Is the attached report from Floyd Brown in sufficient detail??
We would prefer to have his interpretations and pertinent data on yields and crop conditions if it is feasible.

I think Ted can explain this. Ted Dohle is going to take over this work. Ted should have this and consult with Ted if necessary and perhaps also Dr. Robertson.

C.

From
H. S. Wilgus
by RHA
The attached table is a summary of the irrigation measurements I made on the Agronomy Farm during 1945 and 1946.

Floyd E. Brown
Extension Irrigation Specialist
<table>
<thead>
<tr>
<th>Series</th>
<th>Date</th>
<th>Crop</th>
<th>Acres Irrigated</th>
<th>Hours Irrigated</th>
<th>Applied</th>
<th>Absorbed</th>
<th>Run-off</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>June 13, 1946</td>
<td>S. Gr. nursery</td>
<td>1.09</td>
<td>3.50</td>
<td>3.1</td>
<td>2.7</td>
<td>0.1</td>
</tr>
<tr>
<td>400</td>
<td>June 11, 1945</td>
<td>S. Gr. nursery</td>
<td>1.06</td>
<td>4.75</td>
<td>4.7</td>
<td>3.6</td>
<td>1.1</td>
</tr>
<tr>
<td>500</td>
<td>Aug. 3, 1945</td>
<td>Alfalfa - part</td>
<td>0.28</td>
<td>2.25</td>
<td>5.1</td>
<td>4.0</td>
<td>1.1</td>
</tr>
<tr>
<td>600 &amp; 700</td>
<td>June 14, 1946</td>
<td>S. Gr. Nursery</td>
<td>1.31</td>
<td>3.75</td>
<td>3.9</td>
<td>3.9</td>
<td>0.0</td>
</tr>
<tr>
<td>800</td>
<td>June 12, 1945</td>
<td>Rotation</td>
<td>1.52</td>
<td>20.00</td>
<td>13.3</td>
<td>10.9</td>
<td>1.4</td>
</tr>
<tr>
<td>900</td>
<td>June 11, 1945</td>
<td>Sweet clover</td>
<td>1.06</td>
<td>4.50</td>
<td>4.9</td>
<td>3.1</td>
<td>1.8</td>
</tr>
<tr>
<td>1000</td>
<td>Aug. 2, 1945</td>
<td>Rotation</td>
<td>1.62</td>
<td>7.50</td>
<td>4.3</td>
<td>3.9</td>
<td>0.4</td>
</tr>
<tr>
<td>1100</td>
<td>Aug. 3, 1945</td>
<td>Barley and new seeding</td>
<td>2.10</td>
<td>10.25</td>
<td>7.2</td>
<td>6.7</td>
<td>0.5</td>
</tr>
<tr>
<td>1200</td>
<td>Aug. 1, 1945</td>
<td>Corn Hybrids</td>
<td>2.10</td>
<td>8.00</td>
<td>4.3</td>
<td>3.4</td>
<td>0.1</td>
</tr>
<tr>
<td>1300</td>
<td>May 9, 1946</td>
<td>Corn Hybrids</td>
<td>2.10</td>
<td>6.00</td>
<td>4.0</td>
<td>3.2</td>
<td>0.0</td>
</tr>
<tr>
<td>1400</td>
<td>June 13, 1946</td>
<td>Sugar beets</td>
<td>2.10</td>
<td>5.75</td>
<td>3.3</td>
<td>3.2</td>
<td>0.1</td>
</tr>
<tr>
<td>1500</td>
<td>June 3, 1945</td>
<td>Sugar beets</td>
<td>2.10</td>
<td>9.50</td>
<td>3.1</td>
<td>3.1</td>
<td>0.0</td>
</tr>
<tr>
<td>1600</td>
<td>Aug. 1, 1945</td>
<td>Sugar beets</td>
<td>2.10</td>
<td>6.00</td>
<td>3.1</td>
<td>3.1</td>
<td>0.0</td>
</tr>
<tr>
<td>1700</td>
<td>May 9, 1946</td>
<td>Small grain</td>
<td>2.10</td>
<td>13.00</td>
<td>9.9</td>
<td>9.9</td>
<td>0.0</td>
</tr>
<tr>
<td>1800</td>
<td>June 25, 1946</td>
<td>Small grain</td>
<td>2.11</td>
<td>5.25</td>
<td>4.1</td>
<td>4.1</td>
<td>0.0</td>
</tr>
<tr>
<td>1900</td>
<td>July 30, 1945</td>
<td>Sugar beets</td>
<td>2.10</td>
<td>5.75</td>
<td>3.3</td>
<td>3.2</td>
<td>0.1</td>
</tr>
<tr>
<td>2000</td>
<td>Aug. 1, 1945</td>
<td>Sugar beets</td>
<td>2.10</td>
<td>9.50</td>
<td>3.1</td>
<td>3.1</td>
<td>0.0</td>
</tr>
<tr>
<td>2100</td>
<td>Aug. 8, 1945</td>
<td>Sugar beets</td>
<td>2.10</td>
<td>6.00</td>
<td>3.1</td>
<td>3.1</td>
<td>0.0</td>
</tr>
<tr>
<td>2200</td>
<td>July 11, 1945</td>
<td>Sugar beets</td>
<td>2.10</td>
<td>27.25</td>
<td>5.6</td>
<td>5.6</td>
<td>0.0</td>
</tr>
<tr>
<td>2300</td>
<td>July 14, 1945</td>
<td>Sugar beets</td>
<td>2.10</td>
<td>27.25</td>
<td>5.6</td>
<td>5.6</td>
<td>0.0</td>
</tr>
<tr>
<td>2400</td>
<td>July 17, 1945</td>
<td>Sugar beets</td>
<td>2.10</td>
<td>27.25</td>
<td>5.6</td>
<td>5.6</td>
<td>0.0</td>
</tr>
<tr>
<td>2500</td>
<td>July 20, 1945</td>
<td>Sugar beets</td>
<td>2.10</td>
<td>27.25</td>
<td>5.6</td>
<td>5.6</td>
<td>0.0</td>
</tr>
<tr>
<td>2600</td>
<td>July 23, 1945</td>
<td>Sugar beets</td>
<td>2.10</td>
<td>27.25</td>
<td>5.6</td>
<td>5.6</td>
<td>0.0</td>
</tr>
<tr>
<td>2700</td>
<td>July 26, 1945</td>
<td>Sugar beets</td>
<td>2.10</td>
<td>27.25</td>
<td>5.6</td>
<td>5.6</td>
<td>0.0</td>
</tr>
<tr>
<td>2800</td>
<td>July 29, 1945</td>
<td>Sugar beets</td>
<td>2.10</td>
<td>27.25</td>
<td>5.6</td>
<td>5.6</td>
<td>0.0</td>
</tr>
<tr>
<td>2900</td>
<td>August 1, 1945</td>
<td>Sugar beets</td>
<td>2.10</td>
<td>27.25</td>
<td>5.6</td>
<td>5.6</td>
<td>0.0</td>
</tr>
<tr>
<td>3000</td>
<td>August 4, 1945</td>
<td>Sugar beets</td>
<td>2.10</td>
<td>27.25</td>
<td>5.6</td>
<td>5.6</td>
<td>0.0</td>
</tr>
<tr>
<td>3100</td>
<td>August 7, 1945</td>
<td>Sugar beets</td>
<td>2.10</td>
<td>27.25</td>
<td>5.6</td>
<td>5.6</td>
<td>0.0</td>
</tr>
<tr>
<td>3200</td>
<td>August 10, 1945</td>
<td>Sugar beets</td>
<td>2.10</td>
<td>27.25</td>
<td>5.6</td>
<td>5.6</td>
<td>0.0</td>
</tr>
<tr>
<td>3300</td>
<td>August 13, 1945</td>
<td>Sugar beets</td>
<td>2.10</td>
<td>27.25</td>
<td>5.6</td>
<td>5.6</td>
<td>0.0</td>
</tr>
<tr>
<td>3400</td>
<td>August 16, 1945</td>
<td>Sugar beets</td>
<td>2.10</td>
<td>27.25</td>
<td>5.6</td>
<td>5.6</td>
<td>0.0</td>
</tr>
<tr>
<td>3500</td>
<td>August 19, 1945</td>
<td>Sugar beets</td>
<td>2.10</td>
<td>27.25</td>
<td>5.6</td>
<td>5.6</td>
<td>0.0</td>
</tr>
<tr>
<td>3600</td>
<td>August 22, 1945</td>
<td>Sugar beets</td>
<td>2.10</td>
<td>27.25</td>
<td>5.6</td>
<td>5.6</td>
<td>0.0</td>
</tr>
<tr>
<td>3700</td>
<td>August 25, 1945</td>
<td>Sugar beets</td>
<td>2.10</td>
<td>27.25</td>
<td>5.6</td>
<td>5.6</td>
<td>0.0</td>
</tr>
<tr>
<td>3800</td>
<td>August 28, 1945</td>
<td>Sugar beets</td>
<td>2.10</td>
<td>27.25</td>
<td>5.6</td>
<td>5.6</td>
<td>0.0</td>
</tr>
<tr>
<td>3900</td>
<td>August 31, 1945</td>
<td>Sugar beets</td>
<td>2.10</td>
<td>27.25</td>
<td>5.6</td>
<td>5.6</td>
<td>0.0</td>
</tr>
<tr>
<td>1000-1100-1200</td>
<td>June 11, 1945</td>
<td>Sp. wheat</td>
<td>6.97</td>
<td>60.50</td>
<td>33.6</td>
<td>31.7</td>
<td>1.9</td>
</tr>
<tr>
<td>1300</td>
<td>June 5, 1945</td>
<td>Barley &amp; New seeding</td>
<td>1.98</td>
<td>12.00</td>
<td>23.8</td>
<td>21.4</td>
<td>2.4</td>
</tr>
<tr>
<td>1400</td>
<td>May 9, 1946</td>
<td>Alfalfa plots</td>
<td>1.98</td>
<td>7.00</td>
<td>12.2</td>
<td>10.1</td>
<td>2.0</td>
</tr>
<tr>
<td>1500</td>
<td>May 13, 1946</td>
<td>Alfalfa plots</td>
<td>1.98</td>
<td>21.00</td>
<td>31.4</td>
<td>30.1</td>
<td>1.4</td>
</tr>
</tbody>
</table>

*100 and 1200 irrigated together in 1946.`
Mr. Code;

Howard Fitch is sending copy of
Floyd Brown's Annual Report to you.

Mrs. Scott
COOPERATIVE EXTENSION WORK
IN
AGRICULTURE AND HOME ECONOMICS
STATE OF COLORADO
COLORADO AGRICULTURAL AND MECHANICAL COLLEGE
AND THE
UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

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ANNUAL REPORT
of
FLOYD E. BROWN
SPECIALIST IN IRRIGATION PRACTICE
December 1, 1945 to July 10, 1946

SIGNED

Floyd E. Brown
Extension Agricultural Specialist

APPROVED
JAN 24 1947

State Extension Director
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ACTIVITIES AND ACCOMPLISHMENTS

Subject-matter information was discussed with the County Agents at district conferences held at Fort Collins, Fort Morgan, Rocky Ford, Monte Vista, and Glenwood Springs. Colored slides showing information regarding irrigation and the results of previous irrigation demonstrations were used. The 1946 irrigation program was discussed and tentative plans for demonstrations were arranged at these meetings.

Following the conferences an outline of the proposed demonstrations to be conducted during 1946 was prepared and sent to the county agents who indicated a desire to conduct them. A copy of the outline follows on the next page.
To County Agents

Subject: Irrigation Demonstrations

The most effective irrigation demonstration that has been tried in the past is outlined as follows:

1. The demonstration may be conducted with any row crop or crop irrigated by furrows or corrugations.

2. Water is applied at approximately the same rate of flow into three sets of furrows and at about the same rate used by the farmer.

3. Each set of furrows consists of from 4 to 12 furrows.

4. Water will be applied to one set of furrows for 1 hour, the second set for 2 hours and 3 hours in the third set for flat sandy soil. Longer periods will be used where water penetrates slowly. Thus the time for clay soil may be 6 hours, 12 hours and 18 hours.

5. The amount of water applied and the runoff will be measured by small Parshall flumes, which I have available.

6. Prior to the irrigation the soil will be examined to determine how deep into the soil the water should penetrate to result in an effective irrigation.

7. On the day following the demonstration the soil in each set of furrows will be examined to determine which length of time and the amount of water required to secure an effective irrigation.

8. A demonstration meeting on the day following the irrigation is desirable.

9. The demonstration will show the farmer a method of determining how long or how much water to apply to any given field by following the procedure as shown by the demonstration.

10. The demonstration will show the use of the Parshall measuring flume, use of soil auger, soil probe, and syphon tubes.

11. The demonstration can be modified to show the differences between irrigation in every furrow as compared to every other furrow.

12. The demonstration can be made a part of a field day program or tours.

If you are interested in conducting demonstrations of this kind, let me know when you would like to have me assist you.
Water for irrigation becomes available in the Arkansas Valley earlier than it does in the North-eastern part of the state. Consequently it was planned to begin the demonstrations in the Arkansas Valley during the month of May.

Due to the fact that travel during the month of June was not possible, no demonstrations were planned for June.
METHOD DEMONSTRATIONS

The following are reports of the demonstrations and other accomplishments conducted in the Arkansas Valley Counties:

A demonstration showing improved methods of measuring irrigation water was conducted the week of May 20 on the Henry Heidt farm southeast of Sugar City.

E. M. Gregory, County Agent, and P. E. Brown, Irrigation Specialist, showed how to set and use a 6 inch Parshall water measuring flume which was recently purchased by Mr. Heidt. It was found that Mr. Heidt was receiving a flow of .70 of cubic foot of water per second at the time the measurement was made.

Other measurements were made for ditches belonging to Andrew Schimpf, Pete Heman, and F. L. Vlach. A small portable 3" Parshall flume was used to measure the flow for these men.

An interesting demonstration showing the relationship between the length of furrows and the amount of water required in an irrigation was also conducted on Mr. Heidt's farm. He was irrigating corn for germination. The furrows were about 660 feet long and had an average slope of 2 feet per 100 feet of length.

It was found that with a flow of .053 cubic feet of water per second or 23.8 gallons per minute in each furrow that it required 18 hours for the water to reach the lower end of the furrows. This length of time resulted in an application of 23 acre-inches per acre, or the equivalent of a 23 inch rain fall over the area irrigated. Mr. Brown pointed out that the 23 acre-inches was not applied uniformly over the length of the furrows and that it was quite likely that three or four times the average amount was absorbed by the soil in the upper end of the furrows. It was estimated that
the lower end of the furrows did not receive more than 2 or 3 inches of water per acre.

In contrast to the excessive amount of water used in the long furrows it was found that by the use of a cross ditch thereby making the furrows 330 feet long that the same amount of water flowing in each furrow that 3 hours would be required for the water to flow to the cross ditch or half way across the field. This procedure resulted in the application of 6.5 acre-inches per acre or a saving of nearly two-thirds of the amount of water required by the long furrows.

Mr. Vlach was also irrigating corn for germination in a medium heavy clay soil. The length of run was 400 and a heavy run of water was applied for an hour and fifteen minutes. This was the length of time required for the water to run the length of the furrows or 400 ft.

During the hour and fifteen minutes, a little over 3 acre-inches were applied and the penetration was approximately 26 inches.

It was recommended that as a result of the demonstration that furrows for irrigation should be no longer than the distance required for the water to flow during two or three hours of time.

About 20 farmers observed the installation of the measuring flume and the irrigation demonstration.
Otero County

An irrigation demonstration to show the relationship of the length of furrows to the amount of water applied was conducted on the McCullon farm near Worman.

Corn was being irrigated for germination. The furrows were about 1100 feet long. Part of the corn was on land plowed out of alfalfa and part was on corn land in 1945.

The upper half of the furrows on the alfalfa ground received 6.6 acre-inches of water per acre and the lower half of the furrows received 4.6 acre-inches per acre.

On the land that was planted to corn in 1945 and again in 1946 it was found that the upper half of the rows received an average of 4.8 acre-inches of water per acre and the lower half received 1.9 acre inches of water per acre.

On each set of furrows the water in the furrows reached the middle of the furrows in less than 2 hours time and then required from 6 to 8 hours to flow to the lower end of the furrows.

Each of these demonstrations indicated the value of a cross ditch, especially for the saving of time or labor in irrigation.

Bent County

Due to rain and lack of irrigation water it was found impossible to conduct the irrigation demonstrations that were planned.

The type of demonstration was discussed with the county agent and Soil Conservation Service personnel with the expectation that the demonstrations would be conducted at a later date without the assistance of the specialist.

Since the specialist's itinerary called for his presence in Las Animas County on May 28 and 29, the specialist remained in Bent County and assisted the County Agent in the planting of corn variety tests.
Las Animas County

Rain on May 27 prevented the irrigation demonstration that was planned on May 28-29. Arrangements were made with the County Agent and Soil Conservation Service personnel to conduct the demonstration at a later date.

A talk on recommended irrigation practices was given over the local radio station in Trinidad on May 29.
AFFECT OF SOIL MOISTURE ON WINTER KILLING OF ALFALFA

Nearly every autumn the specialist has given publicity to the need for fall and winter irrigation of alfalfa as one means of preventing winter killing and to furnish soil moisture for early growth the following season.

During the winter of 1945-46 there was very little precipitation after September 1. Considerable wind was experienced which tended to dry the surface soil. Abnormally low temperatures were not present, although the lowest temperature for the winter came early following mild weather.

In the spring of 1946, the alfalfa crop started to grow very slow on most fields. Some fields seemed to be completely dead. When the new growth did appear, most of it developed from the root, below the old crown.

In order to determine whether or not any relationship existed between the soil moisture and the conditions of the alfalfa Mr. W. R. Hiernes, Larimer County 4-H Club Agent, and the specialist took soil samples and made observations on a number of fields.

The laboratory of the Soil Conservation Service cooperated in determining the soil moisture percentage and the probable wilting point of the soils.
The following table shows the results of observations made on April 10.

<table>
<thead>
<tr>
<th>Farm</th>
<th>Condition of Alfalfa</th>
<th>Water Present</th>
<th>Probable Wilting Point</th>
<th>Available Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hoffman</td>
<td>Good stand-3&quot; high</td>
<td>16.6</td>
<td>8.6</td>
<td>8.0</td>
</tr>
<tr>
<td></td>
<td>Irrigated in October</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warren (1)</td>
<td>Old alfalfa, thin stand 2&quot; high. Irrigated during winter.</td>
<td>19.1</td>
<td>11.0</td>
<td>8.1</td>
</tr>
<tr>
<td>Warren (2)</td>
<td>New alfalfa, good stand 3&quot; high. Irrigated during winter.</td>
<td>18.9</td>
<td>12.4</td>
<td>6.5</td>
</tr>
<tr>
<td>Howe</td>
<td>Very good alfalfa 2&quot; high. Water table at about 5 ft.</td>
<td>17.8</td>
<td>13.0</td>
<td></td>
</tr>
<tr>
<td>Biebellaus</td>
<td>Old alfalfa-4&quot; high. Good condition. Irrigated in October.</td>
<td>20.1</td>
<td>12.3</td>
<td>7.8</td>
</tr>
<tr>
<td>Average</td>
<td>for good fields</td>
<td>18.5</td>
<td>11.5</td>
<td>7.0</td>
</tr>
<tr>
<td>Warren</td>
<td>Same field as Warren (1) above. Not irrigated, apparently dead</td>
<td>13.6</td>
<td>11.0</td>
<td>2.6</td>
</tr>
<tr>
<td>Warren</td>
<td>Same field as Warren (2) above. Not irrigated, apparently dead</td>
<td>15.1</td>
<td>12.4</td>
<td>2.7</td>
</tr>
<tr>
<td>Howe</td>
<td>Same field as Howe above Water table 15 to 20 ft. alfalfa poor condition.</td>
<td>16.1</td>
<td>13.2</td>
<td>2.9</td>
</tr>
<tr>
<td>Keerns</td>
<td>Surface soil quite dry. Water table 6 ft., apparently dead.</td>
<td>17.8</td>
<td>13.4</td>
<td>4.4</td>
</tr>
<tr>
<td>Average</td>
<td>for poor fields</td>
<td>15.6</td>
<td>12.5</td>
<td>3.1</td>
</tr>
</tbody>
</table>

Although the fields that were in bad condition had more soil moisture than the wilting point, the amount of moisture above the wilting point was much less than in the fields in good condition.

Apparently there was a relationship between the soil moisture and the condition of the alfalfa. The tests help to prove the recommendation in favor of fall or winter irrigation.
LAND LEVELING AND DRAINAGE DEMONSTRATIONS

Two land leveling demonstrations were started in Weld County with the cooperation of Mr. George James, assistant County Agent.

On the Carl Henry farm, southeast of Greeley a 20 acre field was topographically surveyed and a contour map prepared showing the surface profile prior to leveling. Another map was then prepared to show the proposed topography following the leveling and the amount and location of all cuts and fills. Following the preparation of this map, guide stakes were located at 100 foot intervals on the field showing the amount of cuts and fills to be used during the leveling operations.

It was found that a uniform slope could be established on the field by making cuts and fills which did not exceed 4 inches of depth.

Following the location of the guide stakes, Mr. Henry had the leveling work performed.

On the S. J. Rhodes farm 6 miles east of Fort Lupton a similar survey, maps and location of guide stakes was also accomplished on 25 acres.

The field was also in need of drainage, and it was decided to defer the leveling until after drainage was accomplished.

It was believed that the use of dynamite might be used to dig the required drainage ditches and consequently Mr. Balaeu, a Dupont powder expert in Denver, was contacted. Mr. Balaeu visited the field and agreed to assist with the drainage demonstration. Mr. Rhodes purchased the necessary dynamite, and the services of Mr. Balaeu were furnished without cost by the Dupont Company.

The date for the blasting demonstration was set for May 10. On this date about 50 feet of ditch was blasted for a test of the
possibilities, size of load, spacing of shots, etc. Following the
test it was decided to postpone the work, because of the severe
weather conditions that prevailed. About 50 people observed the test
on May 10, although the weather conditions were bad.

On May 20, the demonstration was completed. At this time about
1700 feet of the ditch was blasted at one time. Approximately 250
people attended the demonstration on May 20.

The completed ditch was from 3 to 6 feet in depth and from 5
to 12 feet in width. The cost of the dynamite was about $90.00.

Since the demonstration the specialist has not visited the farm,
but Mr. James, County Agent, reports that the desired drainage is
performing satisfactorily.
COOPERATION WITH UNION PACIFIC RAILROAD

Mr. Herold Benn, Agricultural Agent, has been preparing an educational movie on recommended irrigation practices.

The specialist secured the cooperation of Mr. Jack French, County Agent in Morgan County, who assisted Mr. Benn to obtain views of the border method of irrigation and land leveling in Morgan County.

In Larimer County the specialist assisted in securing views of recommended ditch structures, concrete canal lining, construction of lateral ditches on grade, land leveling, furrow method of irrigation and flood methods of irrigation.

A bulletin to be published by the Union Pacific Railroad on recommended methods of irrigation was reviewed by the specialist and suggestions were given for improvement of the publication.
IRRIGATION MEETINGS TO DISCUSS IRRIGATION

Weld County Farmers' Institute - January 3 - attendance 35.
Rocky Ford Science Club - February 11 - attendance 17.
Irrigation and Crops Institute (Otero and Bent Counties) -
Marianola - February 12 - attendance 15
Swink - February 13 - attendance 5
La Junta - February 14 - attendance 17
Las Animas - February 14-15 attendance 22
Young Farmers and Homemakers' Meeting
Brighton - June 17 - attendance 20

Colored slides were used to illustrate the information discussed in each of the meetings.
The manuscript for one section of a tentative bulletin on land leveling has been prepared. It is planned to have another section for a discussion of the engineering features of land leveling to be prepared by the Civil Irrigation Section and another section for the discussion of soils by Mr. Robert Gardner of the Agronomy section.

The part prepared by the specialist has been delivered to Dean W. A. Christensen of the Engineering Division.
The following news articles were prepared for publication.
Many post-war plans of farmers call for a program of land leveling to save labor and water in irrigating, reports Floyd E. Brown, extension irrigation specialist for Colorado A & M College, Fort Collins.

Irrigation water flows at a more even speed and depth over a field after the surface has been leveled to uniform slope or grade. In some cases, an estimated 50-percent saving in water and labor required to irrigate a field has resulted from the elimination of high and low spots.

The cost of land leveling varies from a few dollars to more than $50 per acre, depending on the amount of soil moved. Most of the leveling work is done by owners of leveling equipment at an hourly rate.

All land-leveling plans need a map made from a survey of the field surface, showing the location of high and low spots and the depth of soil to be moved to provide a continuous and reasonably uniform slope. Then stakes can be located in the field to show the amount of cut and fill needed.

Land leveling attempted without a previous plan or survey usually results in unsatisfactory treatment, Brown points out. Soil may be moved farther than necessary and may be moved to or from the wrong areas. Sometimes it is found necessary to move the soil more than once before a good leveling job results.

Farmers within soil conservation districts may secure engineering assistance from the Soil Conservation Service by applying to their local board of directors. Other farmers are urged to employ an engineer to make the survey and map, especially if a major land-leveling job is needed.

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January 24, 1946

2-398
To Weeklies

Release THURSDAY, May 16, 1946

DITCHES CAN BE "DUG" WITH DYNAMITE STICKS, DEMONSTRATION PROVES

Fort Collins, May 16 -- That drainage and irrigation ditches can be "dug" by blasting with dynamite sticks is being demonstrated to farmers by experts of Colorado A and M College.

The latest demonstration of how time and money can be saved on ditches was given Friday (May 10) at the S. J. Rhodes farm east of Fort Lupton.

A 1700-foot ditch was blown with sticks of dynamite placed in holes about eighteen inches apart along the entire length of the proposed ditch.

Previously a ditch experiment was carried out on the farm of Hazel Slaves west of Yellow Jacket in M-ntezuma county. This experiment, however, showed that the ground must be wet in order for the dynamite to explode from hole to hole without the use of caps.

In this exhibition, dynamite was placed in holes eighteen inches deep and the same distance apart, with a capped stick placed near one of the sticks in the line.

When the capped stick went off it set off the next stick which in turn exploded the stick next to it, and so on down the line. The result was that all the sticks were set off in virtually one blast.

About six hundred feet of ditch about four feet deep and three and a half feet wide was blown. The cost for one hundred feet of ditch powder alone was six dollars and seventy cents.

(more)
The best ditches can be blown when the water level is within three or four inches of the top of the ground or higher, or even when the water is over the top of the ground.

Farmers were warned to consult an expert when trying out the new method of ditch-digging.

In charge of the exhibition near Fort Lupton was George Janes, assistant county agent of Weld County. Assisting were E. H. Triemiller, Weld County agent, and Floyd Brown, Colorado A and M College extension service irrigation specialist.

May 9, 1946
2 - 604
PROP YIELD FROM LIGHT IRRIGATION AID TO BE GOOD

Fort Collins, May 30,—Experiments indicate that light irrigation produce as good or better yields from most crops than does heavy irrigation, say irrigation experts of Colorado A and M College.

It is especially important that farmers realize this, it is emphasized, because in many parts of Colorado the water supply will be short this year.

Therefore, conservation of water is highly important.

A light irrigation consists of applying enough water to moisten all the dry soil occupied by the roots of the crop. Three to six inches of water applied per acre, uniformly over a field, is usually enough to accomplish this purpose.

One cubic foot of water a second or 30.4 miners' inches flowing for three to six hours is enough water to supply a light irrigation one acre of land.

When two cubic feet of water an acre is used to irrigate a 20-acre field, not more than 30 hours should be required for the irrigation.

Irrigation records indicate that some farmers use more than two three times the recommended amount of water at an irrigation. Farmers will not be able to afford this waste this summer, if water short this summer, it is warned.

### May 23, 1946

2 - 342
To Weeklies
Release SUNDAY, June 2, 1946

SEE EVERY MEANS TO SAVE WATER, FARMERS URGED

Fort Collins, June 2—Farmers in many sections of Colorado may be faced with an acute shortage of water for irrigation purposes in 1946, warned Floyd Brown, Colorado A & M College irrigation specialist.

Since the maximum production of crops which is so greatly needed could be held back by lack of water, he urged farmers to use every known means to conserve the available supply.

"Constant attention to water during irrigation," he said, "meaning regulating the flow of water so it will be evenly distributed in furrows and over fields, is the greatest water-saving practice.

"Control water to prevent waste at the lower end of the field; change water to a new area as soon as sufficient moisture is absorbed by the soil."

When irrigating small grain or alfalfa, he said, where the entire surface of the field is covered with water, the ditches should be close enough so it will not be necessary to apply water for more than one hour to any part of the field.

When irrigating row crops, where it requires more than two or three hours for water to reach the end of the furrow, a cross ditch should be used to shorten the water run. Cross ditches save water, time and labor.

Numerous experiments indicate that light irrigation for most crops will produce as good or better yields as will heavy irrigation, he declared.

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May 28, 1946
2-353