IRRIGATION in Colorado

By W. H. Olin

Published by

THE COLORADO STATE COMMERCIAL ASSOCIATION

DENVER, COLORADO
HINTS FOR HOMESSEKERS.

This book has been compiled by one who is thoroughly familiar with the subject and the State; the statements contained herein can be depended upon as reliable and conservative; underestimated rather than overestimated. Do not expect to get something for nothing in Colorado—or in any other portion of the world. The price of land is generally indicative of its quality. If you wish good cheap land, it will be necessary for you to go far from the railroads, and wait for the country to grow up to you. Land soon to come under irrigation, but without an actual water right, sells cheaper than one with a water right which has been in force for several years.

"If a POOR man buys POOR land, and pays for it—he is still POOR. If a poor man can buy good land, no matter what the price, on terms that he can meet from sure crops, when he gets it paid for, he is no longer poor."—Fertile Lands in Colorado.

There are plenty of opportunities in Colorado for the man who has a little money, takes plenty of time, and uses good judgment.

The Colorado State Commercial Association stands ready and willing at all times to conscientiously and fully answer questions of prospective homeseekers regarding any section of the State. There is no charge for this service. In your letters, please try to ask definite questions, so that we may give you the information you desire accurately.

THE COLORADO STATE COMMERCIAL ASS'N.
1736 Stout Street, Denver, Colorado

A Colorado Strawberry Patch. Profit $400 an acre.
IRRIGATION IN COLORADO

EXPLAINING AND ILLUSTRATING THE MEANING OF THE TERM IRRIGATION. CONTAINING CONCISE INFORMATION ON IRRIGATION AND IRRIGATED PRODUCTS IN COLORADO

ALSO COMPARATIVE TABLES WITH FACTS AND FIGURES OF VALUE TO THOSE SEEKING HOMES IN THE STATE OF COLORADO. DESIGNED ESPECIALLY TO GIVE THE FUNDAMENTAL AND ESSENTIAL FACTS REGARDING IRRIGATION

Irrigating and Planting Cabbage.

By W. H. OLM, Vice-President for Colorado of the National Corn Exposition, Omaha

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93881
One thing which we wish to make clear, is that Colorado's climate is unsurpassed for mildness and healthful qualities. In all but a few of the higher sections of the State, Colorado's winters are very short; with very little snow; but little rainfull, in comparison with other States; and she has sunshine three hundred days in the year. The atmosphere is dry and the healthiest in the world.
IRRIGATION IN COLORADO

By W. H. OLIN, Vice-President for Colorado of
The National Corn Exposition, Omaha

Written Expressly for
THE COLORADO STATE COMMERCIAL ASSOCIATION
Denver, Colo.

Definition. "Irrigation is the watering of land by artificial means to enable crops to be grown or to increase production."—Dr. Elwood Mead.

Fundamental Terms Used in Irrigation.

Water Right. A water right is regulated and defined by State statute. It is the right to divert water from any stream, reservoir or canal, to crop land for irrigation purposes. The right which is first taken out is said to have priority over all others, and its legal claim of precedence, established, gives it priority rights which must be recognized as first claim to irrigation water from stream, canal or reservoir from which it draws its supply.

Early priorities are, therefore, important, and add to the commercial value of a water right.

A water right, purchased by a farmer from a Company owning and operating an irrigating system of canals, is regulated by the contract between the party purchasing the right and the Company owning canal furnishing the water. Irrigating canals are given the right to appropriate water from streams in Colorado according to the priority decreed by the Court, which is always asked to adjudicate or declare it. All irrigating waters in Colorado are distributed in accordance with Court decrees, based on appropriations, priority claims and the statutes governing irrigation practice.

This plan absolutely safeguards the water rights of a water user. Water rights are of two kinds:

Direct and Storage.

A Direct Water Right gives owner of same authority for "direct use" of water from stream or canal. Irrigating canals possess appropriations for this purpose, according to date of right established by Court decree and for the amount named in said decree.

A Storage Water Right gives legal authority for impounding water in reservoirs as a storage supply for use, as may be desired. Like the Direct Water Right, this right possesses appropriation in order of date, by Court decree.

Tonge's "Handbook of Colorado" says: "A canal or company having an appropriation for 'direct use' can not take water from the stream at any season of the year for 'storage' purposes under that appropriation, nor can a reservoir having an appropriation for 'storage' pur-
poses, take water from the stream at any season of the year for 'direct' use, or even for storage, until the canals entitled to water for 'direct' use have been satisfied."

Some of the more recent appropriations of water have to depend upon "flood water." This means that the owners of flood water rights are not allowed to take water from the streams until all the prior appropriations are supplied. When there is high water in the stream all are well supplied and flood rights are practically as good as any other, since there is then water for all.

Where there is normal or low water in the stream, flood rights may be cut down in amount of water or entirely deprived from use of any water to supply or protect the adjudicated or decreed rights having priority. For this reason "flood water" rights are not considered as valuable as other water rights.

**Protection of Water Rights.** To protect the water rights of water users and supervise distribution of irrigating waters the State Legislature in 1879 created the office of State Engineer.

He has divided the State into water divisions, and these divisions in turn into districts. For each irrigation division—at present there are five—is a Division Engineer, who is responsible for gauging (measuring) of streams in his district, distribution of irrigating waters in the various districts for each of which is provided a Water Commissioner.

Good water rights are absolutely essential to success in farming "under the ditch."

**Duty of Water.** Dr. Mead defines the duty of water in irrigation "as the area of crop which can be matured with a given volume of water. An approximate knowledge of the duty of water is as necessary in the distribution of water in irrigation as a unit of value in finance and trade."

The duty of water varies widely with local conditions, character of crop, quality of soil, physical condition of the field, season of year, seepage, evaporation, and character of farmer using the water. One farmer may obtain 50% more efficiency of a given volume of water than another farmer. This difference is accounted for by the greater
skill, or negligence, economy, or waste of water by one farmer over the other farmer. Certain fundamentals are essential for the irrigation farmer to know that he may conserve his irrigation water and obtain from it the highest duty possible.

Use the least quantity of water necessary to secure the best yield. Use that method of distribution which the crop and the soil suggest will give the best watering in the least possible time with a minimum of loss; irrigate at such times as growing conditions indicate are most desirable to maintain vigorous, constant growth from germination to maturity; use a "full head" when distributing on the field and cover all parts of a given area—leaving no "bare spots" (unwatered portions), are irrigation axioms which enable farmers often to raise the efficiency of a water share or right in a few years to nearly double its former duty.

Irrigation farming calls for the highest class of farmers and, in return, yields a greater net profit per acre, on every crop adapted to this class of farming, than any other farming dependent solely upon the annual precipitation of moisture.

Units of Measurement. There are three units of water measurement which each farmer should consider and fully understand. They are the inch, the cubic foot per second, and the acre-foot. The general statutes of Colorado, 1883, Section 3472, clearly defines how water sold by the inch shall be measured. "Every inch shall be considered equal to an inch-square orifice under a five-inch pressure, and a five-inch pressure shall be from the top of the orifice of the box put into the banks of the ditch to the surface of the water; said boxes, or any slot or aperture through which such water shall be measured, shall in all cases be six inches perpendicular, inside measurement, except boxes delivering less than twelve inches, which may be square, with or without slides; all slides for the same shall move horizontally and not otherwise; and said box put into the banks of ditch shall have a descending grade from the water in ditch of not less than one-eighth of an inch to the foot."

This unit of measurement is our oldest unit, and, because of its first having been used by the placer miner, the irrigator borrowed it from him and calls it the "miner's inch."
It is a practical unit for measuring small quantities of water, but is not practical for stream or large canal measurements. It is, in all reports, spoken of as the statutory inch, since its limits are defined by statute.

The cubic foot per second is the unit of volume for gauging rivers and measuring the flow of ditches and irrigating canals.

The volume of flowing water passing over the weir (device for measuring water) in a second of time is measured in cubic feet. A cubic foot of water in our State is 38.4 statutory inches, equivalent to seven and one-half gallons of water.

The acre foot is a unit for measuring reservoir or stored water. It is the amount of water necessary to cover an acre to the depth of one foot, equal, therefore, to 43,560 cubic feet. One cubic foot per second of water in a stream flowing constantly for 24 hours equals approximately two acre feet, says Dr. Mead, so we have a means of converting cubic feet per second units into acre feet and vice versa.

Ditch companies can buy, sell or trade water with the same accuracy and exactness as they would any other commodity of trade and traffic.

For the convenience of water users, all canals have water measurers, who distribute water according to water contracts. These parties are commonly spoken of as "ditch riders," and are supposed to divide the water to users during the irrigating season in the most economical and equitable manner possible.

Methods of Irrigation.

Bulletin No. 145, from U. S. Office of Experiment Station, upon "Preparing Land for Irrigation and Methods of Applying Water," will give helpful information to new settlers upon irrigated farms. Following are some condensed and pertinent statements from said Bulletin.

Owing to extreme conditions of soils, land surfaces, crops, and water supply, it is impossible to give exact statements of the cost of preparing land and applying water, and, therefore, two sets of figures are given, one showing an average minimum cost and the other an average maximum cost. When conditions are favorable the cost will approach the lower estimate. On the other hand, when the land is uneven, the water supply scanty, or permanent structures are introduced, the cost may be increased to the higher limit.

To insure a just basis for comparison the wages of one man working ten hours, including board and implements, was taken at $2.50, and a man and team for the same time at $3.50. The estimate of cost also includes three irrigations for the season.

The Check Method. A light, sandy soil on a comparatively level slope of from 3 to 15 feet to the mile is usually looked upon as best suited to the formation of checks. The same method may be used on heavy clay loams, providing the surface layer will not bake after being flooded.

A field having a steep slope should not be irrigated by this method. Some other plan of wetting the soil should be used. The size of checks in common use varies from three-fourths of an acre to two to three times that area.

This method is seldom, if ever, used in Colorado, although quite generally used in irrigated regions of Asia, Africa, Europe, Mexico, San Joaquin Valley, California, and the Southwest. The crops usually
Onions. Yield 725 bushels an acre.

grown under this method are alfalfa, grain, grape vines, and sugar beets. This method requires a large head or volume of water. Farmers not able to obtain a head of from 5 to 10 cubic feet per second should use some other method.

Summary of Cost for a Five-Year Period by Check Method

<table>
<thead>
<tr>
<th>Period</th>
<th>Requirements</th>
<th>Av. Min. Cost per Acre</th>
<th>Av. Max. Cost per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Year</td>
<td>Building check and laterals........</td>
<td>$8.00</td>
<td>$16.00</td>
</tr>
<tr>
<td></td>
<td>Irrigating three times...............</td>
<td>.50</td>
<td>1.50</td>
</tr>
<tr>
<td>2nd Year</td>
<td>Repairing and irrigating...........</td>
<td>.75</td>
<td>1.75</td>
</tr>
<tr>
<td>3rd Year</td>
<td>Repairing and irrigating...........</td>
<td>.75</td>
<td>1.75</td>
</tr>
<tr>
<td>4th Year</td>
<td>Repairing and irrigating...........</td>
<td>.75</td>
<td>1.75</td>
</tr>
<tr>
<td>5th Year</td>
<td>Repairing and irrigating...........</td>
<td>.75</td>
<td>1.75</td>
</tr>
<tr>
<td>Average yearly cost</td>
<td></td>
<td>2.30</td>
<td>4.90</td>
</tr>
</tbody>
</table>

Flooding from Field Ditches. This method is the one commonly practiced for practically forty years, in the major portion of irrigated sections of Colorado, Utah and adjoining States for practically all grain and grass crops.

The expense incurred in preparing the land to receive water is small in comparison with some other methods.

In old established colonies, in Northern Colorado, field laterals for flood irrigation are laid out according to the lay of the land, the way the water must run. Formerly, irrigators made these laterals 200 to 300 feet apart and forced water to cover entire surface intervening. Experience has taught them that time and water are both saved by making these laterals from 75 to 90 feet apart.

The successful irrigator seeks to cover the higher portions of the field between laterals first and advance the sheet of water uniformly over the area irrigated so that all parts of that section of the field to
A Celery Farm. Shipped 75 cars 1909.

which water is being applied may receive as far as possible, the same amount of water. Canvas dams are placed in the laterals so as to back up the water for a distance of at least 75 feet and the water is allowed to flow through cuts made in the bank at stated intervals, just where the irrigator desires it to go.

With a head of 2 to 3½ cubic feet per second, the irrigator in Northern Colorado finds he can spread water over his fields between laterals placed, as named above, with comparative ease.

In the San Luis Valley Irrigation districts are placed much farther apart and a somewhat different system of irrigation is practiced. Here the water is distributed up between the laterals and, after proper distance is determined, laterals made and water turned in, the water is distributed in many sections of this great mountain valley practically irrigate themselves. It is a system of irrigation, peculiar to that soil formation, and one must become familiar with local conditions or the irrigator, as one has well said, may irrigate 80 acres underground while he is getting one acre on the surface well moistened.

Luscious Tokays and Muscates, grown by Irrigation in Colorado's fruit belt.

A collection of various products of one orchard. $100 to $500 profit per acre.

Second Cutting Alfalfa. Stacks show first cutting. There will be one more cutting from this field. Yield, 500 tons.
Summary of Cost of Flooding Method for a Period of Five Years.

<table>
<thead>
<tr>
<th>Period</th>
<th>Requirements</th>
<th>Av. Min. Cost per Acre</th>
<th>Av. Max. Cost per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Year</td>
<td>Grading the surface and building field ditches .......... $2.00</td>
<td>$5.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Irrigating three times .............. 1.00</td>
<td>2.75</td>
<td></td>
</tr>
<tr>
<td>2nd Year</td>
<td>Repairing ditches, making laterals and irrigating .. 1.20</td>
<td></td>
<td>3.00</td>
</tr>
<tr>
<td>3rd Year</td>
<td>Repairing ditches, making laterals and irrigating .. 1.20</td>
<td></td>
<td>3.00</td>
</tr>
<tr>
<td>4th Year</td>
<td>Repairing ditches, making laterals and irrigating .. 1.20</td>
<td></td>
<td>3.00</td>
</tr>
<tr>
<td>5th Year</td>
<td>Repairing ditches, making laterals and irrigating .. 1.20</td>
<td></td>
<td>3.00</td>
</tr>
<tr>
<td>Average yearly cost .......... 1.56</td>
<td></td>
<td>3.95</td>
<td></td>
</tr>
</tbody>
</table>

(No detailed cost for sub-irrigation as practiced in San Luis Valley is at hand, but it is not as expensive as the usual flood system given above.)

Furrow Irrigation. This method of irrigation is the one used for root crops and by the orchardists in Colorado. The method of planting sugar beets and potatoes is favorable to this system, although some sections of the State use the flood method for first irrigation of sugar beets.

The distance which a stream of water can be successfully run in furrows, depends upon the texture of the soil through which they extend, and the lay of the land. Where the soil is coarse and absorbs water quickly, the distance for the same head of water must be shorter than where the texture of the soil is finer and absorbs water more slowly. The stream in the furrows must be made to flow with a velocity sufficient to carry it to the lowest extremity of the field or the next lateral below, but at the

Nine-foot Oats. 125 bushels an acre.
same time, must not flow with such swiftness as to cause scouring of
the banks of the furrow or cutting deep into the furrow. Certain po-
tato farmers use a special implement for “furrowing out” these row
laterals, which gives a furrow of sufficient depth for them to run a head
of water through the furrow, which wets the potato roots, but does not
wet the tuber bed. They contend that this plan enables them to pro-
duce a very superior quality of potatoes. Many potato growers prac-
tice the method of alternate row irrigation. They will irrigate all odd
numbered rows one day in a given area and the even rows the next
day. This moistens but one side of the potato hills and lessens chance
of over irrigation, allows sub absorption of water for all potato roots,
and will absolutely prevent any possibility of sun scald while irrigat-
ing. Orchard irrigation is in a class by itself and one needs to make a
study of the kind of fruit to be irrigated, character and texture of soil
and slope of the land, as well as age of trees and space between rows.

Summary of Cost of Furrow Method for a Period of
Five Years.

<table>
<thead>
<tr>
<th>Period</th>
<th>Requirements</th>
<th>Av. Min. Cost per Acre</th>
<th>Av. Max. Cost per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Year</td>
<td>Making head ditches and furrows</td>
<td>$1.00</td>
<td>$10.00</td>
</tr>
<tr>
<td></td>
<td>Irrigating three times</td>
<td>1.50</td>
<td>2.25</td>
</tr>
<tr>
<td>2nd Year</td>
<td>Making furrows and irrigating</td>
<td>2.00</td>
<td>2.75</td>
</tr>
<tr>
<td>3rd Year</td>
<td>Making furrows and irrigating</td>
<td>2.00</td>
<td>2.75</td>
</tr>
<tr>
<td>4th Year</td>
<td>Making furrows and irrigating</td>
<td>2.00</td>
<td>2.75</td>
</tr>
<tr>
<td>5th Year</td>
<td>Making furrows and irrigating</td>
<td>2.00</td>
<td>2.75</td>
</tr>
<tr>
<td></td>
<td>Average yearly cost</td>
<td>2.10</td>
<td>4.55</td>
</tr>
</tbody>
</table>

It will be seen that the average maximum cost by the most expen-
sive method of irrigation is less than Five Dollars per acre. This is a
crop insurance, for you get the water when you want it, put it where
you want it, and in the proper amount to absolutely insure maximum
plant growth. The tendency with the new settler is to over irrigate.
From experienced farmers who now irrigate most successfully, permit
the writer to quote:

1. “Run the main lateral along the highest portion of the farm.
   It will command the greatest irrigable area and will save future labor,
time, and therefore money.

2. “See that your laterals are laid out to the best advantage at the
   outset and that your fields are thoroughly graded. You cannot prepare
   your fields too well for irrigation purposes.

3. “In furrow irrigation always place a check dam in head ditch
   opposite the lowest furrow of the strip, to hold the water at the desired
   elevation and to distribute the flow between the furrows. The number
   of furrows which should receive water at one time will depend on the
   crop, the volume of water in the head ditch and the smoothness and
   texture of the soil.

4. “See that the streams flow down each furrow in an equal quan-
tity without damming and flooding the crop.

5. “As soon as soil is sufficiently dry, fill in the furrows and cul-
tivate space between the rows.
6. "Sometimes it is desirable to irrigate grain, clover, or alfalfa from corrugations or shallow furrows on account of liability of the soil to bake. These are usually formed by home made implements. The distance between corrugations or shallow furrows varies with character of crop and slope of ground from six inches to thirty inches apart.

7. "The frequency of irrigation and the amount of water to be applied each time must be decided by each farmer in accordance with the character of his soil and the crop he is growing.

"You cannot irrigate by the clock. You must put water on when the crops need it and take it off when the want is supplied. Enough water is better than too much.

"Two irrigations are usually sufficient for small grains and grass. Four or five are required for young orchards. Melons and sugar beets should have no water for some time previous to maturity of the crop. Alfalfa, clover and timothy should have no water during the maturing of the seed, if seed is desired. Some foresight is required in using the water at your command, so that sections of the land may be irrigated consecutively for economy of both water and labor of applying it. Above all, watch your work. Each little stream requires attention."

Above suggestions will be found most helpful to all rainbelt farmers coming into Colorado's irrigated districts to farm.

A Colorado Rain. Water when, where and as often as you want it by irrigation in Colorado.

The Irrigating Season.

A Colorado statute provides that all irrigating canals shall be prepared to deliver water to their consumers by April 15th, and the period when water may be used extends to November 15th, each year.

The third crop of alfalfa and the sugar beet crop require water later in the season than any other crops. Water is seldom required
after the second week in September for even these crops. Fall irrigation, preparing ground for the succeeding season's crop, is practiced with good effect in both the South Platte River and Arkansas River Valleys.

The Irrigated Area in Colorado.

From the latest reliable data the writer has prepared the following classification of irrigated lands within Colorado:

<table>
<thead>
<tr>
<th>Section</th>
<th>Area—Acres.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Northern Colorado</td>
<td>916,659</td>
</tr>
<tr>
<td>2. Arkansas Valley</td>
<td>466,357</td>
</tr>
<tr>
<td>3. San Luis Valley</td>
<td>439,239</td>
</tr>
<tr>
<td>4. Grand River Valley</td>
<td>120,000</td>
</tr>
<tr>
<td>5. Montrose District</td>
<td>215,000</td>
</tr>
<tr>
<td>6. Montezuma District</td>
<td>60,000</td>
</tr>
<tr>
<td>7. Durango District</td>
<td>20,000</td>
</tr>
<tr>
<td>8. Routt County District</td>
<td>50,000</td>
</tr>
<tr>
<td><strong>Total for State</strong></td>
<td><strong>2,317,255</strong></td>
</tr>
</tbody>
</table>

This represents an investment in irrigation enterprises of more than $50,000,000. Projects now under construction, when completed, will give us fully three million acres of irrigated lands for Colorado. We have more acres "under the ditch," more miles of irrigating canals, than any other State in the Union. It is estimated that Colorado has more than six million acres of irrigable lands.

Probably the Cache La Poudre River has the most remarkable record of any stream in the State furnishing irrigation waters for crop purposes. This river, a tributary of the South Platte, is scarcely more than fifty miles long. It has in its drainage basin 85 storage reservoirs, by means of which it irrigates 300,000 acres of land and has given the farmers within its territory since irrigation has been practiced, fifty million dollars' worth of products.

**Pump Irrigation.**

Besides river irrigation, Colorado has a considerable area watered by means of water wheels, centrifugal pumps, and artesian wells. This form of irrigation has an important future and since it gives a perpetual, non-assessable water right, its development will be watched with great interest. One valley in Colorado has more than 600 artesian wells, varying from 400 to 1,000 feet in depth, and the water from these wells is being used to a very great advantage. In the fruit regions of the Grand Valley, many most excellent fruit farms have been made from practically desert land by means of the water wheel, and one section of Weld County is irrigating many scores of farms with pumps, quite successfully. The Office of Irrigation Investigations of the Department of Agriculture, Washington, D. C., has a station at Eads, Colorado, where tests are being made of pump irrigation for our State. Important and reliable data will thus be obtained and furnished our farmers upon this important phase of irrigation.
Crop Results “Under the Ditch” in Colorado.

Colorado leads in crop yield and value of staple crops of the field. The following table gives comparative yields of wheat, oats, barley, potatoes and hay in the leading crop States in the Middle West and Colorado. This data was obtained from the Government Year Book, and covers a ten-year period up to and including crop year 1908:

### Crop Yields and Value Per Acre.

<table>
<thead>
<tr>
<th>STATE</th>
<th>WHEAT</th>
<th>OATS</th>
<th>BARLEY</th>
<th>POTATOES</th>
<th>HAY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yield Bu.</td>
<td></td>
<td>Yield Bu.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Value</td>
<td></td>
<td>Value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minnesota</td>
<td>12.6</td>
<td>30.3</td>
<td>9.17</td>
<td>25.80</td>
<td>86.0</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>16.6</td>
<td>33.4</td>
<td>10.69</td>
<td>28.58</td>
<td>91.6</td>
</tr>
<tr>
<td>Indiana</td>
<td>13.6</td>
<td>29.1</td>
<td>9.14</td>
<td>25.59</td>
<td>77.3</td>
</tr>
<tr>
<td>Illinois</td>
<td>14.7</td>
<td>31.3</td>
<td>9.69</td>
<td>27.96</td>
<td>85.1</td>
</tr>
<tr>
<td>Iowa</td>
<td>14.2</td>
<td>30.0</td>
<td>8.33</td>
<td>26.03</td>
<td>83.4</td>
</tr>
<tr>
<td>Missouri</td>
<td>13.5</td>
<td>23.17</td>
<td>7.42</td>
<td>21.21</td>
<td>81.2</td>
</tr>
<tr>
<td>Kansas</td>
<td>13.5</td>
<td>24.44</td>
<td>7.65</td>
<td>19.74</td>
<td>77.4</td>
</tr>
<tr>
<td>Nebraska</td>
<td>16.0</td>
<td>26.9</td>
<td>7.51</td>
<td>24.37</td>
<td>84.5</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>12.8</td>
<td>22.3</td>
<td>9.94</td>
<td>26.75</td>
<td>76.5</td>
</tr>
<tr>
<td><strong>Colorado</strong></td>
<td><strong>25.4</strong></td>
<td><strong>18.65</strong></td>
<td><strong>34.2</strong></td>
<td><strong>15.98</strong></td>
<td><strong>33.01</strong></td>
</tr>
</tbody>
</table>

The weight of oats in all the above-named States seldom is more than 32 to 34 pounds per bushel, and wheat and barley rarely overrun. Irrigated oats in Colorado often weigh 50 pounds per bushel, and wheat and barley almost invariably overrun two to four pounds.

The average for Colorado includes both the irrigated and non-irrigated crop lands. The yields and values are much higher than this for the irrigated lands alone.

Yields of wheat, 50, 60, and even 70 bushels per acre; oats, 90, 120, and 125 bushels per acre; barley, 90, 125 and 147 bushels per acre are on record. Potatoes yielding 847½ bushels per acre have been obtained by a San Luis Valley farmer at 7,700 feet elevation. The average yield for the State is over 150 bushels per acre, while the net returns to the potato growers of the Uncompahgre Valley, Carbondale District, Greeley District, and San Luis Valley is from $50 to $250 per acre.

Corn is not grown under irrigation because it is not profitable, since the irrigation farmer always desires to average $40.00 per acre crop, and forty bushels per acre is all he can depend on with the corn types which he can grow in his altitude in Colorado.
1. Field Peas in Blossom. 2. Colorado raises more sugar beets than any other State in the Union. This is one of many piles. Contains 10,000 tons of beets awaiting shipment. 3. Irrigating sugar beets. 4. An irrigated farm in Colorado. (From an actual photograph.) 5. A field of irrigation sugar beets. Notice how the beet tops cover the space between the rows of beets. 6. Cutting alfalfa. 7. Harvesting wheat under the shadow of the Rockies. Two miles of wheat.

Sugar beets are being grown so successfully that this crop keeps sixteen sugar factories busy to take care of the 1,760,000 tons brought them to convert into sugar. This crop distributes nine millions of dollars this year (1909) to our farmers, and has made Colorado the greatest sugar-producing State in the Union.

The Rocky Ford cantaloupe and Kleckly Sweet watermelon have advertised Colorado more than any other crop. While they are grown to greatest perfection in the Arkansas Valley, the melon industry is now a crop in the great fruit region of the State where they are planted in the young orchards giving a productive crop while the farmer is waiting for the trees to reach bearing age. The basis of all crop production under irrigation is the alfalfa crop. This has become so valuable that crop rotations are made to fit into the growing and feeding of this crop.

Alfalfa culture has made Northern Colorado a great feeding district for cattle and lambs, while the field pea has converted the San Luis Valley into a rich feeding district for hogs and lambs.
Probably the fruit districts of the Western Slope have shown the greatest results from cropping irrigated lands that are recorded.

Here is the home of the Colorado red apple. This apple commands the highest price East or West, and a distinguished State Senator in Pennsylvania this last season, sent this message to the apple growers of the Western Slope: “Continue to exercise the same care that has characterized your apple packing up to the present time and the pre-eminence and highest market price of the Colorado apple will remain undisputed.”

For the season 1909, Editor Sheppard, of “Better Fruit,” of Hood River, Oregon, credits Colorado with 800 more cars of apples than the six States of Utah, Idaho, Washington, Oregon, Montana, and New Mexico combined.

<table>
<thead>
<tr>
<th>States</th>
<th>Cars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utah</td>
<td>400</td>
</tr>
<tr>
<td>Idaho</td>
<td>300</td>
</tr>
<tr>
<td>Washington</td>
<td>1,740</td>
</tr>
<tr>
<td>Oregon</td>
<td>750</td>
</tr>
<tr>
<td>Montana</td>
<td>100</td>
</tr>
<tr>
<td>New Mexico</td>
<td>200</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,490</strong></td>
</tr>
<tr>
<td><strong>Colorado</strong></td>
<td><strong>4,300</strong></td>
</tr>
</tbody>
</table>

The writer, standing in a magnificent 45-acre orchard on the Western Slope, so loaded with fruit that 50% of the trees had to be propped up, was told by the owner that this orchard for twelve consecutive years had netted him above all expenses $250 per acre, per year.

The highest priced land in America is to-day found in the Grand Valley Fruit Belt, Colorado, and while this land commands $2,500 to $4,000 per acre, many of its 10 to 20-acre fruit farms gave their owners a thousand dollars per acre crop of apples, pears and peaches this year. This pays 25% on the land investment. The berry and tree fruits grow in great perfection on the Western and Eastern Slope of the Rockies, and in the Arkansas Valley from Canon City to Rocky Ford.

We have fruitful fields and cultivated valleys that are not out-classed nor outranked by any section of the whole broad domain of the United States, and our agricultural possibilities, we ourselves are but just beginning to realize.

**Colorado Affords Opportunity For All.**

Because of its growing industries in all lines of trade and traffic, rural and urban property offer unexcelled opportunities for investment.

The bringing of at least one million additional acres “under the ditch” within the next five years is not only possible, but probable.

Not only on level areas, apart from the mountain districts, but on the slopes and in the mountain valleys, the irrigation ditch has carried the cultivated crop with most profitable results, from 3,800 feet in lower Arkansas Valley to 9,500 feet altitude in the mountain plateaus.

Irrigated Colorado gives a variety of crop and climate calculated to satisfy the most pessimistic, unexcelled in any other State.

The Colorado farmer has a market largely his own, because of his proximity to very large and valuable mining camps and growing manufactures.
The agricultural, mining and manufacturing interests are mutually inter-dependent. Our State is a commonwealth of divers interests indissolubly associated together, and we rejoice in this mingling in trade of miner, manufacturer, capitalist, merchant, ranchman and farmer. Here we find community of interests, reciprocity in trade, each community drawing support from and giving sustenance to the other.

Here are advantages and inducements offered for all branches of agriculture on a scale of production and profit unknown to humid regions. To these add the advantages of good roads to loading stations, railway, telegraph and telephone, cheap and abundant fuel, educational privileges as excellent as they are varied, an invigorating atmosphere and climate unsurpassed for healthfulness, rural scenery, such as the Rocky Mountain region alone can furnish, and a people known for their integrity, intelligence and enterprise. This is the Irrigated Region of Colorado to-day.

We invite you to come and share in the prosperity, happiness and joys of life that await the Coloradonian of to-morrow.

"Come thou with us and we will do thee good."

Famous Colorado Potatoes. $100 an acre profit.

GOING WEST?
COME TO COLORADO

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How would YOU like to have a farm home like this in Colorado? Wonderful climate, beautiful scenery, modern conveniences, good schools, excelent water, big profits for farmers and fruit-growers, many markets with big demand for Colorado products—and IRRIGATION.

Information and literature that will help you get located in Colorado will be sent, without charge, upon request. Write a letter, giving full particulars regarding your desires, to

THE COLORADO STATE COMMERCIAL ASS'Y
1736 Stout St., Denver, Colo.

The Association does not Sell, Buy or Trade Lands.