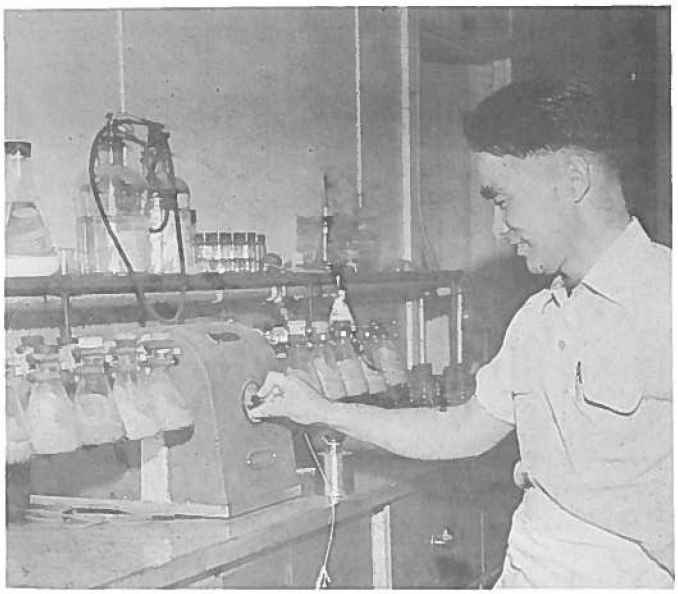
Salts were leached from the soil by flooding and drainage.

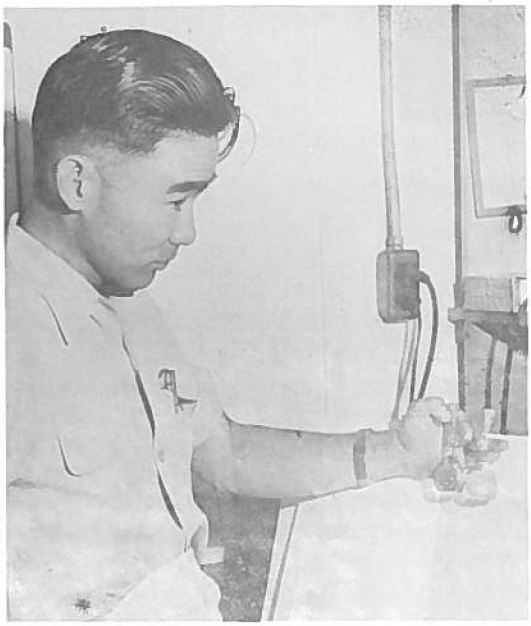
An adjoining plot where very little grain is growing. Alkali weed has "taken over!"

Although the plot was irrigated no leaching of salt was attempted and no chemical was used to counteract the alkali.

A new soil test for phosphorus recently developed through the cooperative efforts of the United States Department of Agriculture and Colorado A & M Experiment Station is creating international interest. The test is quick and reliable on both acid and alkaline soils, and shows how much plant-available phosphorus a soil contains. Key to its success is the use of a solution of ordinary baking soda. Here are the steps necessary in making the test:







Above - Shaking the soil sample and baking soda solution with a mechanical shaker. The entire test can be completed in less than one hour.

Upper left - A chemical is added to the shaken and filtered soil solution which will develop a color in proportion to the amount of phosphorus available.

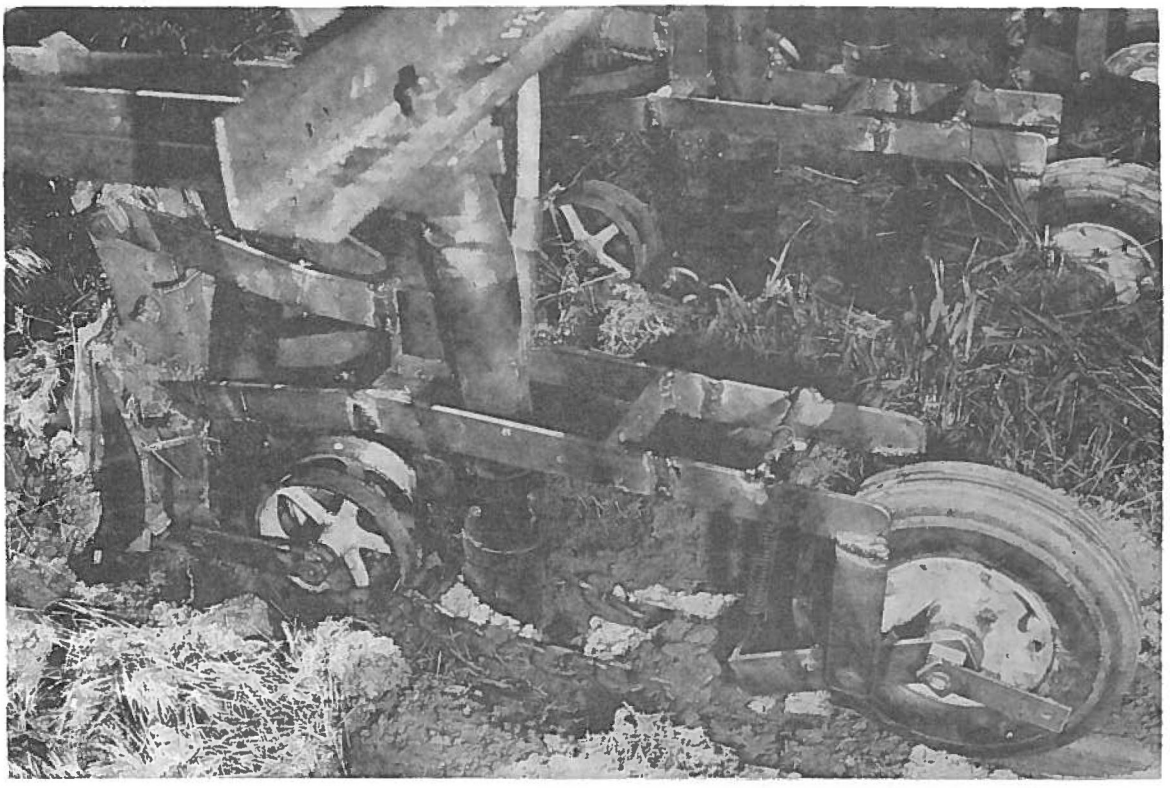
Lower left - Dark vial on left illustrates soil with plentiful supply of available phosphorus. The vials are placed in a colorimeter which accurately measures intensity of color.

At present several hundred major problems dealing with land use, soil fertility, increasing productivity and conserving manpower on Colorado's varied farms and ranches are being studied.

Here is an example of the type of problem under study at experiment stations. This planter places a strip of fertilizer on the bottom of the shallow furrow cut by a blade, covers the fertilizer with soil, places the seed above the fertilizer strip, and finally covers the seed with soil. The soil is packed into place by the press wheel.

This new grass seeder, designed and built at Colorado A & M, holds a promise for seeding abandoned cropland and for reseeding depleted rangeland.

Three planting units do several jobs in one operation; furrows, seeds, and places fertilizer.



Left to right: Lister blade, fertilizer tube, split press wheel, seed tube, drag chain and final press wheel.

FRONTIERS IN EDUCATION

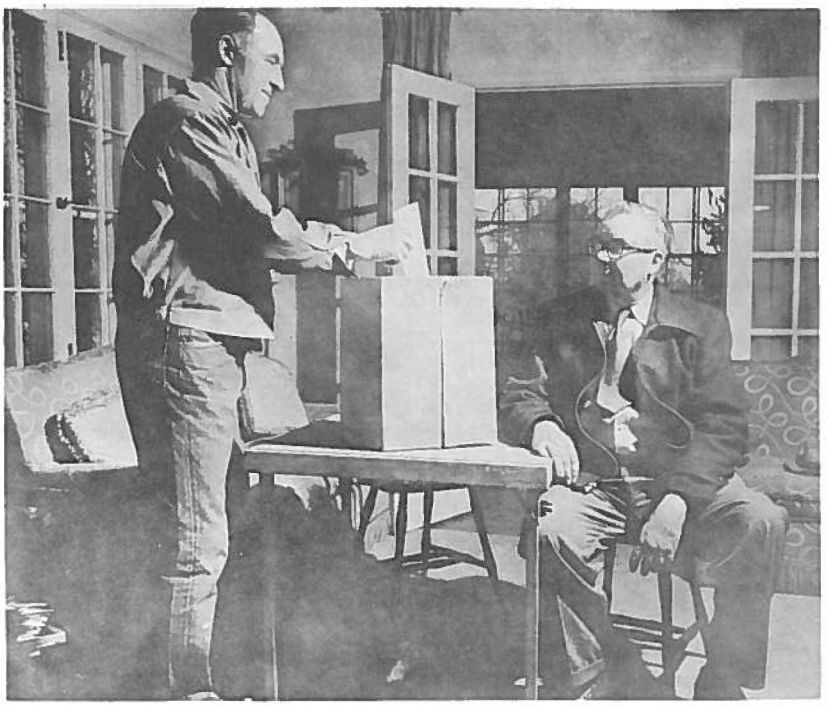
It is important that the sound agricultural technology discovered by research people be put to practical use. New agricultural information is made available to farmers and ranchers through the many groups and agencies who are helping pioneer the "New Frontier."

SOIL CONSERVATION DISTRICTS

The organization of soil conservation districts is an effective step in the educational program.

Districts coordinate the help of many groups.

Farmers circulate petitions to indicate their desire for a district.

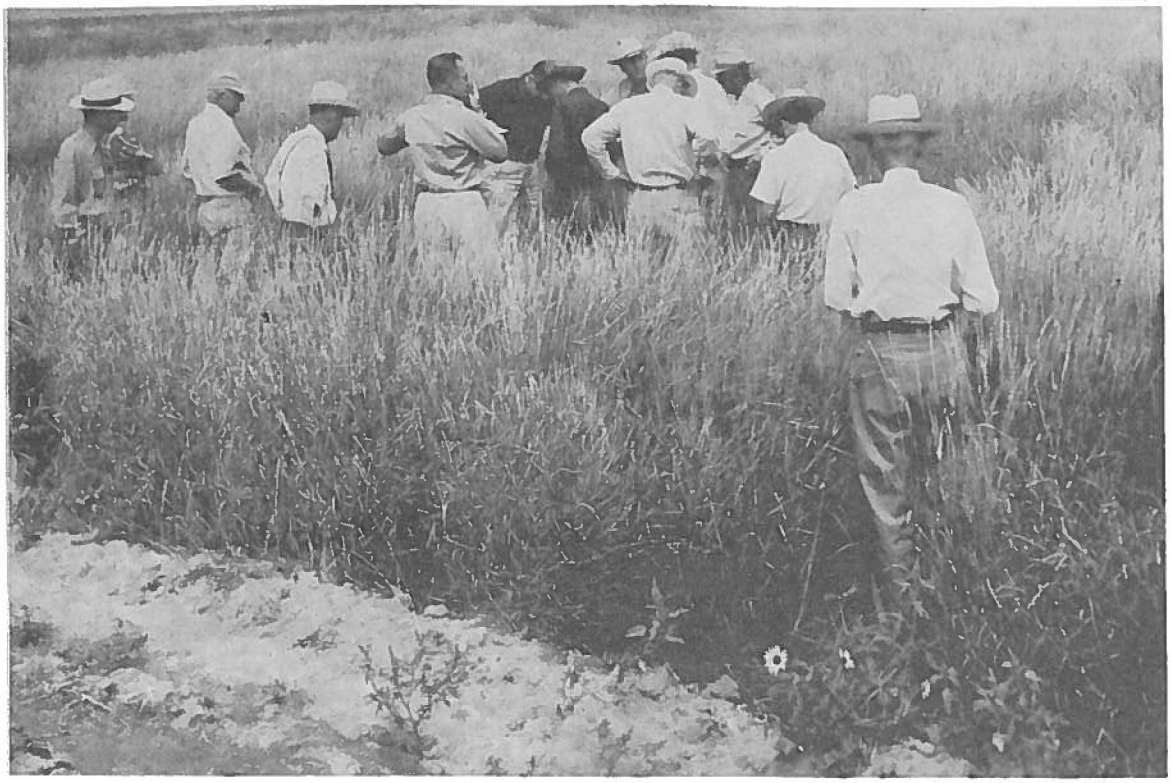


DEMOCRACY!

Farmers cast their ballots FOR or AGAINST the Soil Conservation District.

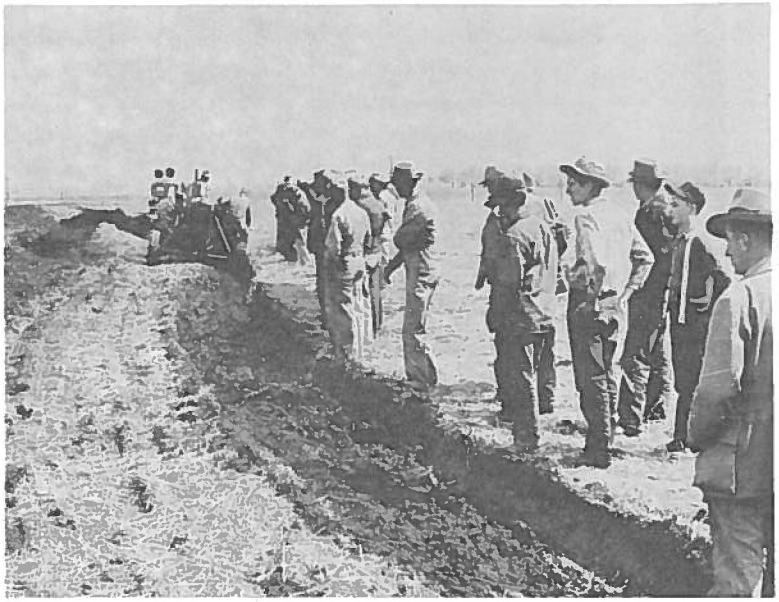
DEMONSTRATIONS

A demonstration is the show window of research. Demonstrations allow the "pioneer" to see what "explorers" have found.



Above: A well-planned demonstration is a means of acquainting farmers with new crop varieties, new farming methods, and recommended soil conservation practices.

Right: Terracing demonstrations have acquainted many farmers with terraces and their values.



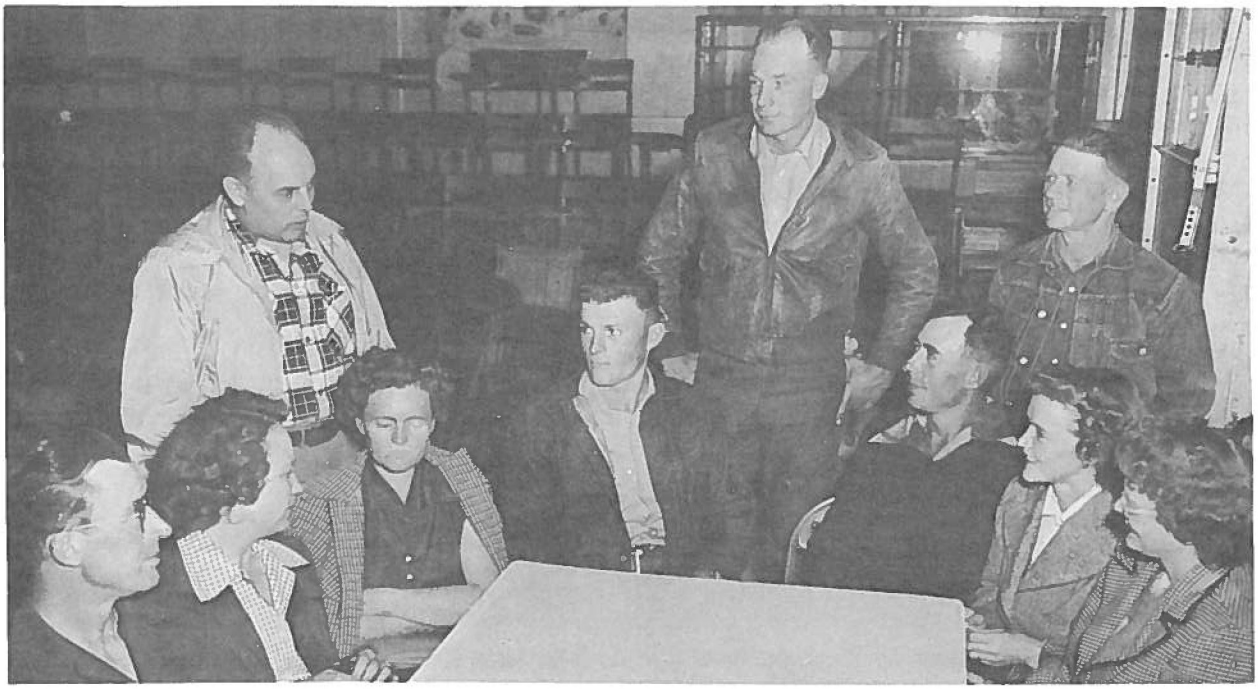
YOUNG CONSERVATIONISTS

High School FFA students learn conservation "by doing." Ditch layout job.

Conservation demonstrations are important to 4-H Club members.

YOUNG FARMERS AND HOMEMAKERS

Young Farmers and Homemakers, anxious to "pioneer," plan conservation field days as part of their yearly program.



EXHIBITS

Educational exhibits present information quickly and convincingly. They are especially helpful in creating interest in solutions to important farm, home and community problems.

Exhibits such as this are being widely used by all those who are spreading the gospel of conservation.

EXPLORE - PIONEER - THE SOIL !

We all recognize differences in land. What really counts these days are small differences not easily seen by those who are not farmers or ranchers or workers in soil science. "Mapping, studying and classifying soils"has gone on for quite a while, but it is still truly a "frontier."

Government agencies helping the man on the land with his conservation problems are dividing the thousands of soil types into eight groups. The first group needs little out of the ordinary in the way of conservation practices to keep its soils highly productive and safe from erosion.

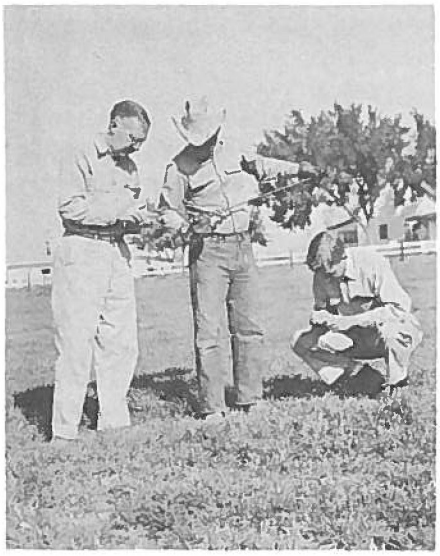
At the other extreme are the groups suited only for permanent covers of grass; soils which give trouble if they are urged to produce beyond their capabilities.

In between the extremes are three capability classes, suited to cultivation. But, they need constant, vigilant conservation practices.

Mapping and classifying soil has advanced sufficiently so that nearly every land owner can obtain capability information from his local soil conservation district. Study the soil!

SOIL SAMPLING

New and Old

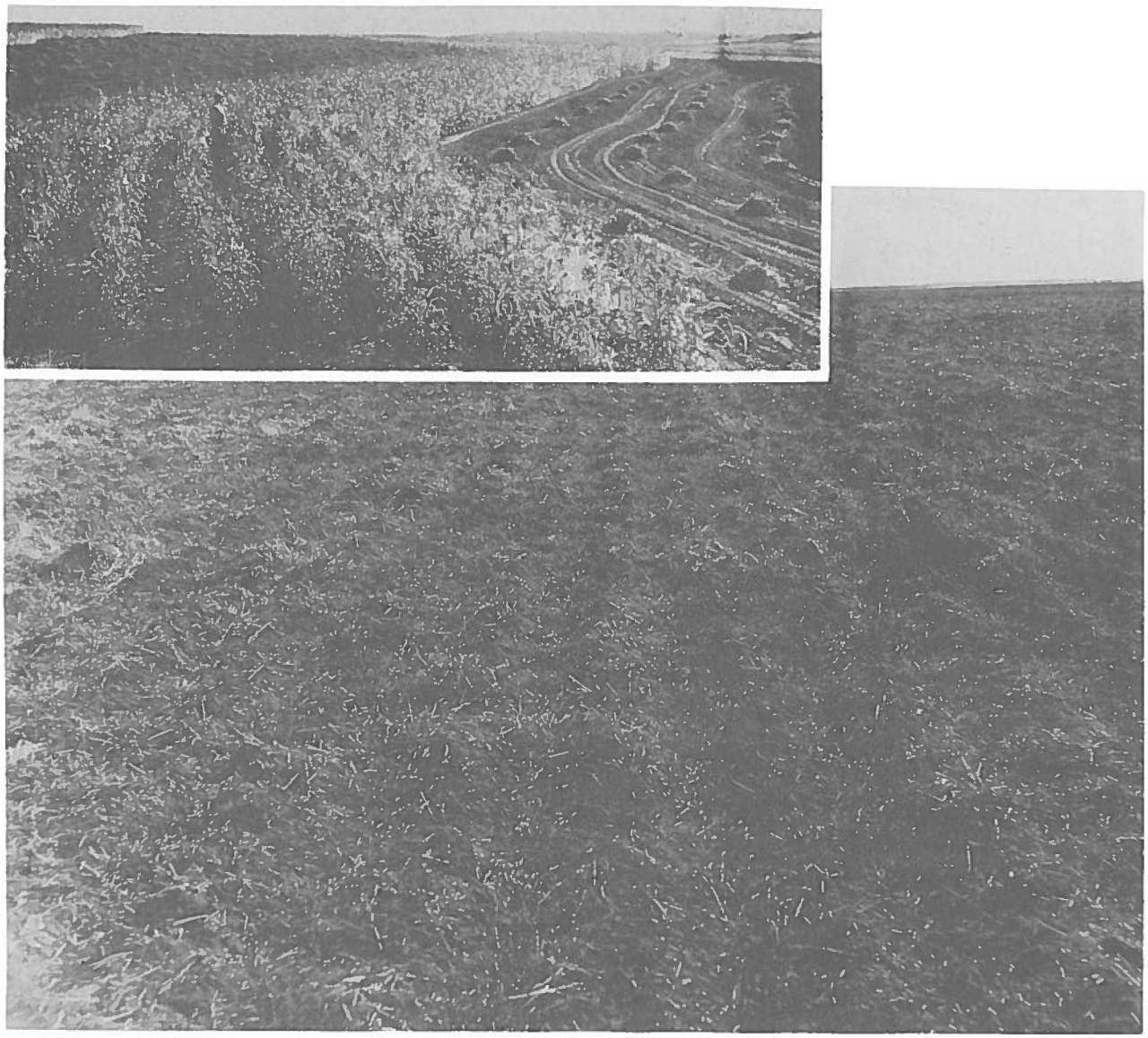


Farmers can make augers and learn much about their soil

PIONEERING DRY CROPLAND PRACTICES

The non-irrigated portion of Colorado classified as suitable for cultivation is located principally in the eastern portion of the State. Semi-arid conditions prevail and regulate the type of farming operations as well as the crops grown.

We have learned, in this area, from research and sometimes from sad experience, that special attention must be given to soil capabilities and the control of erosion. To know the capability of the land, and to know what it is best suited for is only the beginning. Action must follow !



Here is growing wheat in a "Stubble Mulch" at the height of the 1954 "blow." "Pioneer" farmers in Eastern Colorado are setting the pace in the number one job for all dryland farmers. Strip Cropping is a good companion practice for "Stubble Mulching."

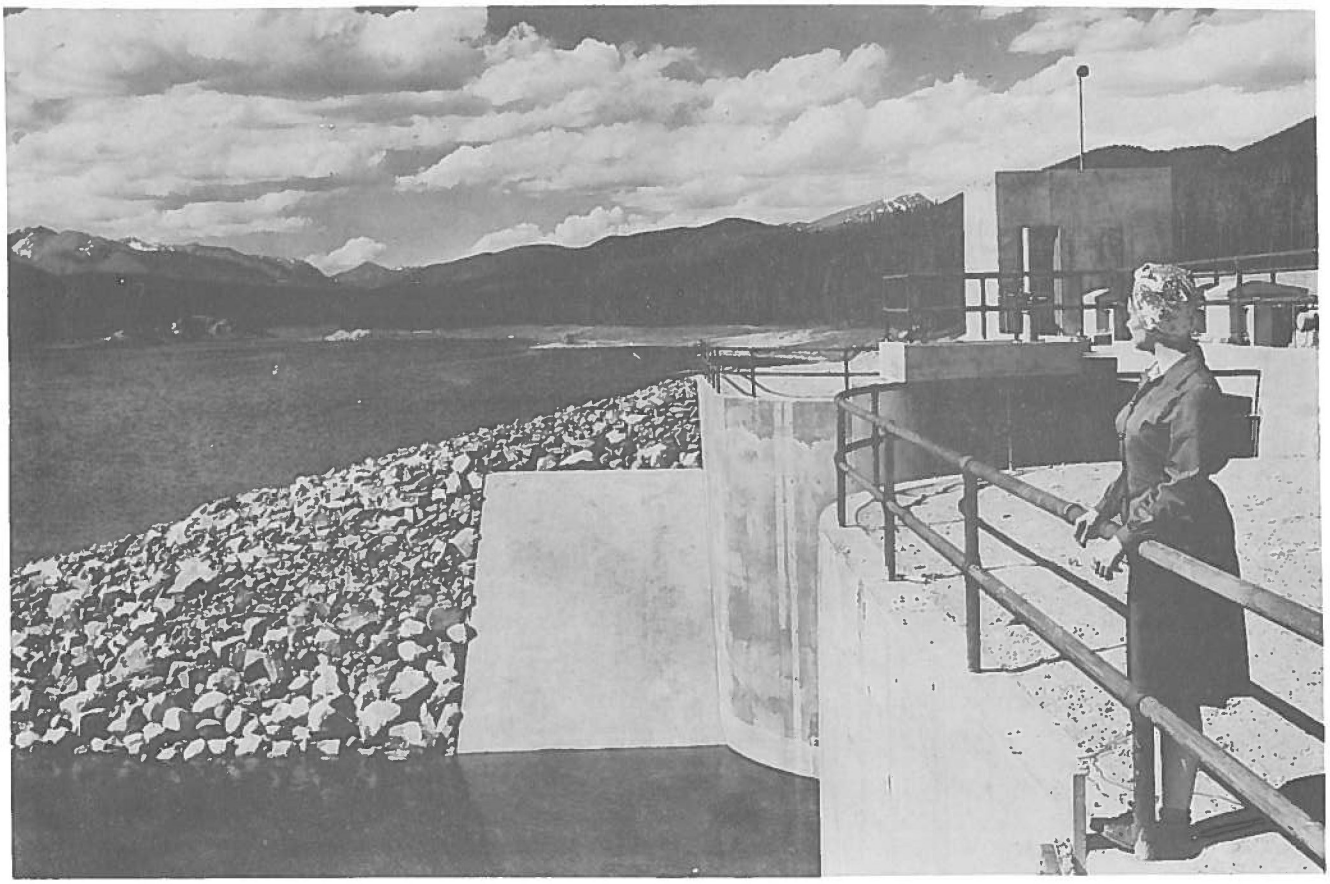
FRONTIERS IN IRRIGATION

The high mountain area where heavy snows accumulate serves as the source of water for irrigation as well as domestic and industrial use. Good land use in the mountains insures a steady flow of useable water. The United States Forest Service has "pioneered" the way.

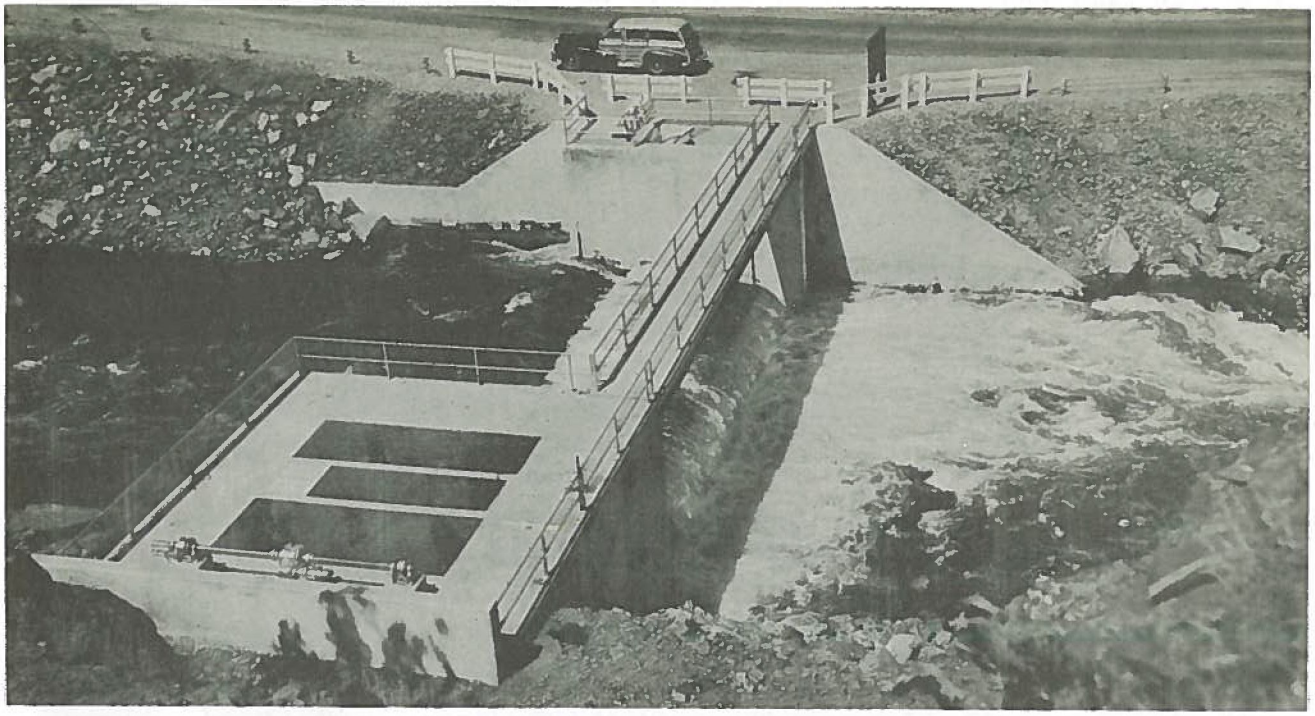
Snow in the high country stabilizes stream flow.

Summer grazing is permitted after the snow has gone.

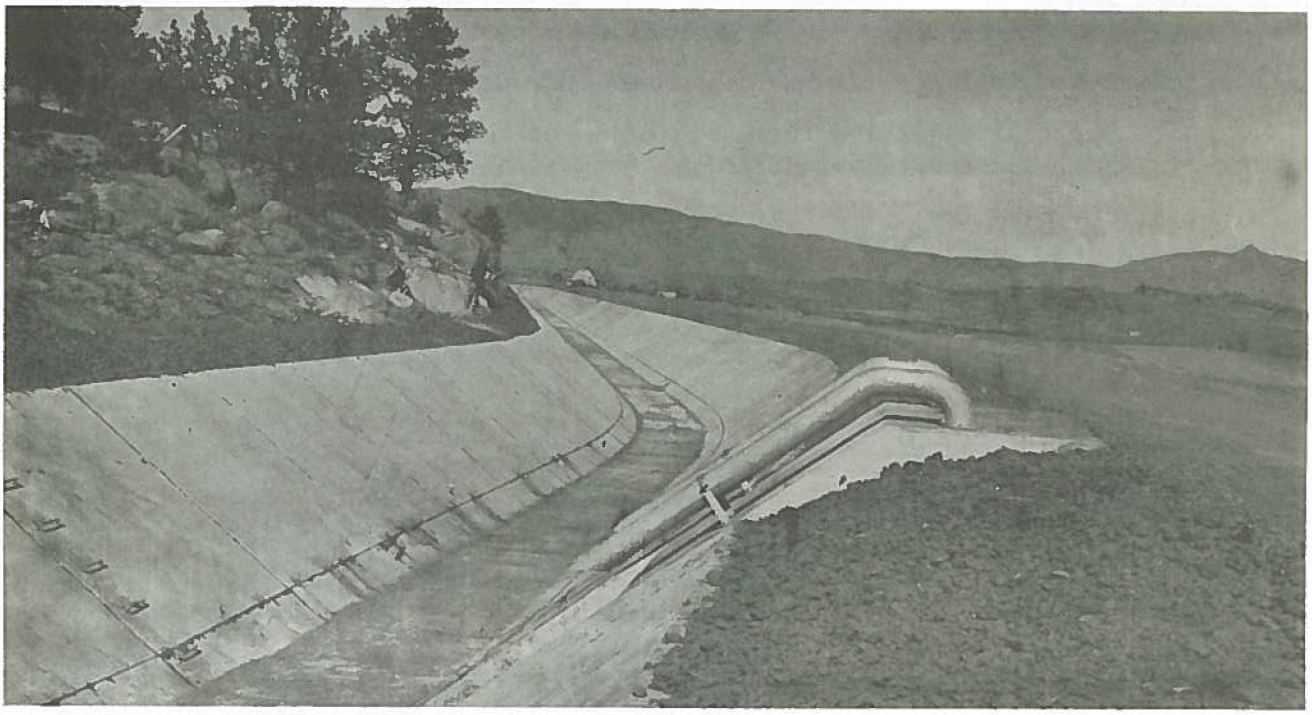
If watersheds erode it affects many people.



Water storage supports wildlife and recreation, and assures a supply of water for the irrigation season. Pioneering here is important, and a job that means a lot to each of us. Storage facilities constructed in the last few years are Granby, Willow Creek and Horse Tooth Reservoirs on the Big Thompson Project.



Water control structures such as this Thompson River diversion give positive control of water.



Ditch linings save water. The Horsetooth Feeder Canal near Loveland is an important segment of the Big Thompson Project.

PIONEERING WATER CONSERVATION

Irrigation water control and small structures on the farm are largely the job of the land owner. The Forest Service, Bureau of Reclamation, and many irrigation companies are doing work on the big jobs. Water conservation on the farm has just begun. The farm is the place water can really be saved. Ditch linings, structures, proper irrigation and weed control are all ahead !

Small ditch lining forms can often be rented from local Soil Conservation Districts.

Convenient concrete structures are easy to build, save water.

RANGE LAND FRONTIERS

Approximately 40 million acres of land in Colorado produce a forage crop on which livestock is grazed. The soil capabilities of most of this land are such that much of it must always remain in permanent grass crops, grass crops to protect it for the future. However, these areas respond to careful management and the native vegetation can produce a bountiful harvest of feed and livestock. A wide "frontier" of "grass-management" work lies ahead.

Grass management of the future will provide erosion protection and more production than ever before, of food and fiber.

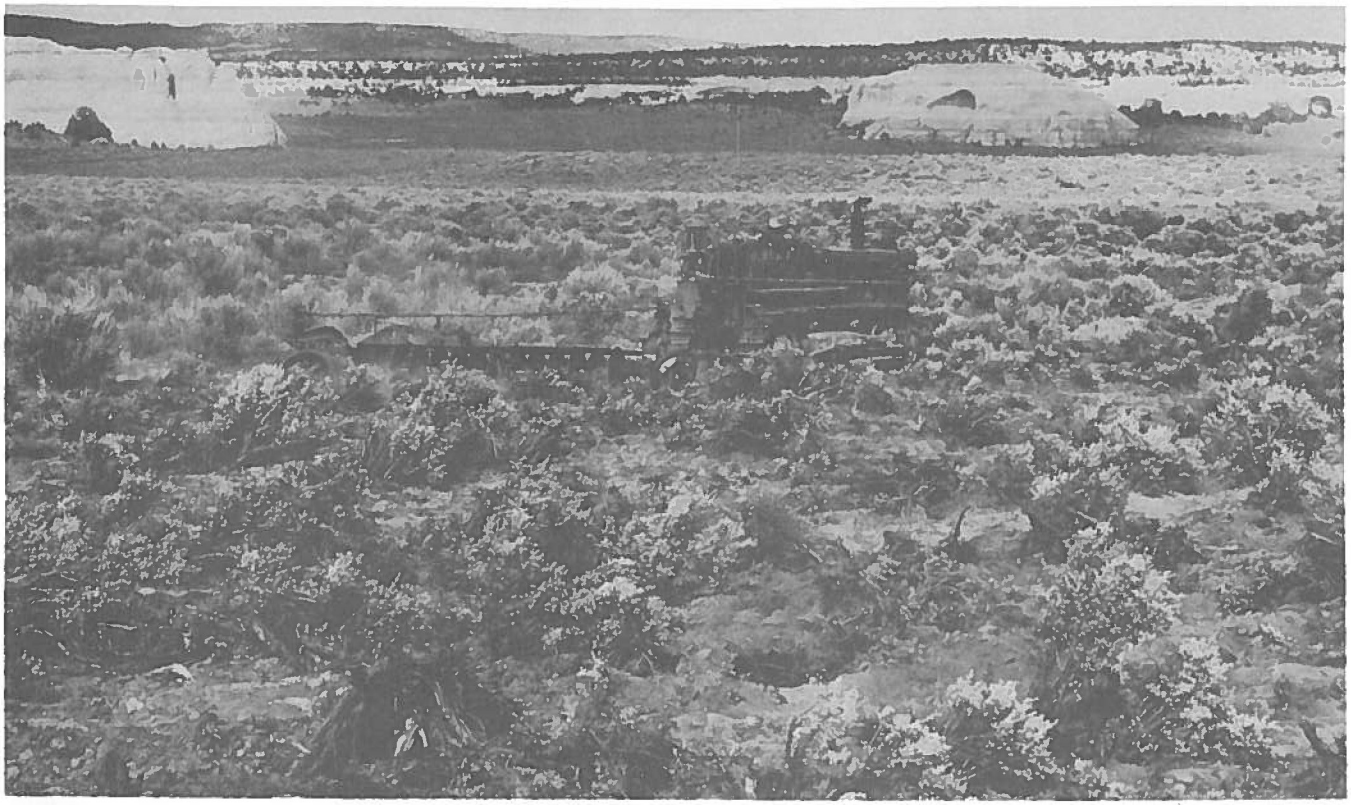
Mountain meadow improvement is a job just begun. Long neglected meadows are a current problem for the conservationist "explorers."

LAND PREPARATION

Land leveled with instruments and large equipment saves money. This exacting work should be planned and checked by skilled men. The Soil Conservation Service supplies help for the farmer and rancher on many jobs.

Large scale leveling pioneered in the last twenty years by heavy equipment allows more efficient use of water.

SAGE BRUSH RANGE PROBLEMS



Production is low on sage brush ranges, yet thousands of acres of this land is capable of producing desirable grass. A big job ahead is the clearing of sage and reseeding to grass.

A "Frontier" as yet, almost untouched is the seeding of low capability plains land. The part of the land in Eastern Colorado unsuited to regular cropping challenges the "pioneers."

PIONEERING LAND REPAIR

Good lands, damaged by seepage, need to be drained.

Gullies formed in times of unwise land use remain to be healed.

Trees and shrubs, planted and protected, can heal.

This Board acknowledges with thanks and appreciation, the cooperation and assistance of the Colorado Historical Society for providing the print for the cover page of this brochure.

Acknowledgment is also made to the Colorado State Extension Service, The Colorado State Experiment Station, the Soil Conservation Service of the United States Department of Agriculture, and the Colorado Department of Agriculture for the use of the photographs and material which they have provided the Board.

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