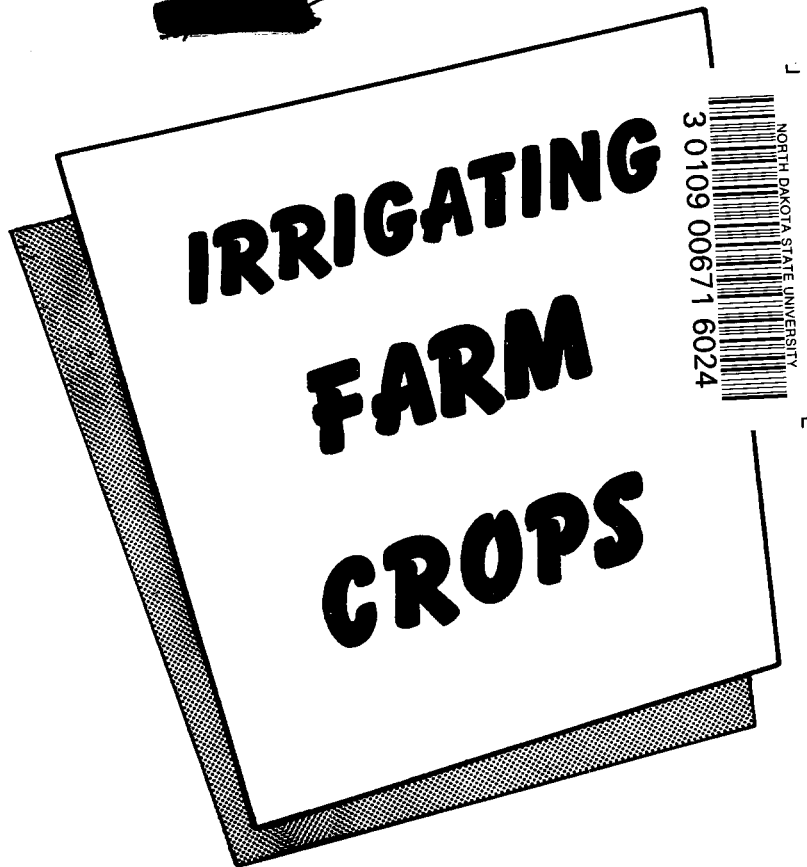


April 1953



5
544.3
.N9
A8
no. 192

Prepared by:
Daniel J. McLellan
Extension Water Use Agent

5
544.3
.N9
A8
no. 192

IRRIGATING FARM CROPS

When you irrigate you store water in the soil for plant use. It is important that the irrigation be made before the soil moisture is used up.

Do not delay irrigation until plants show signs of injury or you will lose about two weeks of growth. Plants will stop growing about a week before they show outward signs of dryness, and it will probably take another week to get them watered.

Time to irrigate is determined by soil moisture and the crop being grown. The best way to tell when it is time to irrigate is by looking at the soil.

Dig down and take a sample from 6 inches to a foot deep. If the soil cannot be pressed into a firm ball, it should be irrigated. If it does ball up firmly, it does not need additional water. It may not be possible to irrigate at the very time the soil needs water. In that case, irrigate early, considering the crop. There are critical periods when plants need water more than at other stages of growth.

It is well to consider the following when planning irrigation:

ALFALFA - Alfalfa needs water for regrowth after it has been cut. The best practice is to finish irrigating 4 or 5 days before cutting. This gives the ground a chance to dry up enough to permit haying, and gives the alfalfa roots a moisture supply to start regrowth. An irrigation in the fall will provide alfalfa with moisture for a quick start the next spring.

SMALL GRAINS - If the soil is dry, it should be watered before seeding. The greatest demand for water comes when plants are making vigorous growth, especially when in the boot stage. Irrigation after the milk stage is not recommended. It may cause severe lodging.

PASTURE - Irrigated pastures should be divided into two or more fields so the part being irrigated can be given a chance to regrow, while another field is being pastured.

The time of irrigation will depend on the length of time the stock are left on each field. Whenever the animals are moved, that portion of pasture should be irrigated immediately. Immediate irrigation hastens regrowth.

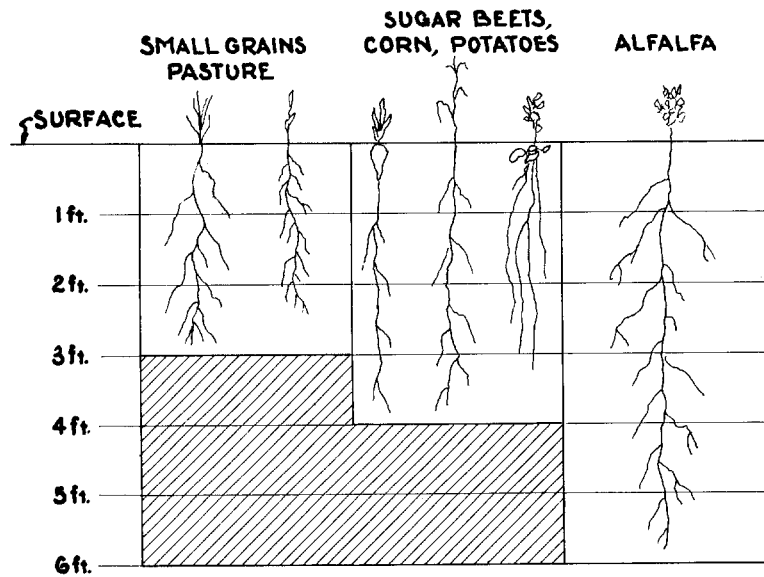
Divide your irrigated pasture into as many parts as is practical. An electric fence is a good divider. Pastures that are stocked heavily and eaten rapidly have the highest carrying capacity. Divide your pasture so you can irrigate every 2 to 3 weeks.

POTATOES - Potatoes need a constant supply of available soil moisture for maximum yield and good quality. The root area must be kept moist constantly, but water should not stand around tubers. This can be avoided by high hilling. Frequent light irrigations are necessary. Stop irrigating about a month before harvest so your potatoes have a chance to mature properly.

CORN - Corn is sensitive to too much water. Usually, two irrigations will be enough. The time corn needs water most will be at the jointing stage and again at the tasseling stage. Later irrigations may delay maturing.

HOW MUCH WATER TO USE

When you are putting water on the soil you should put on just as much at one time as your soil can store for plant use. Figure No. 1 shows how deep different plants take water from the soil. For example, small grains take their water from the top 3 feet, so add enough water at each irrigation to wet that top 3 feet of soil.



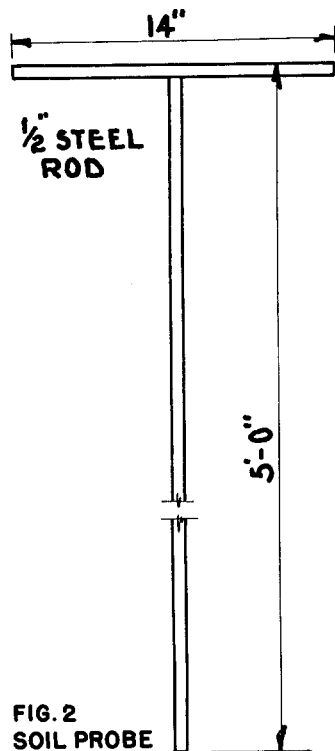


FIG. 2
SOIL PROBE

You can tell how deep the soil has been wetted by using a soil probe. This probe can be made by welding a crosspiece on top of a 5-foot length of 1/2-inch steel rod. The probe can be pushed easily into wet soil, but will stop when it hits dry dirt. Stop irrigating when the probe goes down 2/3 of the depth you want to irrigate. Stop irrigating when the probe strikes dry soil at 2 feet for small grains and pasture, 2 feet 8 inches in corn, sugar beets and potatoes, and at 4 feet in alfalfa.

A soil probe can save you many dollars in power and in labor. By using it you can tell whether soil around the roots is storing as much water as it can hold. When this root zone is full, it does no good to irrigate more, it merely wastes water. If the root zone is not filled, it will require water sooner than if it were filled, and will either cause the crop to suffer for lack of moisture or make necessary an additional irrigation.

It is important not to put on water at a rate faster than the soil will soak up. Too fast application results in soil and water losses and wasted power.

SOIL MANAGEMENT

Irrigation produces higher yields than dry farming. The higher yields take more plant food from the soil. Here are some good soil management practices to follow:

- Have a good rotation. Legumes and grasses build up soil structure when they are plowed under and make it easier to irrigate. Irrigated legumes and grasses drop off in yield after 3 or 4 years.

● Barnyard manure supplies plant food and builds up soil structure. Apply all that is available.

● Avoid too much cultivation. Don't cultivate fields that are too wet.

● Fall plowing helps soil by exposing it to freezing and thawing.

● Don't burn stubble.

● Avoid continuous cropping.

● Use commercial fertilizer.

Recommended Fertilizer Rate

Alfalfa and pastures - (Broadcast) 150-250 lbs. 0-43-0 per acre

Small grain & flax - (Drill attachment) 100 lbs. 11-48-0 per acre

Potatoes - (Planter attachment) 150 lbs. 11-48-0 per acre

Corn - (Planter attachment & side dressed) 200 lbs.
16-20-0 per acre

Unless a crop rotation is maintained, the condition of the soil will become bad and yields will drop. A good rotation with alfalfa or grass is necessary to maintain humus, or organic matter, in the soil. Humus is very important in irrigation because it helps the soil take and hold the irrigation water as it is applied. If humus is not maintained, the soil will become sticky and hard to work, and crop yields will suffer. Here is a sample rotation:

1st year-Small grain or flax (nurse crop) and alfalfa
(or pasture)

2nd year-Alfalfa (or pasture)

3rd year-Alfalfa (or pasture)

4th year-Alfalfa (or pasture)

5th year-Alfalfa (or pasture)

6th year-Row crop

7th year-Small grain, flax (or row crop)

8th year-Small grain or flax (nurse crop) and alfalfa
(or pasture)