VENT_224

VENT_224

2-65-1

CHECK SOIL MOISTURE BEFORE IRRIGATING

(Left) Using a shovel or auger, the soil should be examined to determine the amount of water present in the root zone before irrigating. The amount to be added can then be calculated, based upon the water holding capacity of the soil.

In order to apply water efficiently to the soil, it is necessary to know the amount of water needed to refill the root zone. (See Chart on Page 3)

CHECK DEPTH OF WATER PENETRATION

(Right) The soil should be checked with probe or auger during irrigation to see how deep the water is going so that needed adjustments can be made.

About 48 hours following the irrigation, another soil check should be made to determine whether moisture was added to the desired depth.

2-65-5

2-65-6

EFFICIENT WATER APPLICATION RESULTS

(Left)

1. Uniform stand and growth of crops.
2. Uniform crop maturity.
3. Savings in water and labor.
4. Maximum crop yields.

R7-149
Revised
1-1-53

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
PACIFIC REGION

THE STANDARD LAND CAPABILITY CLASSIFICATION

The first step in preparing a conservation farm plan is to make a careful survey of the land. The details of soil, slope, erosion and many other physical features are plotted on aerial photographs by an experienced soil scientist.

This detailed information is used to develop a classification of land based on its capability for use. The classification contains two general divisions: (1) Land safe to cultivate, and (2), land not suited for cultivation. Each of these has 4 classes which are shown on the map by a standard color and number. The larger the number of the class, the greater is its hazard for use. For example, Class I has few or no hazards while Class VIII has a great many.

Land-capability classes are divided into subclasses. These show the principle kind of conservation problem involved, such as subclass "e" for erosion, "w" for wetness, "s" for soil, and "c" for climate. The subclasses in turn are divided into units. Each of these is enough different from all others to require its own distinctive treatment in order to use it to best advantage.

The 8 Land-capability classes with their standard colors and symbols are as follows:

LAND SUITED FOR CULTIVATION

CLASS I — Best land for cultivated use. Deep soil, nearly level, little or no erosion, adapted to a wide variety of crops. No special difficulties in farming.

CLASS II — Good land for cultivation. Gentle slopes, usually moderately deep soil, or other minor problems. Frequently requires some moderate degree of protection from erosion or improvement of the drainage.

CLASS III — Moderately good land for cultivation. Usually gentle slopes but somewhat steeper than those in Class II; commonly shallow soils or with moderate to severe erosion. Some level land with poor drainage and with alkali in places. Needs special protection from erosion, waterlogging, or other hazards.

CLASS IV — Fairly good land. Suitable for occasional cultivation, usually not more than 1 year in 6. Best suited for hay or pasture, or for orchards and vineyards if protected by cover crops. Some Class IV land can be used for seasonal or other special crops under very careful management.

LAND NOT SUITED FOR CULTIVATION

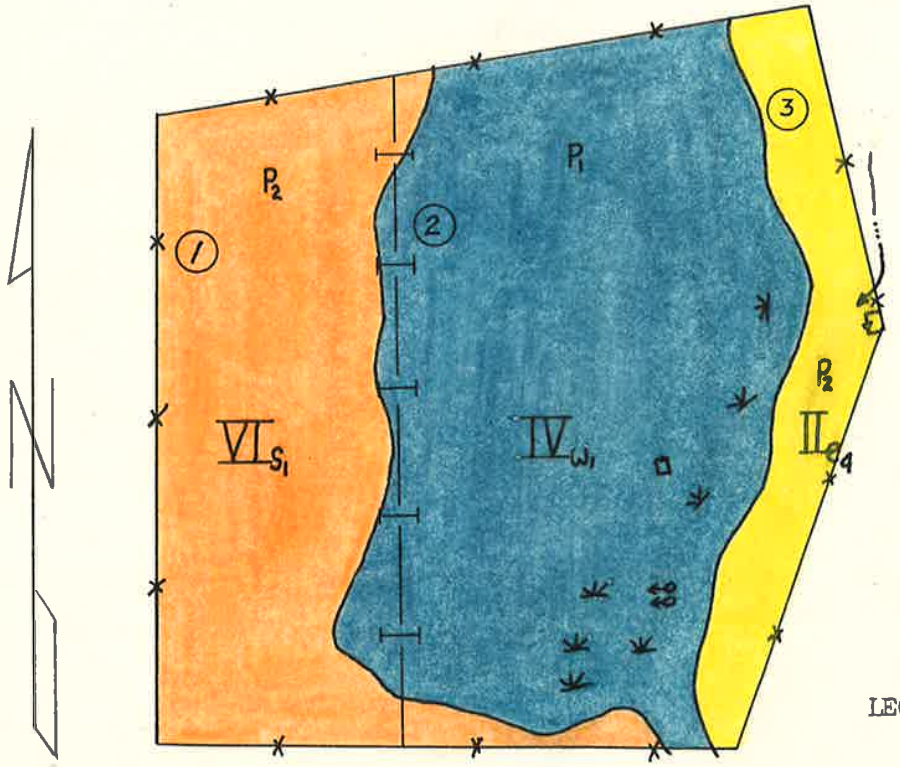
CLASS V — Very well suited for grazing or forestry depending on climatic conditions. Has little or no physical limitation for such use and requires only good range or woodland management.

CLASS VI — Well suited for grazing or forestry. Characterized by steep slopes, susceptibility to erosion, shallow soils, alkali or other unfavorable conditions and requires more careful management than Class V land. Safely used for orchards or vineyards under permanent cover.

CLASS VII — Fairly well suited for grazing or forestry. Has major hazards or limitations such as: very steep slopes, shallow or droughty soils, excessive erosion, or severe alkali conditions. Requires very careful management.

CLASS VIII — Land not suited for cultivation, grazing, or forestry, but may be used for wildlife, recreation, or as a source of water supply.

A G R-SCS PORTLAND, ORE. JAN. 1953



LEGEND

(2)	Field numbers
×——×	Existing fence
—I——I—	Proposed fence
~~	Soil boundary line
···→	Intermittant stream
o→	Spring
⁂	Wet spots
II_{e_4}, IV_{w_1}, etc.	Land Capability classification

CONSERVATION PLAN

OPERATOR Ted Thompson FARM NO. 15 DATE Dec 57

Eureka S.C.D. Nevada ACRES 191 SCALE 1" = 800'

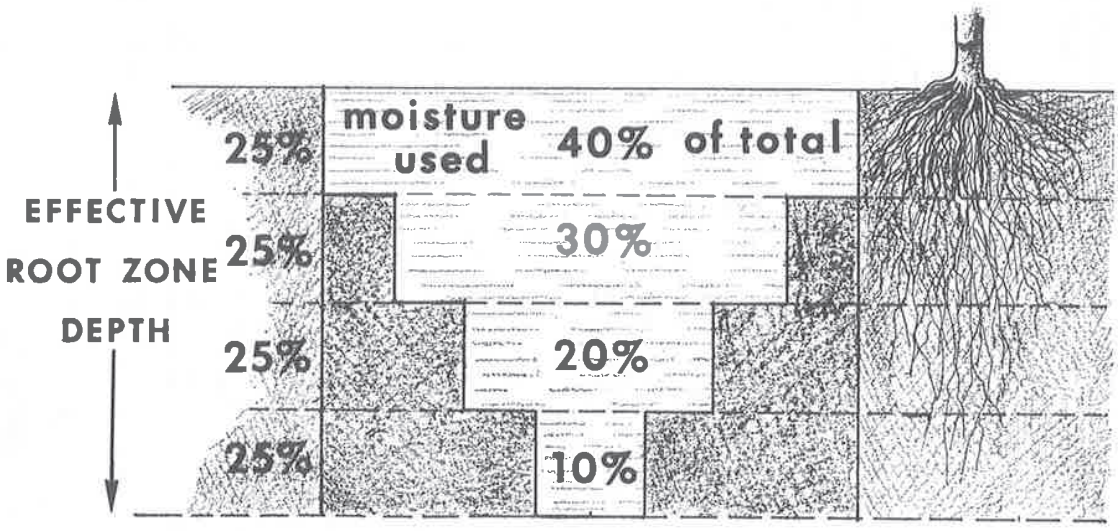
How to Estimate the Amount of Water to Apply

If you dig a hole or trench in a field which has not been irrigated for 2 or 3 weeks, you probably will find the upper portion of the soil quite dry. There is a greater concentration of moisture-using roots in the top foot or two of soil than deeper. Also, water has evaporated to the air from the top few inches of soil. As you dig down, the soil will become more moist. Here the plants have taken water at a slower rate, so more remains in the soil. Usually, about 40 percent of the moisture is taken from the top quarter of the root zone, and lesser amounts from the lower quarters.

During hot, dry periods when the plants are large and still growing rapidly, water will be used fast and the top part of the root zone will dry out quickly. When the weather is cooler or cloudy, the plants will use water more slowly. With a young, immature crop, the roots will not yet extend very deep, and the moisture will be used from a smaller portion of the soil.

You can estimate about how much water to apply under any of these conditions by examining the soil profile before irrigating. Several spots in the field should be checked. A shovel can be used, but in some soils a soil auger or sampling tube is better. Be sure to check the moisture to the full depth you expect the crop roots to use moisture. This depth may vary from as little as 2 feet or less for some truck crops to 6 or 8 feet or more for alfalfa or orchard. In arid or semiarid climates particularly, rainfall is often insufficient to replenish the moisture needed in the lower root zone. It is important that you add water to wet the lower part of the root zone if it is not already near field capacity.

As you dig or auger into the soil, examine the sample that you get from each foot of depth. Squeeze a handful of the soil sample very firmly and compare its appearance and feel with the description given in the accompanying guide.



Most crops in deep, uniform soils use moisture more slowly from the lower root zone than from the upper soil as shown. The top quarter is the first to be exhausted of available moisture. The plant then has to draw its moisture from the lower three-quarters of root depth. This places a stress on the plant, and adequate moisture to sustain rapid growth cannot be extracted by the roots.

IMPROVED WATER APPLICATION • CAN SAVE WATER, SOIL and LABOR and INCREASE YIELDS

2-30-6

HAVE THE LAND IN GOOD CONDITION

(Left) Level land makes it possible to apply water more evenly to all parts of the field. Uniform water penetration over the entire field results in uniform crop growth.

Level land also makes it possible to add the correct amount of water to the soil with each irrigation.

HAVE A GOOD IRRIGATION SYSTEM

(Right) The irrigation system should:

1. Provide for positive control of water onto the field.
2. Prevent erosion and excessive seepage losses.
3. Be designed to deliver the proper amount of water.

2-19-7

2-65-2

DETERMINING WATER INTAKE RATE

(Left) It is important to know how fast the soil will take water. This information makes it possible to estimate the:

1. Correct size of stream to use in each border or furrow.
2. Time required to wet the soil to the desired depth.
3. Grades to level to.
4. Lengths of irrigation runs.

USDA-SCS PORTLAND, OREG. 1962 M-3638

HOW TO ESTIMATE MOISTURE CONTENT BY "FEELING" THE SOIL

This is known as the ball test. To make the test, squeeze a handful of soil three or four times like milking a hard cow. If the soil is dry, it will not form a ball. If you can form a ball that remains intact after being tossed one foot into the air five times and catching it as you would a baseball, it is durable. If it breaks with less than five tosses, it is weak.

Chart for Estimating the Amount of Available Moisture in the Soil and for Estimating the Amount Needed to Refill the Soil

Per Cent of Available Moisture Remaining	Coarse	Light	Medium	Heavy to Very Heavy
	Sand to Loamy Sand	Loamy Fine Sand to Fine Sandy Loam	Very Fine Sandy Loam to Silt	Sandy Clay Loam to Clay
0 to 25	Dry, loose, single-grained. Flows through fingers.	Dry, loose, dusty. Flows through fingers.	Hard, dry, cloddy or crusted. Will break down into powdery condition.	Hard, baked, cracked. Sometimes has loose crumbs on surface.
25 to 50	Still appears to be dry. Will not form a ball with pressure.	Still appears to be dry. Will not form a ball.	Somewhat crumbly, but will hold together from pressure.	Somewhat pliable. Will ball under pressure.
50 to 75	Will not form ball but has color change because of moisture.	Tends to ball under pressure but seldom will hold together.	Forms a durable ball, somewhat plastic. Will sometimes slick slightly with pressure.	Forms a durable ball. Will ribbon out between thumb and forefinger.
75 to Field Capacity	May stick together slightly. Sometimes forms very weak ball under pressure.	Forms weak ball, breaks easily. Will not slick.	Forms a durable ball and is very pliable. Slicks readily if relatively high in clay.	Easily ribbons out between fingers. Has a slick feeling.
At Field Capacity	Wet outline of ball is left on hand. No free water appears.	Same as Coarse.	Same as Coarse.	Same as Coarse.
Above Field Capacity	Free water appears when ball is bounced.	Free water is released when kneading.	Free water can be squeezed out.	Free water forms on surface. Soil puddles.

Chart Showing Range in Available Moisture Holding Capacity (Inches of Water Per Foot of Soil)

Coarse	Light	Medium	Heavy to Very Heavy
Sand to Loamy Sand	Loamy Fine Sand to Fine Sandy Loam	Very Fine Sandy Loam to Silt	Sandy Clay Loam to Clay
0.6 to 1.0	1.0 to 1.5	1.5 to 2.5	1.6 to 2.5

CONSERVATION RANCH PLAN

TED THOMPSON

COOPERATING willow

with the

EUREKA #3

SOIL CONSERVATION DISTRICT

NEVADA

3815

PLAN NUMBER NV-SCD-20-15
PLANNED BY Beckstrom
DATE January 1954

Assisted by

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FARMER-DISTRICT COOPERATIVE AGREEMENT
Eureka Soil Conservation District

No. NV-SCD-20-~~37G~~ 15

I understand the purpose of our Soil Conservation District, its objectives, and program. I intend to use my land within its capabilities and treat it according to its needs and to this end I enter into the following agreement with the Soil Conservation District.

I agree:

1. To develope as rapidly as feasible a basic conservation plan for my farm.
2. To comply with State laws governing the beneficial use of water.
3. To maintain as best I can all structures and to use all other conservation measures put into effect on my land.
4. To pay the prevailing rate for use of equipment furnished by the district at my request.

The District agrees:

1. To supply a land capability inventory of my farm (or ranch).
2. To supply as soon as possible a guide for needed treatment by alternative land use for each land capability unit.
3. To make available technical assistance to help prepare and apply a basic conservation plan for my farm (or ranch).
4. To furnish equipment and materials, if available, for conservation use.

It is mutually agreed:

1. That neither the District nor I will be liable for damage on the other's property while the conservation measures are being carried out unless such damage is caused by negligence or misconduct.
2. That in the event of sale of the farm (or ranch) neither I nor the new owner will be under any obligation to carry out the provisions of this agreement.
3. That help received from the district will be dependent on the amount of assistance the district has to offer.

This agreement shall start on the date of the last signature to it. If not ended before, it will be in effect until _____. It will then be automatically renewed from year to year unless the district or I agree by written notice to the contrary, at least 60 days before any termination date.

SIGNATURES

Fred McThompson _____
Owner's name Date

_____ _____
Operator's name Date

_____ _____
Address Address

FOR THE SOIL CONSERVATION DISTRICT:

Floyd M. Schaefer Dec. 14, 1951
Supervisor Date

Owner - Ted Thompson
Operator - Ted Thompson

Ranch No. - NV-SCD-20-15
Acres - 191

GENERAL

This ranch is one of the several operated by the owner. It lies to the north of the home ranch and in some respects varies little from the other ranches owned. Therefore, many of the conservation measures applicable to the other ranches also apply here; hence this ranch plan will be briefed to that extent to keep from duplicating.

SOILS

The soils found on this ranch classify the land into three capabilities. The best of the land (Colored Yellow) falls into capability IIe_4. The soil here is characterized by being deep (average of 48"), medium textured, and underlain by a claypan. Slope is about four percent and there is evidence of moderate erosion. This soil is affected slightly by saline and alkali salts.

The next best soil falls into classification IVw_1 (Colored Blue). It is characterized by being deep, heavy textured, with a slow permeability rate, and underlain by a claypan. There is very little slope to this land and therefore it is moderately affected by poor drainage. A slight saline and alkali condition also exists.

The other soil found on this property is classified as VIs_1 (Colored Orange). This soil is moderately deep (average 28"), heavy textured, and underlain by a claypan. Permeability rate is slow. There is very little slope to this soil and no sign of erosion. It is affected slightly by a wetness, salinity and alkalinity condition.

CONSERVATION TREATMENT

The conservation problems are considered to be the following:

1. Drainage
2. Water Spreading
3. Seedbed Preparation
4. Seeding Mixtures
5. Fertilizing
6. Pasture Management

Drainage - (Field 2 - 102 Acres). To help alleviate the wet condition of this field, open drains should be established. Actual layout design of these drains will be furnished upon your request at time of installation.

Water Spreading - (Fields 1 and 2 - 167 Acres). If drains from field 2 pick up any water, it should be spread on field 1. This will aid you in an attempt to establish better forage grasses here. Once established the grasses suggested below will probably be able to maintain themselves without further irrigation.

A water spreading system should be established on field 3 so that when runoff water is available, it can be utilized.

Seedbed Preparation - (Fields 1, 2 and 3 - 191 Acres). As suggested in your other plans, a seedbed should be prepared before attempting to establish any of the tame grasses or legumes. This means that the present cover of sod will have to be completely broken up and smoothed down before seeding.

Seeding Mixtures and Cropping Practices - (Fields 1, 2, and 3 - 191 Acres). Below are the suggested mixtures for the various fields with their seeding rates.

For Field 1

Tall Wheatgrass	8 Pounds per Acre
Yellow Sweet Clover	5 Pounds per Acre
	13 Pounds per Acre

For Field 2

Manchar Smooth Brome	6 Pounds Per Acre
Timothy	2 Pounds Per Acre
Alsike Clover	2 Pounds Per Acre
Mammoth Red Clover	4 Pounds Per Acre
	14 Pounds Per Acre

For Field 3

If irrigation water is available, the following mixture is suggested:

Alfalfa	6 Pounds Per Acre
Smooth Brome	8 Pounds Per Acre
	14 Pounds Per Acre

If irrigation water is never available, then crested wheatgrass and alfalfa should be tried at the indicated rates.

Ladak alfalfa	1 Pound per Acre
Crested Wheatgrass	6 Pounds per Acre
	7 Pounds per Acre

The same principles of crop rotation and seeding apply on this ranch as was discussed in the Mau farm plan.

Fertilizing - (Fields 1, 2 and 3 - 191 Acres). Because of the low fertilizer and organic content of these soils, commercial fertilizing will aid tremendously in attempting to establish any of the above seedings.

Therefore, trial plots should be initiated to determine the amounts and kinds of fertilizer to use.

All available barnyard manure should be applied at the rateof 10 tons per acre.

Pasture Management - (Field 1 - 65 Acres). To graze this field and not interfere with your hay production on fields 2 and 3, a fence should be constructed as shown on the map. Then this field should be grazed in a rotation-deferred system with your other range fields. Also tall wheatgrass has to be managed in the matter discussed in your Cox farm plan if it is to survive grazing.