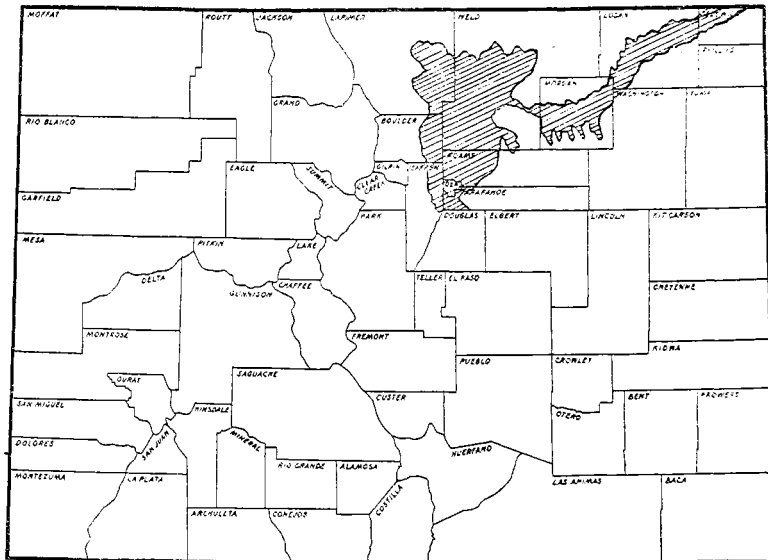


AN AGRICULTURAL PROGRAM FOR THE IRRIGATED REGION OF NORTHERN COLORADO

COLORADO



LIBRARY
COLORADO STATE COLLEGE OF A. & M.
 FORT COLLINS, COLORADO

COLORADO AGRICULTURAL COLLEGE

EXTENSION SERVICE

F. A. ANDERSON, DIRECTOR

FORT COLLINS

Cooperative Extension Work in Agriculture and Home Economics,
 Colorado Agricultural College and the United States Department of
 Agriculture Cooperating. Distributed in Furtherance of the Acts of
 Congress of May 8 and June 30, 1914.



018400 9909617

TABLE OF CONTENTS

Introduction	3
Acknowledgments	3
Conference program	4
Northern Colorado as an Agricultural Region.....	5
Economic Commodity Study and Committee Recommendations	9
Sheep	9
Beef Cattle	17
Dairying	21
Swine	25
Poultry	30
Turkeys	33
Rabbits	35
Bees and Honey.....	36
Irrigation and Drainage	38
Trends in Farm Crops.....	40
Alfalfa and Irrigated Pastures.....	43
Sugar Beets	46
Potatoes	49
Grain and Seed Crops.....	55
Beans	58
Farm Organization and the Farm Budget.....	60
Conference Directory	66

630 178
6060

AN AGRICULTURAL PROGRAM FOR THE IRRIGATED REGION OF NORTHERN COLORADO

BY THOS. H. SUMMERS, EXTENSION ECONOMIST IN FARM MANAGEMENT

During the past 5 years a number of economic conferences have been held in various sections of Colorado for the purpose of bringing together groups of farmers and farm women to study their economic problems and to work out agricultural programs looking toward some solution of these problems.

Previous to the calling of these conferences there would be gathered at the Agricultural College all available data as to acreage planted to various farm crops, trends in numbers of livestock, principal markets, shipments to these markets, competition from other production regions and costs of production together with methods of production and of marketing.

Information would also be gathered in the region under consideration. Methods would then be discussed with the leading farmers and after a thoro survey a conference of selected farmers and farm women would be called. After reviewing all information available and selecting the most important problems, these men and women would work out in committees a number of recommendations that should assist in solving the farm and farm home problems.

These recommendations then become the basis for extension work in the region. County extension agents and specialists take them into account in working out extension projects. Frequently similar problems are found in a number of sections of the region. Concerted action on the part of all concerned is then initiated and efforts are united in bringing about a solution.

Such an economic conference was held for Northern Colorado at Greeley, Colorado, on February 13 and 14, 1930. The main body of this report gives the recommendations approved by the committees together with much of the data considered by them.

ACKNOWLEDGMENTS

Acknowledgement is here given the Office of Cooperative Extension Work of the United States Department of Agriculture which, thru Eugene Merritt, gave valuable assistance in supplying data and organizing facts, and in directing the plans of the conference; to railroads, dairy products, manufacturing

plants and other processing plants and to other local agencies which contributed valuable information; to Experiment Station workers for their help and to those who contributed to the comfort and convenience of the committees during the conference; and to farm men and women who so generously gave their time and best efforts in making possible the conference.

Local extension workers under the able leadership of R. H. Felts, County Extension Agent Leader, were responsible for local plans and arrangements. The formulation of plans for putting the recommendations into effect now rests largely with them.

PROGRAM

Northern Colorado Economic Conference
Greeley, Colorado

February 13-14, 1930

Court House

Conference Chairman.....Dr. B. F. Davis, Denver
Vice Chairman.....L. T. Winger, Brush
Vice Chairman.....E. R. Bliss, Greeley
Secretary.....E. H. Folbrecht, Greeley

Thursday, February 13

10:00—General meeting in Court Room, fourth floor

Dr. B. F. Davis, Conference Chairman

10:15—Purpose of the Conference. Pres. Chas. A. Lory, Fort Collins

10:45—Instructions to committees. R. H. Felts, Fort Collins

11:00—Committee meetings

12:00—Lunch hour

1:00-5:00—Committee meetings

6:30—Conference banquet. K. P. Hall

Toastmaster.....E. R. Bliss, Greeley
Meeting the Public Fancies—Jas. K. Wallace, Live-
stock Marketing Specialist, U. S. D. A.

The Farmer's View of the Present Situation—C. L.
Hover, Longmont

The Farm Home—Mrs. Mary G. Isham, Brighton

Friday, February 14

9:00—Committee meetings

11:00—General meeting, Court Room—L. T. Winger, Chairman.
Putting Conference Recommendations Into Effect.

Help from Bureau of Agricultural Economics—W. F.
Callendar, Washington, D. C.

Help from the Colorado Agricultural Extension Service—F. A. Anderson, Fort Collins

Help from Farm Organizations—B. F. Davis, Denver

12:00—Lunch hour

1:00—General meeting, Court Room

Committee Recommendations and Summary of Committee Discussions

4:00—Adjournment

Vice Chairman L. T. Winger was acting chairman of the conference in the absence of Dr. B. F. Davis.

Vice Chairman E. R. Bliss was chairman of the general meeting at 11 o'clock Friday morning.

Vice Chairman L. T. Winger was chairman of the general meeting at 1 o'clock Friday afternoon.

The commodity recommendations were read at the closing meeting by the committee chairmen and adopted by the conference. The recommendations were then discussed by the committee secretaries.

Following is the record of attendance:

Opening meeting-----	225
Banquet-----	130
Meeting 11 a. m. Friday-----	200
Committee meetings-----	250
Closing meeting-----	200

NORTHERN COLORADO AS AN AGRICULTURAL REGION

Northern Colorado, as referred to in this bulletin, comprises the following nine counties in the northern and northeastern part of the state: Adams, Arapahoe, Boulder, Jefferson, Larimer, Logan, Morgan, Weld and Sedgwick. The district is watered by the South Platte, Poudre and Thompson rivers and their tributaries. A considerable area is under irrigation and the soil responds with marked productiveness to the application of water.

Early History¹.—Altho some signs of agriculture in addition to grazing are recorded in the early fifties, comparatively little agricultural development occurred in this portion of Colorado before the establishment of colonies in the early seventies. During this period the Greeley, St. Louis Westerner, Burlington and Fort Collins colonies were established.

1. Data from "History of Agriculture in Colorado" by Alvin T. Steinel and D. W. Working, Fort Collins.

The first agriculture included mainly wheat. The Rocky Mountain Weekly News of July 11, 1877, contains a description of the farm of B. S. LaGrange of the Greeley colony. Out of something over 200 acres in crop, 150 acres were in wheat, 35 in oats and 25 in corn and potatoes.

Potatoes were grown in the state as early as 1859 while corn was grown in 1858 in Northern Colorado. Alfalfa was grown for the first time in Colorado at Denver in 1863. A field was planted to alfalfa in Clear Creek Valley in 1867, while in 1868 Charles Baldwin grew alfalfa in Boulder County.

Sugar beets were first grown by Peter Magnes in the Platte Valley in the early sixties. It was not until 1899, however, that the first sugar factory in Colorado was erected at Grand Junction. In 1901 the Loveland sugar factory was built.

With the coming of the sugar beet and the further expansion of alfalfa and potatoes came a more diversified farming that required more systematic rotations and which made possible the present development of the livestock-feeding industry in Northern Colorado.

Land Classification.—Something over 8,900,000 acres of land, both irrigated and dry, are contained in the counties under consideration. Eighty-two percent of the total is classed as agricultural land.

Only a little over 10 percent or about 910,000 acres are under the ditch. The balance of the agricultural land is devoted to dry farming, grazing or natural hay. Dry farming occupies about 30 percent, grazing 36 percent and natural hay land 6 percent of the total area of the region.

Table 1 shows the classification of this land for the entire district and for each county.

Table 1.—Land classification of counties of Northern Colorado, 1928

Counties	Total area (acres)	Irrigated land	Natural hay land	Dry farming land	Grazing land
Adams	807,680	94,000	9,460	496,800	150,170
Arapahoe	538,880	28,120		380,600	83,690
Boulder	488,960	81,882		22,662	154,396
Jefferson	517,120	69,486		19,060	252,777
Larimer	1,682,560	110,226	15,400	23,866	612,386
Logan	1,166,080	70,481	15,000	571,080	331,080
Morgan	823,040	79,712	2,220	248,293	412,080
Sedgwick	339,840	19,937	5,557	185,576	92,313
Weld	2,574,080	355,899	6,755	729,521	1,169,830
Total	8,938,240	909,743	54,392	2,677,458	3,258,722
Percent of total	100	10	6	30	36

Source: Colorado Yearbook.

Rainfall.—The rainfall of this district varies from 12.65 inches at Greeley to 16.91 inches in the eastern border near the Nebraska line. Very little agriculture is possible close to the mountains without irrigation. Generally speaking the rainfall increases as one goes east from the mountains. Where the rainfall is sufficient, dry farming is carried on to a considerable extent.

Table 1, which is based upon records of the United States Weather Bureau, shows the total precipitation and the percentage falling during the crop-growing season for eight places located in six of the nine counties of the district.

Table 2.—The normal annual precipitation in inches for cities of Northern Colorado.

Station	County	Annual precipitation	Percentage falling during April to September
Boulder	Boulder	16.12	65
Fort Collins	Larimer	14.77	73
Fort Morgan	Morgan	13.98	79
Greeley	Weld	12.65	75
Julesburg	Sedgwick	16.18	79
Longmont	Boulder	14.75	72
Sedgwick	Sedgwick	16.91	78
Sterling	Logan	14.89	89

Source: Records of the U. S. Weather Bureau.

Soils.—Sandy soils and sandy loam soils predominate in this area. In portions of Boulder, Larimer and Weld counties however the soil tends toward the heavier types ranging from silt loam to clay.

For the most part the land is fairly easily worked, both in seedbed preparation and subsequent cultivations. The topography is generally smooth allowing irrigation to be done with little difficulty from soil washing.

With many years of crop production under irrigation, the fertility has been depleted to the extent that frequent applications of barnyard and green manures are necessary to produce satisfactory crop yields. In the last few years commercial fertilizers, especially phosphates, have been used to maintain the soil fertility.

Farm Products in the Irrigated District.—The irrigated region is largely devoted to general farming, including winter feeding, with some specialization in dairying, poultry and crop farming. In general the farms vary in size from around 40 acres to 320 acres. Alfalfa, sugar beets, potatoes and the grains—wheat, oats, barley and corn—are the principal crops grown. Cattle and

sheep are fed in the winter months to find a market for the feed crops produced. Sugar beets, potatoes and wheat are the principal cash crops, some of which furnish valuable feed in their by-products.

While there is a local market for a small quantity of farm products, the bulk of the products must be shipped considerable distances to find a market. Such items as freight and handling charges play an important part in the costs of production and distribution.

Livestock.—Colorado feeds annually about 1,500,000 head of sheep, mostly lambs. Northern Colorado alone feeds about 75 percent of this number and is the largest lamb-feeding section of the United States.

Many cattle are also fed during the fall and winter months. The state feeds annually from 120,000 to 150,000 head and Northern Colorado feeds around 85 percent of this number. (See Table 3).

In making a survey of the number of livestock on farms it was not possible, in general, to secure a division between the number on dryland farms and irrigated farms. It was possible, however, to secure a fairly accurate division for the year 1928. (See Table 4).

Figures show that for the year 1928, 27 percent of the beef cattle on farms, 56 percent of the horses and mules, 69 percent of the dairy cows, 46 percent of the hogs and 23 percent of the sheep were on irrigated farms in the region. A predominance of horses, mules and dairy cows was found on irrigated farms and of beef cattle, hogs and sheep upon dryland farms.

In order to be able to compare cattle with horses, hogs and sheep, all animals are stated in terms of animal units. One cow, one horse, five hogs or six sheep equal one animal unit in this tabulation.

Cattle showed a steady decline in numbers from 1919 to 1926. Since that time a gradual increase may be observed. Horses and mules are on the decline while hogs have experienced considerable fluctuation. Sheep on farms have remained fairly constant since 1920.

The 1929 figures show increases for range cattle, dairy cows and sheep, a decrease for horses and mules, with the number of hogs remaining about the same.

Table 3.—Number of livestock on feed January 1 for the state and Northern Colorado, and Northern Colorado's percentage of the total

Year	Sheep and Lambs thousands of head			Cattle thousands of head		
	State	N. Colo.	Pct.	State	N. Colo.	Pct.
1922	1,040	760	73	92	78	85
1923	1,500	1,175	78	92	79	86
1924	1,400	1,150	82	95	80	84
1925	1,600	1,250	78	100	85	85
1926	1,475	1,090	74	120	100	83
1927	770	570	74	150	130	87
1928	1,580	1,260	80	140	120	86
1929	1,480	1,075	73	136	120	88
1930	1,990	1,500	75	120	100	84

Source: Division of Crops and Livestock Estimates, Denver.

Table 4.—Trend in numbers of livestock, Northern Colorado. Numbers represent thousands of head of animal units.(*)

Year	Range cattle	Horses and mules	Dairy cows	Hogs	Sheep
Total for irrigated and dryland sections					
1919	175	103	48	13	11
1920	149	95	47	10.5	8
1921	132	122	53	9	7.5
1922	133	93	56	11.5	7
1923	133	89	54	15	7.5
1924	127	90	56	16	8.5
1925	121	86	55	11.5	7.5
1926	101	84	53	9.5	8.5
1927	104	80	57	10	8.5
1928	106	79	55	11	8
1929	108	75	59	11	10
Number as divided between irrigated and dryland					
1928 (irr.) . . .	29	44	38	5	2
1928 (dry) . . .	77	35	17	6	6

(*In this table 5 hogs equal 1 animal unit; 6 sheep equal 1 animal unit. Sources: Colorado Yearbook and books of County Assessors of each county, 1928.

ECONOMIC COMMODITY STUDY AND COMMITTEE RECOMMENDATIONS

There is included in the pages that follow the recommendations of the various committees that met to discuss the different commodities produced in the irrigated district of Northern Colorado. These recommendations, in each case, follow a short discussion of the commodity. Each committee selected one point in their recommendations as deserving special consideration. These have been underscored in the different reports.

Sheep.—Sheep feeding has long been an important farm enterprise in Northern Colorado. Colorado feeds 30 to 35 percent

of all lambs in the United States and about 75 percent of all the lambs that are fed in the 12 important feeding states. Out of about 1,500,000 head fed annually in the state, Northern Colorado feeds around 75 percent. These sheep are shipped into the region in the late fall and early winter from the ranges of Colorado, Utah, Idaho, Montana, Wyoming and New Mexico. Here they are fed alfalfa, beet tops, beet pulp, molasses, corn and barley for about 4 months and sent to the market as fat stock. Some go to Denver, a few as far east as Chicago, but the bulk of the sheep fed in this area go to the Kansas City market.

Some fluctuation has occurred in the number fed from year to year, influenced by the price of feeders, the price of feed and the results of the previous feeding period. (See Table 5).

From 1923 to 1929 the number fed has been fairly constant except for the year 1927 when only about half the normal number of sheep was fed. The small number fed that year was due primarily to the heavy losses suffered by sheep feeders during the 1926-27 feeding period.

On January 1, 1930 close to 2 million head were in feedlots in the state. Satisfactory results from the feeding season the previous year were responsible for this great increase together with increased numbers of sheep moving from the range to feedlots. The high wave of industrial activity added to the confidence of the sheep feeder who expected a fairly wide margin between what he had to pay for feeders and the price of fat lambs in the spring.



Over 1,000,000 head of sheep and lambs are fattened in Northern Colorado feedlots each year.

Table 5.—Sheep and lambs on feed January 1.
(000 omitted)

Year	Colorado	12 western States (*)	United States
1923	1,500	2,177	4,266
1924	1,400	2,061	4,229
1925	1,600	2,051	4,007
1926	1,475	2,282	4,616
1927	770	1,585	4,259
1928	1,580	2,277	4,463
1929	1,520	2,233	4,792
1930	1,990	2,793	5,490

(*) The 12 states are: Colorado, Wyoming, California, Utah, Idaho, Oregon, Washington, Nevada, Montana, New Mexico, Arizona and Texas.

Source: Division of Crops and Livestock Estimates, Denver.

Several factors contributed to the disastrously low prices of the spring. One was rapid increase in sheep population on the western ranges. This is shown in Table 6.

Ewes on Colorado ranches increased in number 20 percent from January 1, 1925 to January 1, 1930. The number of ewe lambs saved for breeding stock increased nearly 150 percent. Somewhat similar increases also occurred in the 13 western sheep-raising states. For the United States as a whole, there was a 25 percent increase in the number of ewes on farms and a 30 percent increase in the number of ewe lambs saved for breeding during the same period.

It was this increase in numbers together with the decrease in demand for lamb on the part of the consumer, due to a decrease in purchasing power, that was responsible for the disas-

Table 6.—Trend in numbers of ewes and lambs on the range.
(000 omitted)

	1925	1926	1927	1928	1929	1930
Colorado						
Ewes, Jan. 1	879	920	969	1,120	1,200	1,176
Lambs docked	701	810	824	802	785	
Ewe lambs held	87	96	152	195	190	217
13 Western States						
Ewes, Jan. 1	18,130	18,860	19,341	20,820	22,350	23,157
Lambs docked	14,304	16,243	15,278	17,233	16,645	
Ewe lambs held	3,943	4,103	5,022	5,320	5,570	5,061
United States						
Ewes, Jan. 1	25,792	26,570	27,704	29,591	31,530	32,602
Lambs docked	21,958	23,772	24,153	26,225	25,976	
Ewe lambs held	5,337	5,645	6,691	7,157	7,382	6,927

Source: Division of Crops and Livestock Estimates, Denver.

trously low prices received by lamb feeders for their fat lambs this last spring.

Usually there is a feeding margin sufficiently large between the price of feeder lambs and fat lambs to allow the feeder to secure a fairly satisfactory market for his feed and in addition some profit from his feeding operations. Sometimes, however, this is not the case.

To show the variation in this margin over a period of 7 years, top prices of feeder lambs at Denver from July to December are compared in Table 7 with Chicago top prices for Colorado fat lambs. Chicago is the largest fat lamb market and therefore more or less regulates the price of fat lambs for the country as a whole.

In order to compare prices in the table, feeder prices for the late summer and fall of one year must be compared with the fat lamb prices for the following winter and spring. Such numbers are underlined in the table.

For example, top feeder lambs put into the feedlots in October, 1924, cost around \$13.25 per hundred at Denver. After a 4-months feed the same lambs, well finished, would bring in February about \$18.75 per hundred at Chicago, giving a margin between cost and selling price of \$5.50.

In 1925, however, top feeder lambs bought at \$15.20 per hundred in October brought only \$14.85 at Chicago the following February, showing a loss of 45 cents between the top feeder price at Denver and the Colorado fat lamb top price at Chicago. Again, in 1928, feeder lambs at \$13.25, brought the next February, \$17.35 leaving a margin of \$4.10.

A comparison of similar prices for October, 1929, with February, 1930, shows a loss of \$.25 per hundred, the loss increasing for sales after February.

In four out of the past six feeding periods lambs bought in October and sold the following February returned a satisfactory margin to the feeder. In the 1925-26 and the 1929-30 feeding periods this was not the case and the feeders as a rule suffered heavy losses.

The table also shows how late buying and late selling compared with early buying and early selling. In 4 years out of 6 the December price of feeders was higher than earlier in the season. In 4 out of the 6 years the price of fat lambs at Chicago was higher in April and May than in previous months.

While the establishment of small farm flocks of sheep is increasing in Northern Colorado, the number is still very small.

Table 7—Denver top feeder lamb prices per hundredweight vs. Chicago top prices for Colorado fat lambs.

Month	1923		1924		1925		1926		1927		1928		1929		1930	
	Denver	Ch'go	Denver	Ch'go	Denver	Ch'go	Denver	Ch'go	Denver	Ch'go	Denver	Ch'go	Denver	Ch'go	Denver	Ch'go
Jan.	\$ 15.25	\$13.40	\$13.75	\$17.25	\$19.00	\$15.10	\$16.00	\$13.40	\$	\$12.85	\$14.40	\$15.50	\$17.40	\$12.50	\$14.3b	
Feb.	15.40	14.50	16.00	17.30	18.75	14.25	14.85	13.30		14.75	16.50	15.50	17.35	9.50	12.75	
Mar.	15.50	15.00	16.80	15.00	18.15	12.75	14.50	17.00	17.00	14.25	17.65	16.10	17.85	9.00	11.25	
Apr.	15.25	17.10	17.10	12.00	16.25	14.65	16.10	17.25	17.25	17.25	18.50	16.25	18.10	7.50	10.25	
May	17.00	17.40			16.35	14.90	16.00	15.25	15.25		18.50	14.00	16.65	**	10.50	
June		11.00						13.25		12.50		13.00		**	**	
July		11.00		12.25		13.65		12.50		13.00		12.65				
Aug.		11.75		14.30		13.65		13.10		13.40		12.90				
Sept.		12.50		15.25		13.30		13.50		13.50		13.00				
Oct.		13.25		15.20		13.25		13.60		13.25		13.00		13.00		
Nov.		14.25		15.35		13.50		13.90		13.00		12.35				
Dec.		16.00		15.75		12.60		13.85		13.85		11.75				

**No Sales

Numbers are set in bold face for comparison of the October feeder price with the fat lamb price of the following February.
Sources: U. S. D. A. News (Market) Service, Denver and Chicago Drovers Yearbook.

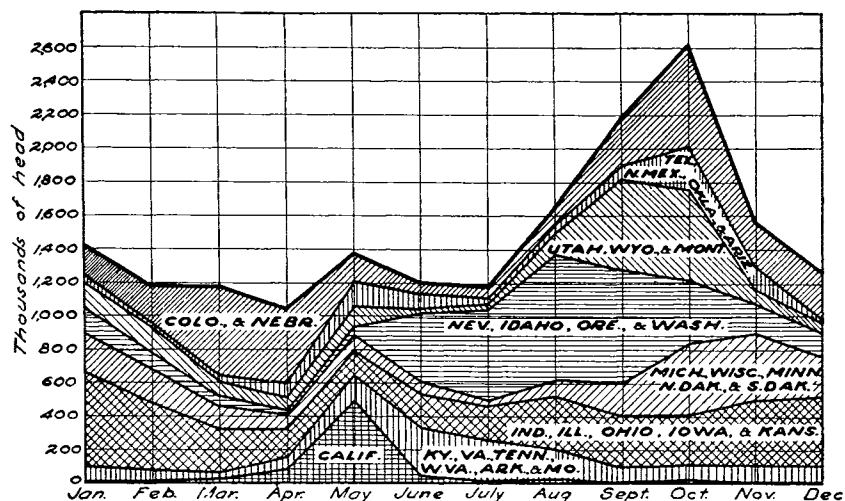


Fig. 1.—Origin of sheep and lamb receipts at public stockyards, 1927. Taken from Bulletin 473 University of California, College of Agriculture, Agricultural Experiment Station, Berkeley, California.

Out of about 48,000 head of such farm sheep in 1928 only about 25 percent or 12,000 were found on irrigated farms.

There is considerable room for the development of the farm flock on irrigated farms, especially as a sideline as irrigated pastures are developed to a greater extent in the region. At the present time, however, in numbers at least, farm flocks of sheep are of relatively little importance in the sheep industry in this region. Many individual sheep feeders feed more than this total number each year.

In the opinion of the sheep committee, lamb feeding will continue to be a basic enterprise in this area. There is a definite market for these fat lambs from Colorado and Nebraska from January to May when little competition is experienced from other lamb-feeding areas. This is clearly shown by Figure 1.

In order that the enterprise may be made more profitable to the lamb feeder, however, a number of improvements were suggested by the committee. Among these was the strengthening of the collective bargaining power of the feeder not only in selling fat lambs but also in purchasing feeder lambs.

Present methods of purchasing were questioned since they have a tendency to increase speculation. Cooperation on the part of all feeders was urged to overcome this tendency.

In some years, like the present, packers discriminate against heavy fat lambs. The feeder frequently pays a set price per

hundred for all his lambs regardless of weight when they go into the feedlot. Some plan, in the opinion of the committee, should be worked out so that feeder lambs might be bought according to weight and quality.

Orderly marketing was also considered, and a need expressed for more information on numbers of sheep, the size of the lamb crop and the outlook for future market trends.

There is a tendency on the part of some farmers to feed too many lambs. The opinion of the committee was that a farmer should govern his feeding operations by the amount of roughage and by-products at his disposal. The committee felt that not over 1,000 lambs should be fed on a 160-acre irrigated farm.

The committee was of the opinion that the problem needing first consideration was a systematic method of purchasing feeder lambs that would eliminate speculative tendencies.

Recommendations of the Sheep Committee

The sheep committee finds:

That the sheep industry is apparently approaching a saturation point in this country with steadily increasing numbers of sheep and low prices of wool. The committee feels, however, that lamb-feeding should continue to be a basic enterprise in this area.

Methods and feeding practices have been developed over a long period. Surplus home grown roughages and by-products are used to good advantage and the fat lambs supply and dominate a definite market demand from January to May when there are relatively few fat lambs from other sections in competition.

The balancing of labor during the winter months and the maintenance of the producing power of cultivated land are well recognized benefits of the industry.

The committee feels, however, that with nearly 50 percent of the winter feeding of sheep and lambs in the United States carried in Colorado and Nebraska, under the jurisdiction of one cooperative lamb feeding association, that all feeders thru that association should stabilize their industry by strengthening their collective bargaining power in the purchasing as well as in the marketing of these lambs.

In some instances there is noted a general tendency to attempt to feed more lambs than the farm will accommodate.

The committee therefore recommends:

1. That where lamb-feeding is practiced the roughages and by-products produced on the farm be used as a basis for planning the extent of lamb-feeding operations.

It is estimated from records presented that the average 160-acre farm in this area should produce enough roughage and by-products, with the addition of some concentrates, to feed not in excess of 1,000 lambs.

2. That thru the lamb feeders' association, efforts be made to have lambs graded as to quality and size for purchase as feeders, since the committee feels that the influence of the consuming public is and will continue to be in preference of light fat lambs of high quality.

3. That feeders in this area, thru their lamb-feeding association, cooperate with the wool growers' associations in an attempt to reduce present speculative tendencies, since the committee feels that the present methods of purchasing feeder lambs tend to increase speculation.

It is suggested that the lamb feeders' association gather and furnish information to its feeders by July 1 of each year as to numbers of lambs available for sale, wool in storage, etc., and recommend to its members a fair price by grades for the purchase of these feeder lambs. The committee feels that the association should be able to work out some method for the purchase of feeder lambs at a fair price to grower and feeder.

4. That an attempt be made to discourage early contracting of range lambs and that lamb feeders thruout the area wait until information on feed conditions and numbers of lambs available have been definitely determined and published by the association before making purchases for the following feeding season.

5. The possibility on the average 160-acre irrigated farm in this area of running a farm flock of from 100 to 120 grade ewes. However, experience with a smaller number of ewes is first necessary if the establishment of such a farm flock is contemplated.

6. Since losses in the feedlot have been steadily mounting, that measures be taken to reduce such losses by:

- (a) Short railroad runs before the first feed, in purchasing lambs on the range;
- (b) Continuous sorting in the feedlots;
- (c) Feeding a variety of feeds;
- (d) Avoiding too heavy a grain ration.

7. That lamb feeders thruout the area work thru their organization in making every effort to promote the orderly and uniform marketing of lambs.

8. That the press be petitioned to avoid giving undue stress to figures which may not give a true picture of the present lamb

supply. The committee feels that with a surplus of any commodity reported the press sometimes has a tendency to enlarge upon the situation to the detriment of the farmer. With a big surplus of lambs reported on feed in Northern Colorado this year, it is pointed out that little publicity has been given to the excessive death loss experienced and its effect in reducing this surplus in tonnage.

The development of a systematic method for the purchase of feeder lambs that will eliminate present speculative tendencies is the most important factor to be considered in this program in the opinion of the committee.

Frank Hartman, Chairman,
Longmont, Colo.

E. J. Maynard and D. C. Bascom
Secretaries, Fort Collins, Colo.

BEEF CATTLE

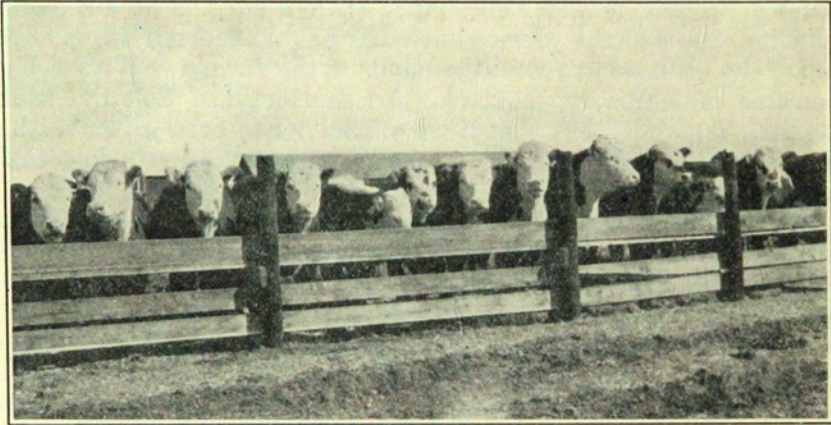
Altho cattle feeding is not carried to such an extent as is lamb feeding in this area, nevertheless it plays an important part in the maintenance of soil fertility as well as providing a good market for feed crops produced in the region.

Colorado feeds annually between 100,000 and 140,000 head of cattle. Of this number about 85 percent are fed in Northern Colorado. (See Table 3, page 9).

Some men feed both cattle and sheep, some only cattle and others only sheep. A few interchange in their feeding operations. One year they will feed sheep and another year cattle, depending upon how much of a margin seems to be offered by each enterprise.

From 35 to 40 percent of the Colorado shipments of cattle and calves move during the months of January to May. This represents to a large extent the movement of fat cattle. Approximately 60 percent goes to Denver, the next largest market receipt of Colorado cattle occurring at Kansas City.

The number of beef cattle on all farms in Northern Colorado (dry and irrigated) decreased from 175,000 head in 1919 to 101,000 head in 1926. Since that time there has been a gradual increase in the number of beef cattle on farms. The figure stood at 104,000 in 1927, 106,000 in 1928 and in 1929, 108,000 head. The greatest increase has taken place on non-irrigated farms. In 1928, the only year that information is available for all counties in the region, 29,000 head out of a total of 106,000, or 27 percent, were found on irrigated farms. (See Table 4).



For a number of years cattle feeding has occupied an important place in the agriculture of Northern Colorado.

A survey of the cattle-feeding situation in this section of Colorado disclosed a number of weaknesses in the operation of this important enterprise. Among these were listed: Lack of organization for orderly marketing such as the lamb feeders have at the present time; need for closer cooperation between cattle feeders' organizations and organizations of range cattlemen; lack of any feeding on some farms and too much feeding on others; a tendency to continue to feed heavy cattle when the consumer demand is mainly for lighter weights that yield lighter cuts of meat; the practice of crowding the feeding operations into a few winter months instead of carrying them during other parts of the year as well.

The possibility of better and earlier finishing of baby beef was discussed at length by the committee. It was the concensus of opinion that creep feeding of calves was possible where a man maintained a small herd of breeding cows. This method calls for the feeding of grain to calves while they are still running with their mothers on pasture. The grain supplement in addition to milk and pasture gives the calves a better start and produces a better and earlier finish at a lower cost per pound.

Protection during the winter feeding period thru the use of inexpensive windbreaks also was discussed and recommended by the committee.

Recommendations of the Beef Cattle Committee

The beef cattle committee finds :

A. That there is urgent need for closer cooperation among cattle feeders, also between cattle feeders' organizations and range cattle producers' organizations. That there is further need for the development of more efficient and orderly marketing of all livestock.

B. That there is an unbalanced situation in the cattle-feeding industry on Northern Colorado farms. Some farmer stockmen are attempting to feed many more cattle than their farms can produce feed for, thus being forced to depend on the purchase of the bulk of the feed requirements, consequently increasing the speculation in the feeding enterprise. Other farms that are producing fattening feeds are feeding neither cattle nor other livestock. Such farms need the fertility produced thru feeding.

C. That the average well-balanced Northern Colorado irrigated farm of 160 acres will produce feeds sufficient to finish two to three carloads of cattle, depending on the class and age.

D. That the consumer demand is greater for smaller cuts of beef. That younger cattle make more economical gains in the feed-lot than older cattle. That younger cattle require a longer feeding period, more concentrated feed, greater care, and more skillful feeding.

E. That the feeding of cattle in Northern Colorado is confined largely to the winter months. Most operators desire to purchase feeders after the rush of fall work and to put these cattle on a finished cattle market before spring work starts. This practice results in a comparatively short marketing season when the bulk of the fat cattle are marketed.

The committee believes that there is a possibility of lengthening the marketing season by timing feeding operations on the farm so that all cattle are not fed at one time.

The committee also feels that there is some possibility for economical summer feeding. Where stockmen run a cow herd, experience has shown that creep feeding of calves following their mothers on pasture is practical.

F. Experience of Northern Colorado feeders has shown the advantage of windbreaks and open sheds for feedlots during severe weather. Cattle having the use of such advantages make better gains. Such equipment can be furnished thru inexpensive construction.

The committee therefore recommends:

1. The immediate organization of an effective Northern Colorado Cattle Feeders' Association. The aim of such an association to be:

- (a) To develop close cooperation among feeders;
- (b) To stimulate closer contact and cooperation with range producers and their associations;
- (c) To cooperate with state and national livestock associations in all matters relating to the welfare of the cattle industry;
- (d) To assist in the program for a constructive educational campaign in the interests of beef consumption;
- (e) Finally, to cooperate with other livestock associations in the development of a more efficient and orderly marketing system.

2. That the average Northern Colorado farmer stockman adjust his cattle-feeding operations to the number of cattle for which his farm can furnish most of the required feed, thus tending to eliminate much speculation in the feeding enterprise.

3. That consideration be given to the feeding of younger and lighter cattle, where the feeder has had experience in feeding.

4. That the feeding operations be timed for a more orderly marketing of cattle.

5. That pasture creep feeding of calves be encouraged where breeding herds are maintained.

6. That inexpensive windbreaks or open sheds be constructed as practical equipment for every feedlot.

Warren H. Monfort, Chairman,
Greeley, Colo.

L. H. Rochford, Secretary,
Fort Collins, Colo.

H. A. Sandhouse, Secretary,
Brighton, Colo.

DAIRYING

Dairying plays an important role in the agriculture of Northern Colorado. Not only are large quantities of market milk produced for consumption, but a number of plants for the manufacturing of dairy products are located in this area. As shown by Table 4, little fluctuation has occurred in the number of dairy cows in this area during the last 9 years but there has been a decided increase in the production of milk and butterfat per cow. This increase has been brought about thru the untiring efforts of the cow-test association.

Of the total number of dairy cows on farms, both dry and irrigated, in 1928, 38,000 head, or 70 percent, were found on irrigated farms, while only 17,000, or 30 percent, were found on non-irrigated farms.

During the period July 1, 1928 to June 30, 1929, 28 dairy manufacturing plants bought close to 5,000,000 pounds of butterfat as whole milk. In addition, 29 plants purchased over 8,600,000 pounds of butterfat as cream, making a total of around 13 and one-half million pounds of butterfat for the year. (Table 8).

A survey in this area of manufactured dairy products showed that 27 plants made over 12 million pounds of butter, and 29 plants made over 1 and one-half million gallons of ice cream. Ten plants made about three-fourths of a million pounds of cottage cheese and bakers cheese, while about 25 million pounds of evaporated milk were made. (Table 9).

Table 8.—Butterfat purchased for dairy manufacture, Northern Colorado, July 1, 1928, to June 30, 1929

	Milk	Cream
No. of plants	28	29
Pounds of butterfat	4,865,000	8,644,000
Purchased locally	77%	9%
Purchased in state outside local area.....	23%	75%
Purchased outside state	—	16%

Source: State Dairy Commissioner Reports.

As shown in Tables 8 and 9, 77 percent of the purchased milk but only 9 percent of the cream was bought locally. Altho 66 percent of the butter, 85 percent of the ice cream and 88 percent of the cottage cheese, was sold locally, only 2 percent of the evaporated milk went to local markets. Shipments out of the state amounted to 22 percent for the butter, 40 percent for the evaporated whole milk, but only 4 percent for the ice cream.

Table 9.—Dairy products manufactured in Northern Colorado and sales territories for these products, July 1, 1928, to June 30, 1929

	Butter	Ice cream	Cottage and Bakers cheese	American Cheddar cheese	Cond. buttermilk	Dried buttermilk	Evap. whole milk
No. of plants	27	29	10	1	1	1	2
Production (000 omitted)	12,153 lb.	1,604 gal.	759 lb.	290 lb.	213 lb.	353 lb.	24,987 lb.
Sold locally	66%	85%	88%		90%	90%	2%
Sold outside local area	12%	11%	12%	20%	10%	10%	58%
Sold outside state	22%	4%		80%			40%
Capacity percent of operation.	290	435	287	287			

Source: State Dairy Commissioner Reports.

A further check-up of the capacity of these plants revealed that there could be made with the present equipment, 190 percent more butter than in 1928-29, 335 percent more ice cream and 187 percent more cheese, indicating that considerable increase in the dairy industry in the region could be made without the necessity of increasing the number of dairy manufacturing plants.

The present dairy situation was discussed by the dairy committee. The large surplus of butter on last January 1 was considered as one of the chief causes of the present low butterfat prices compared with a year ago.

Dairy cows on farms in the United States increased 3 percent from Jan. 1, 1929 to Jan. 1, 1930. It is estimated, however, that an annual increase of 1 percent in numbers is sufficient to meet the increased demand for dairy products due to increased population. In 1927 there were 57,000 dairy cows on farms in Colorado. This number dropped to 55,000 in 1928 but showed a considerable increase in 1929 when the total number reached 59,000 head. (Table 4).

The need for lowering the cost of production was recognized and the committee felt that a number of things could be done by the dairymen to better conditions. Among these were considered the culling out of low producers and the need for the production of more feed on the farm instead of buying so much for the cows. The advisability of having more irrigated pastures as a source of cheap feeds was also given some attention.

In order to reduce the competition between butter and butter substitutes, the committee decided that a state tax should be put upon all nut margarine products. Consequently a wire was sent to Colorado senators urging that the Norbeck-Haugen oleomargarine bill relative to shortenings be reported out of committee and immediately passed.

It was recognized that the quality of butter made in Colorado could be improved if a higher quality cream were produced. In order to encourage better methods of production that would result in a higher quality cream and in turn a better quality butter, the committee felt that a cream-grading system should be established and prices to producers be based on grade.

On many farms where cows are kept some other farm enterprises might fit well into a better-balanced system of farming. Hogs and poultry were suggested to consume by-products of the dairy, especially where either sweet or sour cream is sold and the skim milk kept on the farm.

A survey showed that many farms had no dairy cows, even where there were children in the farm family. On account of the benefit to the health of these children it was felt that enough cows should be kept to supply the farm family with milk and cream.

Recommendations of the Committee on Dairying

The dairy committee recommends:

1. That there be no increase in the number of dairy cows kept for milk production and that there be a closer culling of low-producing cows. That only heifers from the higher-producing dams be kept for dairy purposes.

2. That there be no increase in the number of dairy-products manufacturing plants in this area.

3. That steps be taken to establish a grading system for dairy products and that prices to the producers be based on grade.

4. That record keeping thru dairy-herd-improvement associations be encouraged and herds be improved thru such records and the use of purebred sires and selection of heifers from high-producing dams.

5. That dairymen raise as much feed as practicable and that more permanent pastures be developed for spring and summer feeding.

6. That the quality of dairy products be improved and that the state dairy commissioner be encouraged and given cooperation in enforcing the regulations on milk houses, barns and plants.

7. That steps be taken to establish a state fund for eradication of tuberculosis in cattle.

8. That steps be taken by the Extension Service of the Colorado Agricultural College, State Dairy Commissioner and the office of the Colorado Director of Markets, to form a state dairymen's organization for the purpose of promoting the dairying industry in Colorado.

9. That enough cows be kept on every farm to supply the farm family with dairy products.

10. That enough hogs or poultry be kept on every dairy farm to consume the by-products of the enterprise.

11. That a wire be sent from this conference signed by the chairman to the Senators from Colorado, urging that the Norbeck-Haugen oleomargarine bill relative to shortenings be reported out of committee and immediately passed.

12. That a state tax be put on nut margarine products.

L. T. Winger, Chairman,
Brush, Colo.

C. A. Smith, Secretary,
Fort Collins, Colo.

SWINE

There were in 1929 about 56,000 head of hogs in all of the counties in Northern Colorado on irrigated and dryland farms. Out of 55,000 head on all farms in 1928, about 25,000 head were found on irrigated farms and 30,000 head on dryland farms. The total number of head in 1929 shows no increase over the number in 1928.

The trend in hog production in Colorado can be followed, during recent years at least, thru figures supplied by the Denver Union Stock Yards Company. It has been estimated that about 75 percent of all hogs marketed in Colorado move to the Denver markets. A considerable proportion of the remainder moves west to California points.

Denver livestock receipts for 16 years are shown in Table 10. In 1914 only 255,600 hogs were received. In 1924, 1928 and 1929, the receipts were well over 500,000. In the opinion of the committee, Denver is becoming one of the leading livestock markets of the West.

Time was when Denver hog prices were the same as Omaha hog prices, minus the freight, to Omaha, and the additional handling charges. In recent years, however, the Denver price has been consistently above the Omaha price and in some cases has equaled the Chicago price. This change in price relationship has been brought about largely thru the increased demand for hogs from the west coast markets.

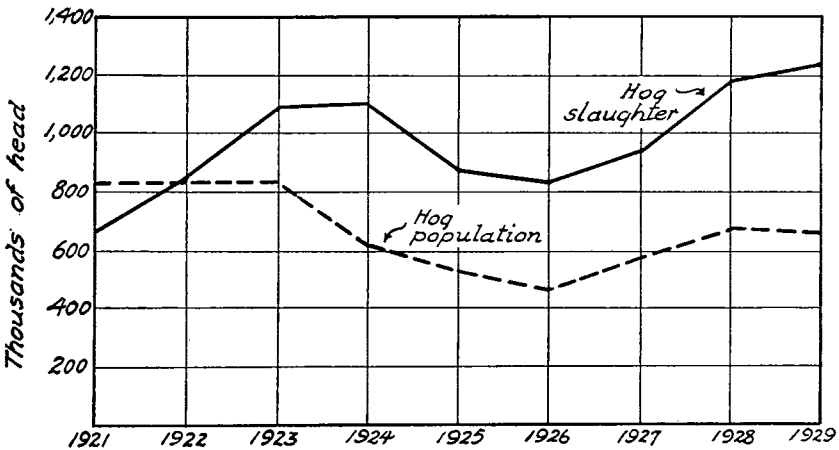
In 1921 California reported over 800,000 head of hogs on farms. In 1926 the number dropped to 468,000 head. In 1929 there were about 670,000 head of hogs on farms in California. While the production trend has been somewhat downward, the record of slaughter shows a decided upward trend, especially since 1926. The 1929 figures show a slaughter of 1,232,000, or almost double the number in 1921. (See Fig. II).

The west coast markets demand a well-finished hog weighing around 160 to 200 pounds. Colorado conditions are such that this type of hog can be very easily produced. California imports about 700,000 head of hogs each year so that here is a market that deserves a great deal of attention on the part of hog producers in Colorado.

In checking up conditions in Northern Colorado relative to the production of hogs, the committee found that hogs are a sideline enterprise on most farms. In too many cases, however, hogs are raised under insanitary conditions, in filthy pens and without the use of pasture.

There seems to be a tendency on the part of farmers in this area to be satisfied with inferior grades of hogs. These, when fed rations that are not well balanced, have little chance of making any profit for the producer.

On farms where dairy cows are kept and butterfat is sold either on a sweet or sour-cream basis, there is an opportunity for the production of hogs in order to utilize to better advantage the by-products from the dairy enterprise. It has been demonstrated repeatedly that with a well-balanced grain ration together with skim milk and pasture, pork can be produced at a cost that will compete with costs in other pork-production areas in the United States. With the favorable geographic location in reference to the west coast markets and with their increasing demand for hogs, there seems to be a chance for some increase in production of hogs in this region.



California hog population and slaughter at San Francisco and Los Angeles.

Table 10.—Livestock receipts at Denver

Year	Cattle	Calves	Sheep	Hogs
1914	406,900	35,800	692,200	255,600
1915	395,900	28,400	765,200	343,700
1916	552,100	49,300	1,409,000	466,700
1917	616,000	37,400	2,059,900	351,900
1918	675,700	52,600	1,651,800	383,500
1919	766,100	57,600	2,087,200	367,600
1920	570,400	46,200	2,078,700	341,200
1921	436,500	45,000	1,467,900	334,100
1922	586,700	69,500	1,866,800	395,200
1923	561,300	58,600	1,865,600	495,300
1924	571,700	58,600	2,039,700	569,000
1925	526,600	60,200	2,357,000	467,400
1926	472,700	56,400	1,825,900	497,000
1927	577,000	63,200	1,908,200	456,900
1928	590,400	76,800	2,295,000	567,200
1929	555,600	68,500	2,290,400	538,500

Source: Annual Report of the Denver Union Stockyards, 1929.

The outlook for hog prices at the present time seems to be more favorable than prices for other classes of livestock, according to the United States Department of Agriculture.

Then, too, consumption of pork and lard has been maintained at a fairly high level during the last few years. (Table 11).

While the consumption of beef and veal combined have decreased since 1920, pork and lard have increased during that same period. The consumption of lamb has also shown some increase. During periods of business depression the tendency is to decrease consumption of lamb and beef and to increase the consumption of pork and pork products.

Table 11.—U. S. annual consumption of meats and lard in pounds per capita

Year	Veal	Total beef	Lamb	Total pork including lard	Total
1900	3.5	71.3	6.8	77.9	156.0
1905	5.4	78.4	6.5	68.8	153.7
1910	6.8	77.9	6.4	68.5	153.0
1915	4.3	58.8	6.3	72.4	136.5
1920	7.6	70.7	5.5	73.8	150.0
1925	8.7	70.8	5.2	80.8	156.8
1927	7.4	65.4	5.4	82.3	153.1
1928	6.8	58.5	5.6	88.6	152.7
1929	6.8	58.2	5.8	87.1	151.1

Source: U. S. D. A. Robert's bulletin on the consumption of meats and meat products.

Recommendations of the Swine Committee

The committee on swine finds that:

A. Hogs are a sideline on most irrigated farms in this area.

B. That during the rush season hogs are neglected to a large extent and must take care of themselves.

C. In too many cases hogs are raised under insanitary conditions, in filthy pens and without the use of pasture.

D. The hog outlook is very favorable to hog producers due to a decrease in national supply and a favorable relationship between feed costs and hog prices.

E. There is a tendency in this area to keep an inferior quality of hogs.

F. Feeding of balanced rations is not generally practiced.

G. On rented farms landlord and tenant have not generally cooperated in hog production.

H. There is a tendency to increase production of corn, barley and oats in this area which should be fed to livestock.

I. The dairy and hog industries are very closely related and should supplement each other especially where butterfat is being marketed on a sour or sweet-cream basis.

J. The majority of hogs are being marketed in November and December when hog prices are lowest.

K. Packing centers have been moving westward. Regardless of the supply of cattle and sheep, hogs are necessary for packing centers.

L. The Denver market is one of the best hog markets in the country.

M. An increase in the demand for pork products in California, due to increase in population and a decrease in numbers of hogs on farms, and a favorable freight rate compared with the rates from eastern and cornbelt areas, make Colorado a logical hog-production region.

N. There is more or less hog cholera thruout the area.

The committee therefore recommends:

1. That enough hogs be raised on every farm to furnish a home supply of meat and that farmers in this area who are hog-minded carry from five to ten sows per farm and raise two litters per year.

2. That, whether hogs are kept as a sideline or as a major enterprise, they be given good care at all times for most economical production.

3. That the McLean County System of sanitation be followed as closely as possible, preventing worms and other filth-born diseases.

4. An increase in hog production in this area to help utilize feed crops such as corn, barley and oats, since market conditions and outlook reports are very favorable to hog production.

5. That a more careful selection of breeding stock be practiced and that nothing but purebred sires be used.

6. That balanced rations be fed with the use of self-feeders, thus making it possible to market hogs earlier in the year at higher market prices.

7. That alfalfa or sweet-clover pastures be used to cheapen cost of production.

8. That on tenant farms, landlord and tenant cooperate in working out a more equitable program for hog production.

9. That hogs be kept on dairy farms, especially those selling sweet or sour cream, and the skimmilk be fed to hogs.

10. That all hogs be vaccinated for hog cholera.

The major recommendation is a combination of several recommendations:

Since Denver is becoming a large packing center, and California markets are increasing their demand for pork products, that hog production be increased thruout this area.

Geo. H. Thompson, Chairman,
Julesburg, Colo.

A. C. Allen, Secretary,
Fort Collins, Colo.

POULTRY

Numbers of poultry on farms in Northern Colorado have been increasing during the last 10 to 15 years. In 1917 close to 334,000 head were reported on all farms, both irrigated and dry, in this region. In 1925 the number had increased to 883,000. This number dropped to 707,000 in 1926 and increased to 919,000 in 1928. In 1929 the number had further increased to 965,000. (Table 12).

Figures are available for 1928 showing a division of poultry between irrigated and dryland farms, with about 58 percent on irrigated and 42 percent on dryland farms.

The increase in the poultry industry can be attributed to the relatively high prices received for poultry and eggs during this period. High prices attract people into a business. By the time they are established they may find an over-production which causes the price to drop.

Such a condition was brought about this spring, partly due to the business slump but for the most part caused by too many people going into the poultry industry which resulted in an over-production or in an output considerably beyond the demand. And in this as in any other food industry an increase in the consumption of a particular kind of food is rarely brought about except at reduced prices to the consumer and then only with a curtailment in consumption of some other food or food product.

In reviewing the poultry situation in Northern Colorado, the committee divided the problems of this enterprise into three groups, namely, poultry for market, egg production and marketing.

Not all producers have the same problems. Many poultry raisers in the area are attempting to carry the enterprise on a

Table 12.—Trend in numbers of poultry on farms in Northern Colorado

Year	Number of poultry
1917	334,000
1918	531,000
1919	595,000
1920	589,000
1921	631,000
1922	766,000
1923	804,000
1924	863,000
1925	883,000
1926	707,000
1927	883,000
1928	919,000
1929	965,000

Source: Colorado Yearbook, 1929

meat and egg basis thru the use of the heavier breeds. Others, however, using the lighter breeds, are interested primarily in the production of eggs for market.

It is recognized that the outlook for the marketing of poultry is for prices lower than in recent years.

Near the larger towns and cities there is a specialized broiler production that brings fairly high prices to the specialized producer. Farm surplus production of broilers beyond the needs of the farm family, therefore, usually receives a packer or storage price.

Early culling is doubly worthwhile to the poultry producer. Poultry prices are generally higher in August than in February. Added to this is the advantage of having only the best pullets to carry thru the winter.

Where the heavier breeds are kept, some attention might be given to caponizing the young cockerels and fattening them, instead of selling them as roosters, for table consumption. Prices for capons are sometimes 12 to 15 cents higher than stags or roosters kept beyond the broiler age.

The question of the number of laying hens to keep as a sideline to supplement the farm income was discussed by the committee. On farms where farmers keep hens of high egg production, where proper equipment is available and where poultry are well cared for, the committee suggests from 300 to 400 laying hens. Such a unit is best established by starting with 300 chicks the first year, saving 100 pullets for the laying flock. In 2 years time the 300 to 400 unit can be established. To make the flock profitable, however, the committee feels that leghorns should lay at least 150 eggs per year and heavy breeds at least 130 eggs.

Altho eggs are shipped into this region during the winter months, there is a long period of heavy production when many eggs have to be shipped long distances to find a satisfactory market. Proper grading of eggs and efficient handling are, therefore, essential if poultrymen are to receive satisfactory prices.

The committee feels that cooperative efforts along this line are better than individual efforts on the part of the producer. Cooperative egg exchanges, therefore, are recommended since these exchanges recognize the necessity of close grading and pay the producer on the basis of grades.

The U. S. Standard Breeding plan came up for consideration. This plan was highly recommended as a sound basis of continued improvement in the marketing of chicks.

Production records on poultry flocks are equally as important as production records on milk cows. Chicks from high-producing flocks with records of performance are desirable for profitable production.

Recommendations of the Poultry Committee

The poultry committee recommends:

Poultry for Market.—1. That the farm flock representing the production of “meat only” and a few eggs be reduced to actual farm-family needs of about 3 dozen hens, because

- (a) The surplus production has not proved sufficiently profitable over a 5-year period to warrant expansion;
- (b) Specialized broiler production near large cities is taking the highest meat prices and leaving only a packer or storage price for farm surplus production;
- (c) The outlook for poultry meat is for lower prices than in recent years, but likely to continue above the prices of other meats even in a period of lower price levels.

2. Earlier culling, since the prices for hens and fries are 4 to 6 cents per pound higher in August than on February 1, with an added income of \$80 to \$100 per farm.

3. The committee suggests that capon production offers a price of 12 to 15 cents higher than stags or roosters kept beyond broiler age.

Egg Production.—That a 300 to 400-hen sideline enterprise be encouraged on farms where high egg production per hen, experience of the operator and equipment warrant, because

- (a) The trend of poultry prices is likely to continue above the price of other livestock products; and quality eggs are likely to continue in stronger demand due to lack of effective substitutes rich in vitamins;
- (b) This enterprise is large enough to form an efficient marketing unit, caselot shipments and secure good care, housing and feed.

The committee suggests that a gradual development be made, starting with 300 chicks the first year, maturing 100 pullets, properly housed and fed, and growing into the 300 to 400-bird unit in 2 years as experience of operator warrants.

The committee feels that a production of 150 eggs or more per bird for leghorns or 130 for heavy breeds, is necessary for commercial profits and such production can only be secured from flocks making such flock averages. Buyers of baby chicks need

to consider the percentage of good pullets raised and egg yields secured as a true basis of values instead of low first cost per chick. In case of doubt, county extension agents and extension poultrymen should be consulted as to the reliability of hatcheries, breeders, etc.

Marketing.—1. Cooperative exchange egg marketing as the only agency buying on grade and giving producers some benefits from these grades, since

- (a) The increase in consumption of fresh eggs, poultry, meat and baby chicks depends on selling on a recognized graded basis;
- (b) That as production of eggs increases, out-of-state shipments become necessary, and cooperative efforts have proved most effective.

2. That accredited hatchery flock owners and independent breeders be encouraged to keep demonstration flock records. And that extension forces cooperate in the U. S. Standard Breeding Plan as a sound basis of continued improvement in the marketing of chicks.

Carl Melzer, Chairman
Littleton, Colo.

Russell J. Hill, Vice-Chairman
1544 1st St., Greeley

O. C. Ufford, Secretary
Fort Collins, Colo.

TURKEYS

Altho turkeys have been produced in Colorado for a good many years, it is only within the last few years that they have been grown to any great extent for outside shipments.

No figures are available on the number of turkeys on farms in Northern Colorado. At the present time, however, it is estimated that there are probably about 300,000 head of turkeys on farms in the state. With the rapid growth in this enterprise comes a number of problems to confront the turkey producer.

During the last year about a 10 percent increase in the number of turkeys on farms was made over 1928. This together with the fact that a similar increase was made for the entire United States resulted in lower prices to the producer than were received the year previous.

While the lowered price was not due entirely to the increased numbers of turkeys for sale, yet it added to the effect of the business depression and helped to contribute to lower prices.

Results from marketing during years of heavy supplies emphasize the necessity of paying attention to the production end in so far as it is concerned with putting a good-quality product into the hands of the consumer. This means better breeding stock to begin with. It also means better feeding or better-balanced rations and care in finishing for the market. Birds not well finished sell for much less per pound than those carrying a good finish.

If production costs are to be kept at a minimum, proper equipment is necessary, especially where the production of turkeys is for commercial consumption. Diseases must be guarded against to reduce losses.

The committee felt that where one engages in the production of breeding stock, certification is necessary as a means of protecting the buyer. This is desirable in the poultry industry. It is equally desirable in the turkey industry.

The marketing of turkeys is being handled to a considerable extent in the turkey-growing sections of the state thru turkey pools. It is estimated that about 75 percent of the turkeys were sold in this way the past season (1929-1930). Three were made: Thanksgiving, Christmas and the January-and-February pool.

After reviewing the turkey situation in Northern Colorado the committee was of the opinion that at the present time no increase in the number of turkeys is desirable.

Recommendations of the Turkey Committee

The turkey committee recommends:

1. An educational program along the lines of better stock, management, feeding and finishing for marketing.

2. That not over five to seven hens and one tom be kept on the average farm. If a larger flock is kept, special equipment is necessary.

3. No hatching of turkeys eggs after July 1.

4. That a well-balanced ration be fed thruout the season.

5. That birds be well finished before marketing.

6. That the Agricultural College carry more research work on turkey diseases.

7. The certification of all turkey flocks where a business is made of selling breeding stock, in order to protect the buyer.

8. That no increase be made in turkey production at this time, but that improvement be made in quality.

Mrs. Ralph Hanna, Chairman
Wellington, Colo.

Mrs. Cora De France Forster, Secy.
Berthoud, Colo.

RABBITS

Rabbits have been raised commercially in this area for at least 20 years. It is only within the last 5 years, however, that rabbits have shown any considerable increase. This increase in the industry has been due to an increased demand for rabbit meat in the Denver area.

Rabbits have been raised for three purposes, namely, to provide breeding stock, to supply meat and to produce fur. Prices for fur during the last year have been very low. Meat prices, while holding fairly steady, have not been high enough to prove profitable except where producers have adopted efficient production methods.

The industry is carried very largely as a supplementary source of farm income, where produced on farms; or as a means of adding to the salary or wage of the owner where they are kept within the city or town limits or in the suburbs of cities or towns.

For best results, methods of production must be such that sanitary quarters are provided, with hutches that are free from draft and allowing 1 and one-fourth square feet of space per pound of live rabbit.

Where breeding stock is being raised, best results are obtained thru breeding three times per year, but where meat is sold, breeding should be done four times per year. Pedigreed stock is recommended as a prerequisite of profitable production.

The marketing of rabbits presents a serious problem at the present time. Some producers sell live rabbits, while others kill and dress them, selling the meat to one buyer and the fur to another. As a result, rabbit prices have been uncertain and fluctuating. Competition with small cuts of other meats exists and prices of poultry and lamb affect the price and the consumption of rabbits.

The committee feels that the market price can be standardized if proper marketing methods are adopted. It therefore suggests that all meat rabbits be marketed alive in greater volume thru some central sales agency under strict supervision and in-

spection. Such a plan will standardize the price and quality and allow for efficient marketing of these products.

Recommendations of the Rabbit Committee

The rabbit committee recommends:

1. That there be a gradual increase in the number of rabbits raised and marketed in this area.

2. That registered stock be used and does be bred regularly for three litters per year for breeding stock and four litters per year for meat. That not over six rabbits be saved per litter, of which not over 25 percent be saved for breeding stock, the remainder to be used for meats.

3. That a three-way system of rabbit raising be adopted:

- (1) Production of breeding stock.
- (2) Production of meat.
- (3) Production of fur.

4. That rigid culling be adopted.

5. That proper sanitary measures be followed by the use of clean, outdoor hutches, free from draughts, allowing 1 and one-fourth square feet per pound of live rabbit.

6. That all meat rabbits be marketed alive in greater volume thru some central sales agency, under strict supervision and inspection.

7. That rabbit raising be considered as a means of supplementing the family income, as well as a specialized enterprise on a commercial basis.

J. M. Nance, Chairman
Englewood, Colo.

A. H. Tedmon, Secretary
Littleton, Colo.

BEEES AND HONEY

Northern Colorado produces about 30 percent of all the honey produced in the state. This region is on a par with the Western Slope in the quantity produced. Over 60 percent of the state output comes from these two areas.

After discussing the honey situation in Northern Colorado, the committee came to the conclusion that this industry could not be expanded to any considerable degree. The problems confronting the producers, however, are those having to do with marketing, cost of production and methods employed in handling

such difficulties as winter protection, adequate food supplies for the bees and colony and honey sanitation.

The United States Department of Agriculture, in cooperation with the inter-mountain experiment stations, has done considerable work in studying the costs and methods of producing honey. A report has already been published that is available to every beekeeper in this area.

The greatest marketing problem has to do with supplying local trade with enough honey for consumption the year round. Local trade should be given first consideration, in the opinion of the committee. In some cases this would mean holding back honey which otherwise might move into wholesale channels.

Most of the honey produced in this section is sold thru the Colorado Honey Producers Association, a cooperative organization. A small advance is made to the producer when the honey is delivered and the balance is paid, less all handling charges, when the honey is sold. The product is pooled by the association.

The trade association of the honey industry is known as the American Honey Institute. National advertising, legislation for the benefit of the honey producer and research are among the activities sponsored by this institute. When the corn sugar bill was up before Congress, this institute did a great deal to see that the bill was not passed. Every honey producer is urged by the committee to give both moral and financial support to the good work carried by the institute.

Honey comes into competition with sugar to such an extent that sugar prices affect honey prices directly. When sugar prices rise, honey prices also increase, while when sugar prices are low, honey prices are also low.

This section produces as good a quality of honey as any place in the state or in the inter-mountain region, in the opinion of the committee. Much improvement, however, is possible in methods of handling that will reduce costs of production.

Recommendations of the Bees and Honey Committee

The committee on bees and honey recommends:

1. That the continuation of the investigational work on the cost of production of honey in the inter-mountain states be requested and that a copy of this recommendation and request be sent to the Bureaus of Entomology and Agricultural Economics.

2. That the beekeepers of Northern Colorado retain sufficient honey for a year-round supply for the local trade and that more attention be given to the local trade.

3. That both moral and financial support be given the activities of the American Honey Institute.

N. L. Henthorne, Chairman
Greeley, Colo.

R. G. Richmond, Secretary
Fort Collins, Colo.

IRRIGATION AND DRAINAGE

Northern Colorado is irrigated by the waters of the South Platte, the Cache La Poudre and the Thompson rivers, the St. Vrain, Boulder and other tributary streams, with some additional or "foreign" water from the Michigan River thru a ditch and from the Laramie River thru a tunnel emptying into the Poudre River. These two rivers are Atlantic-slope streams. The Grand River, a Pacific slope stream, also contributes water to this area thru a ditch emptying into the Poudre.

Ordinarily this area has sufficient water to meet all irrigation needs. At times, however especially when the snowfall is short, there is a serious water shortage. This shortage is further augmented by lack of adequate storage to catch flood waters in the spring of the year. The irrigated territory is shown in Figure 3.

After many years of artificially running water onto the land, a seep condition exists in some places brought about by the raising of the water table. In some instances as much as one-third

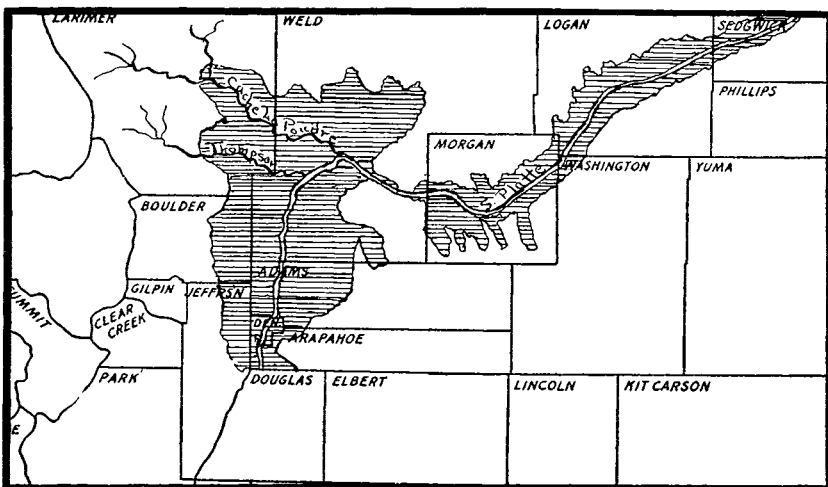


Fig. III—Northern Colorado irrigated area, showing principal rivers.

merly valued at \$150 per acre has been rendered practically worthless for crop production.

Much of this land can be reclaimed thru drainage, the cost depending upon the method used. It has been found that such projects are best accomplished and at less expense thru the organization of drainage districts.

Where small areas have become waterlogged, pumping can be used to reclaim the land. In many sections in this region ex- of the irrigated acreage has gone to seep and land that was for- periments have been conducted in pumping water for irrigation. The supply of underground water seems sufficient to justify the operation of many more pumping plants at the present time. It has been demonstrated, however, that for general farm crops it is not economical to lift water by pumping more than 50 feet.

A survey of conditions in this region shows that many farmers are using too much water merely because the water is avail- able, while at the same time other farmers lower down on the ditches frequently do not have enough water to properly irrigate their crops.

The distribution of water is for the most part estimated, since there are very few accurate measuring devices to measure water from the ditch onto the individual farm. These measuring devices could be installed at a relatively small cost to each farmer. The result would be less land going to seep and the reclaim- ing of seep land for crop production.

Reservoirs have been built at considerable expense which have had to be paid for by the land. This means in many cases a very high capitalization. While such reservoirs are desirable, more attention should be paid to measuring devices as a means of providing more water for irrigation.

Management of canals and ditches are under the supervi- sion of superintendents and ditch riders: These officials are re- sponsible for the distribution of irrigation water. Improvement in management and distribution of water could be brought about thru schools conducted during the winter months.

Recommendations of the Committee on Irrigation and Drainage

The irrigation and drainage committee recommends :

1. The conservation of flood waters, by means of storage reservoirs, to insure an adequate supplemental water supply for existing appropriators in rounding out the water requirements of present established irrigation systems. That the inauguration of new irrigation projects be discouraged for the present.

2. That immediate attention be given to corrective measures, because of the apparent increased acreage of seeped and water-logged lands.

3. That consideration be given to the possibilities of relieving seeped conditions by means of pumping.

4. Where relatively large areas of farm lands require drainage, that organized districts be formed in perfecting reclamation.

5. That individual farm drainage be done under contract guarantee.

6. That pumping from wells be encouraged as a supplemental water supply.

7. That for economical pumping for general field crops, the lift be not to exceed 50 feet.

8. That a thoro investigation be given to the problem of underground-water supplies before actual development is started.

9. A more conservative use of water in irrigation and better control of waste water and surface accumulations.

10. That more attention be given to the distribution of water to the user in the proper and uniform measurement of his supply.

11. That there be held annually, at some convenient place, a conference for ditch superintendents and ditch riders to improve the management and distribution of water.

Frank B. Davis, Chairman
Greeley, Colo.

R. L. Parshall, Secretary
Fort Collins, Colo.

TRENDS IN FARM CROPS

The following farm crops were considered in committee at the economic conference: Alfalfa, sugar beets, wheat, barley, corn, potatoes, oats and beans. In order that these might be compared to better advantage they were divided into the following groups, namely, feed crops, cultivated crops, grain crops and cash crops. There are duplications in all groups since cash crops may be both grain crops and cultivated crops, and some of the feed crops are grain crops and appear in both groups. Sugar beets are listed both as a cash crop and as a feed crop on account of the beet-top pasture.

Alfalfa occupies a greater acreage than any other farm crop in this area. In 1919 there was reported an acreage of 226,000 acres; in 1925, 334,000 acres of alfalfa. From this peak, however, the acreage gradually decreased to 273,000 acres in 1928 but in 1929 increased to 285,000 acres. (Table 13.)

In 1919 and 1920 the acreages of barley and oats were about the same and around 35,000 to 40,000 acres. During the last 5 years, however, the barley acreage has expanded considerably and in 1928 showed an increase of close to 200 percent over the 1919 acreage. While the acreage of oats increased from 1919 to 1924, in later years it has decreased, the 1928 figure being the lowest for the 11-year period. The 1929 figures show an increase of 2,000 acres over 1928 and a total of 33,000 acres.

**Table 13.—Trend in irrigated feed crop acreage, Northern Colorado.
(000 omitted)**

Year	Alfalfa	Barley	Corn	Oats	Beets
1919	226	34	43	35	144
1920	248	40	45	42	153
1921	232	36	28	42	127
1922	254	31	37	41	108
1923	249	33	51	41	114
1924	284	38	53	44	171
1925	334	61	58	40	85
1926	314	60	48	32	174
1927	302	67	40	35	182
1928	273	89	50	31	140
1929	285	96	48	33	165

Source: Colorado Yearbook, 1929.

Corn has fluctuated considerably in acreage in this area during this eleven-year period. Only 28,000 acres were reported in 1921, while the acreage was 58,000 in 1925, 50,000 in 1928, and 48,000 acres in 1929. (Table 14).

Both potatoes and sugar beets have varied greatly in acreage during this period. Only 19,000 acres of potatoes were grown in 1920; in 1922 a high peak was reached of 42,000 acres; another peak of 36,000 acres was reported in 1928; only 26,000 acres were planted in 1929. (Tables 15-16).

The sugar-beet acreage dropped to 85,000 acres in 1925 and reached 182,000 acres in 1927; 140,000 acres were produced in 1928 and 165,000 acres in 1929.

In 1922 the wheat acreage stood second to alfalfa in this region, occupying 185,000 acres. In 1924 only 87,000 acres were produced. After another peak in 1926 when the figure stood at 131,000 acres, planting dropped to 96,000 acres in 1929. Compe-

tition from dryland areas together with the increase in other feed crops has brought about this reduction.

Comparing the relationship between hay, grain and cultivated crop acreages in 1929 about 35 percent of the cropped land was devoted to alfalfa, 33 percent to grain crops and 32 percent to cultivated crops. This division of acreage is such that it has been possible for most farmers to practice a more or less definite cropping system which contributes greatly to the success of farming in this area.

**Table 14.—Trend in irrigated grain-crop acreage, Northern Colorado.
(000 omitted)**

Year	Wheat	Barley	Corn	Oats
1919	163	30	43	35
1920	166	40	45	42
1921	172	36	28	42
1922	185	31	37	41
1923	128	33	51	41
1924	87	38	53	44
1925	109	61	58	40
1926	131	60	48	32
1927	125	67	40	35
1928	96	89	50	31
1929	96	96	48	33

Source: Colorado Yearbook, 1929.

**Table 15.—Trend in irrigated cultivated-crop acreage, Northern Colorado.
(000 omitted)**

Year	Beets	Potatoes	Corn	Beans
1919	144	28	43	
1920	153	19	45	
1921	127	26	28	
1922	108	42	37	
1923	114	27	51	
1924	171	21	53	
1925	85	22	58	42
1926	174	20	48	48
1927	182	28	40	53
1928	140	36	50	33
1929	165	26	48	21

Source: Colorado Yearbook, 1929.

**Table 16.—Trend in irrigated cash-crop acreage, Northern Colorado.
(000 omitted)**

Year	Beets	Wheat	Potatoes	Beans
1919	144	163	28	
1920	153	166	19	
1921	127	172	26	
1922	108	185	42	
1923	114	128	27	
1924	171	87	21	
1925	85	109	22	42
1926	174	131	20	48
1927	182	125	28	53
1928	140	96	36	33
1929	165	96	26	21

Source: Colorado Yearbook, 1929.

Alfalfa and Irrigated Pastures

It has been stated before that alfalfa occupied about 35 per cent of the cropped acreage in this area in 1929. This crop has a larger acreage than either the combined acreages of grain crops or of cultivated crops in this region. (Tables 13-16).

Most of the alfalfa is fed on the farms that produce it. Some is sold and fed on neighboring farms and a very small percentage is sold to alfalfa mills.

In late years great difficulty has been experienced in getting a satisfactory yield of hay from fields that have been in alfalfa for several years. This probably is due to three causes, first, winter killing; second, a bacterial disease that attacks the root and crown of the plant; and third, deficiency of some plant food in the soil.

All these problems were discussed by the committee with the result that recommendations were made looking toward the solution of the problems that interfere with the production of alfalfa.

Hardier seed varieties are advised that will withstand the severe winters. The application of super phosphate, a satisfactory arrangement with tenants so that tenant farms may be made more productive, per acre, and shorter rotations that do not permit land to be left too long in alfalfa, are among the recommendations suggested by the committee.

An accurate check on the acreage in irrigated pastures is difficult. It is certain, however, that the acreage has seen a rapid increase during the last few years. This has been brought about not only by the utilization of land that is ordinarily too wet for the production of other crops, but also thru the utilization of some of the most productive land on the farm. It has been re-

peatedly demonstrated that irrigated pastures are a source of cheap feed for livestock which is available during the summer months when other pasture is frequently short.

A seed formula has been worked out by the Agricultural Experiment Station at Fort Collins for irrigated pastures in this area. This formula, the valuable features possessed by each ingredient and directions for application are included in this report.

Morton's Pasture Grass Mixture.—For Irrigated Pastures to Stand 6 Years or More.

	Seed per Acre	
	Clay Soils	Sandy Loam Soils
Awnless (Western) Brome Grass -----	15 lbs.	10 lbs.
Orchard Grass -----	15 lbs.	10 lbs.
Meadow Fescue -----	10 lbs.	5 lbs.
Timothy -----	6 lbs.	4 lbs.
Yellow Blossom Sweet Clover -----	4 lbs.	3 lbs.
Total lbs. per acre -----	50	32

Fifty pounds per acre are advised for clay soils because bare spots bake under the sun and pack from tramping of livestock and the grasses spread slowly.

Brome grass is a heavy yielder, and spreads from root-stocks, so we depend upon it to close up open spaces in the sod. It is drought resistant and comes on early in the spring.

Orchard grass also is a heavy-yielding grass, and because of its strong, deep roots it gives early grazing.

Meadow fescue is a smaller and finer-leaved grass than the two above. It feeds higher in the soil than they do, and fills in spaces between them. Also it adds variety to the grazing.

Timothy is used only as a filler in order to increase hay crop the first year after seeding, and to give ground cover until the other grasses become established. It is good for these purposes because it is low priced, and has many seeds per pound. It eventually will practically disappear from the pasture.

Yellow-blossom sweet clover is used as the legume for the mixture because it rarely bloats, and altho a biennial, it seeds so close to the ground that it persists in the pasture.

Do Not Pasture the First Season.—It should not be done, no matter how good the pasture looks. It is best to take a crop of hay the second season; but in case you have a very good sod, you can pasture lightly. You should not turn stock on pasture until the grass is from 6 to 8 inches high, because top growth aids root growth. Pasturing the first season before the grasses are well rooted results in pulling up plants, and thinning the stand. Heavy

seeding is advised in order to get a sod as quickly as possible; and pasturing the first season, or early next spring while the ground is loose from frost heaving, sets back the time of acquiring a heavy sod, and reduces carrying capacity. Walk out over a new pasture in early spring and note how loose the soil is. You can pull the young plants out with your fingers.

To suit certain conditions some slight changes may be made in the mixture. At the Experiment Station it has been found that the above pasture mixture produces enough feed to carry 2.7 head of mature cows per acre during the pasture season.

Almost every irrigated farm with an adequate supply of irrigation water could devote a few acres of land to irrigated pasture to provide pasture for the cows and horses on the farm. Farm flocks of sheep also are made more profitable thru the use of such pastures during the summer months.

Recommendations of the Committee on Alfalfa and Irrigated Pastures

The committee recommends:

1. That the yields of alfalfa per acre be increased thru the application of super phosphate fertilizer where necessary and that an educational campaign be put on by the Extension Service and other agencies to acquaint farmers generally with the benefits to be obtained by this practice.

2. That on tenant farms where the use of super phosphate fertilizer is necessary to produce a satisfactory yield of alfalfa (3 tons per acre), the cost of materials and labor be shared equally by landlord and tenant.

3. The use of hardy alfalfa varieties of known origin either home or northern-grown.

4. That one-third of the farm acreage be devoted to alfalfa grown in suitable rotation with other crops.

5. That as much of the hay crop as possible be fed on the farm.

6. That every farm have an irrigated pasture efficient to provide for the dairy cows and horses necessary on that farm.

Ross Stephens, Chairman
Longmont, Colo.

James E. Morrison, Secretary
Sterling, Colo.

Sugar Beets

Colorado leads all other states in the production of sugar beets. In 1929 Colorado produced about 35 percent of all the sugar beets raised in the United States. Furthermore, the production per acre in 1927, 1928 and 1929 was the highest of any state. Out of 230,000 acres grown in the state last year (1929), Northern Colorado grew 61 percent or 165,000 acres. (Table 17).

The consumption of sugar per capita in the United States has been increasing in late years. In 1909 the per capita consumption was only 79.7 pounds. In 1921 it was 95.9 pounds. In 1925 it had reached 107.5 pounds. The consumption decreased to 100.9 pounds in 1927, but by 1929 it had reached the high mark of 108.13 pounds per capita. (Table 18).

Statistics show that less than 20 percent of the sugar consumed in the United States comes from domestic sources. Of the sugar imported, about 50 percent comes from Cuba, 13 percent from Hawaii, 10 percent from the Philippines and around 6.5 percent from Porto Rico.

Domestic beet sugar constitutes about 14.7 percent of all sugar consumed in the United States while Louisiana cane sugar contributes only about 3 percent of the total consumption. In 1929, 36 percent of the domestic sugar production was beet sugar and 64 percent cane sugar. (Table 19).

As will be noted by referring to Table 13, the acreage in sugar beets in Northern Colorado has seen considerable fluctuation during the last 11 years. In 1919 there was a sugar beet acreage of 144,000 acres which was increased to 153,000 in 1920



Colorado leads all other states in the production of sugar beets.

Table 17.—U. S. Sugar-Beet production, 1925-27 average

State	Acres	Yield per acre, tons
Colorado	186,000	13.0
Michigan	100,000	8.2
Nebraska	74,000	13.4
Montana and Wyoming	65,000	11.3
California	59,000	7.8
Utah	58,000	11.9
United States	682,000	10.9

The seven states listed had 80 percent of the total acreage of the United States. Colorado had 27 percent of the total acreage.

Source: U. S. D. A. Yearbook, 1930.

Table 18.—U. S. Sugar production, imports and consumption, 1921-25. Amounts given in terms of refined sugar

Year	Production	Net imports	Total consumption	Pounds per capita
	Short tons of refined sugar (000 omitted)			
1921	1,326	3,909	5,235	95.9
1922	951	4,572	5,523	99.7
1923	1,035	4,249	5,284	93.7
1924	1,172	4,948	6,120	106.8
1925	1,043	5,167	6,210	106.8
1925 (pet)	16.8%	83.2%	100%	

Source: U. S. D. A. Yearbook, 1930.

Table 19.—U. S. production of beet sugar vs. cane sugar

Year	Total production short tons of raw sugar (000 omitted)	Percentage beet sugar	Percentage cane sugar
1924	2,558	40	60
1925	2,596	45	55
1926	2,503	40	60
1927	2,730	43	57
1928	2,706	39	61
1929	2,903	36	64

U. S. D. A. Yearbook, 1930.

and then decreased during the next 2 years to 108,000 acres. In 1924 an acreage of 171,000 acres was grown, but in the following years the acreage was 85,000 or only one-half as large. The peak was reached in 1927 with 182,000 acres. In 1929 the acreage stood at 165,000 acres.

The sugar-beet crop has contributed greatly to the agriculture of Northern Colorado. In addition to furnishing another cash crop, it has had a great deal to do with establishing winter livestock feeding in this section of the state. Beet-tops pasture and beet pulp have long been considered economical feeds in the fattening of lambs and cattle as well as in the production of milk.

It is a recognized fact that sugar beets cannot be grown to advantage in this area for more than 2 years in succession on the same land. The adoption of this crop in the cropping system has tended to bring about not only a better balance for the region between hay, grain and cultivated crops, but has been influential in balancing the crop rotation on the individual farm.

In line with the crop-rotation idea, the committee recognized the importance of maintaining soil fertility as well as the necessity of keeping the acreage of beets at that point where it could be tended properly without neglecting other farm work. The committee therefore recommended that not more than 20 percent of the crop acreage be devoted to sugar beets.

Much discussion was devoted to methods of increasing yields per acre and of reducing costs of production per ton. Better land preparation and closer supervision of hand labor were recognized as means of accomplishing this. Labor-saving devices were considered where such are capable of reducing costs.

Marketing of the sugar-beet crop is an important phase of sugar-beet production. It was the opinion of the committee that more attention should be given to the organization of growers which would result in a better understanding of the marketing problems.

The most outstanding recommendation, in the opinion of the committee, was the need for maintaining and increasing soil fertility thru more livestock feeding on the farm to better utilize beet by-products and also to provide a market for alfalfa and other feed crops.

Recommendations of the Committee on Sugar Beets

The committee recommends:

1. That in order to maintain fertility and a balanced crop rotation, not more than 20 percent of the crop acreage be put into beets. In the United States there is no surplus of beet sugar as a menace such as is confronting most other agricultural crops, since the United States produces only one-fourth of the national requirements. It follows that any restriction of acreage suggested by this committee is with the viewpoint of maintaining soil fertility and with no thought of curtailing production to increase prices.

2. That all growers associate themselves with the Mountain States Beet Growers Marketing Association in order to have power to bargain with the buyer and to secure a fair share of the net returns from the sale of sugar from a ton of beets, the division being based on the grower's cost of producing a ton of beets

into sugar. The grower in his individual capacity lacks bargaining power and the best minds of our nation are convinced that only thru cooperation can agriculture attain an equitable farm return and be placed on a parity with industry. The committee also considers it a poor economic policy to allow the buyer of a 22-million-dollar crop also to be the seller, a situation which exists without a growers' selling organization.

3. That the best farm methods be practiced for economic production: (a) Better preparation of seedbeds, especially discing before plowing; (b) closer supervision of hand labor in blocking and thinning; and (c) the encouragement of any mechanical labor-saving devices in order to cheapen costs of production.

4. **The maintenance and increase of soil fertility thru rotation and fertilization and by the feeding of livestock for the profitable use of by-products on the farm, thereby supplying a market for hay and grain produced in the rotation.**

E. H. Markham, Chairman
Meade, Colo.

A. L. Litel, Vice-Chairman
Sterling, Colo.

Geo. R. Smith, Secretary
Longmont, Colo.

G. E. McCrimmon, Secretary
Julesburg, Colo.

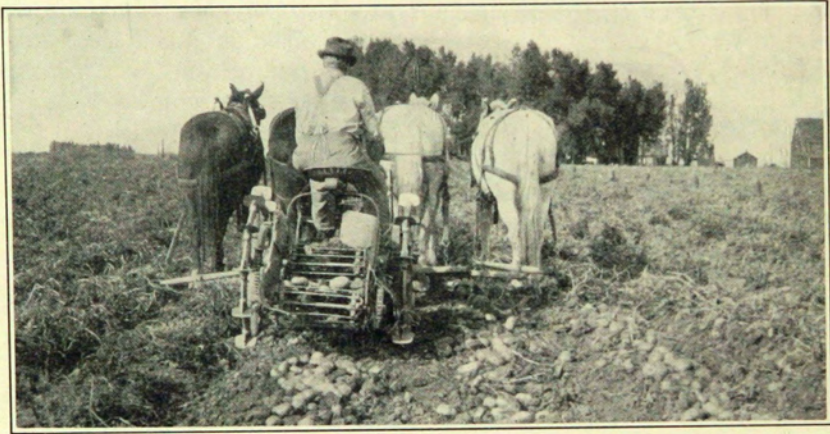
Potatoes

In 1929 Colorado produced 3.4 percent of the national potato crop, while in 1928 she grew only 2.8 percent, yet Colorado's crop in 1929 amounted to over 12 million bushels.

Of the 1928 Colorado potato crop, Northern Colorado produced something over 5 million bushels or 39 percent, and in 1929 about 3 million bushels or 24 percent of the total state production.

The importance of this area compared with other potato-producing sections of the state is seen in Table 20. This region ranks second in total acreage and second in production. The San Luis Valley is first and the Western Slope is in third place.

Colorado potatoes are shipped into almost every state in the United States. Out of 15,831 cars of Colorado potatoes shipped in the 1927-28 potato season, about 47 percent went into the southern states, while 52 percent was used in Colorado or was



Potatoes are one of the principal cash crops produced in this region.

shipped into other states even as far east as Ohio. Table 21 shows this in considerable detail.

In the 1928-29 season, however, 56 percent went into the southern states and 43 percent to the other states. The number

Table 20.—Colorado potato production areas by counties, 1929

Area	Acres	Percentage	Thousands of bushels	Percentage
State	88,000	100	12,320	100
Rio Grande	17,250		3,191	
Saguache	6,550		1,087	
Conejos	3,400		486	
Alamosa	5,800		1,044	
San Luis Valley	33,000	38	5,808	47
Adams	670		87	
Larimer	500		40	
Logan	1,200		94	
Morgan	2,100		333	
Sedgwick	395		31	
Weld	22,960		2,432	
Northern Colorado	27,825	32	3,017	24
Montrose	4,250		827	
Mesa	2,400		345	
Garfield	2,560		492	
Delta	950		149	
Eagle	1,350		282	
Western Slope	11,510	13	2,095	17

Source: Colorado Yearbook, 1929.

Table 21.—Destination of Colorado potatoes by states

State*	1927-1928		1928-1929	
	No. of cars	Perc'tge	No. of cars	Perc'tge
Colorado	15,831		13,371	
Texas	2,219		3,546	
Oklahoma	1,506		1,563	
Louisiana	1,013		805	
Tennessee	633		193	
New Mexico	505		569	
Arkansas	456		243	
Alabama	356		190	
Mississippi	354		187	
Florida	246		45	
Arizona	178	47	206	56
Kansas	2,656		1,791	
Colorado	2,307		1,908	
Missouri	2,277		1,007	
Illinois	599		822	
Ohio	277		10	
Nebraska	218		109	
Iowa	209	52	52	43

*Only states receiving more than 200 cars are listed for the year 1927-1928.
Source: Market News Service, Denver. (Calhoun)

Table 22.—Market shifts in Colorado potatoes

City	Carlot unloads		
	1926-27	1927-28	1928-29
Birmingham	210	172	134
Chicago	718	530	933
Cleveland	60	292	3
Dallas	90	95	204
Evansville	1*	140	13
Denver	957	1,106	591
El Paso	29*	147	241
Fort Worth	81	88	163
Houston	50*	147	290
Jacksonville	—*	124	1
Kansas City	309	276	175
Memphis	172	124	60
Milwaukee	44	100	42
Nashville	60*	430	142
New Orleans	503	565	490
Oklahoma City	18*	94	118
San Antonio	129*	233	347
Shreveport	44*	151	134
St. Louis	755	666	300
Colorado production, bushels (000)	11,760	16,046	13,420

*Record incomplete for 1926-27.
Source: Market News Service, Denver. (Calhoun)

of cars shipped that year totaled 13,371 which was considerably less than the preceding year.

The shifting of markets for Colorado potatoes is illustrated in Table 22. Carlot unloads of Colorado potatoes are shown for

the principal markets for the seasons 1926-27, 1927-28 and 1928-29. An examination of the table reveals a number of changes in carlot receipts during this period.

All Texas markets show an increase for the period, while St. Louis, Birmingham, Memphis and Kansas City show a decrease. Chicago, Cleveland and Milwaukee show wide fluctuations.

It is interesting to note the competition which Colorado potatoes must meet on certain markets. Figures are available for the unloads of potatoes at Fort Worth, St. Louis and Chicago for the 1928-29 shipping season. These are shown in tables 23, 24 and 25. Numbers of cars of potatoes unloaded monthly at these markets during the season are shown with states of origin.

At Fort Worth, about as many cars were unloaded from Idaho as from Colorado. Competition is keen between these two states during the entire shipping season. California, Nebraska and Utah are also competitors during a part of the season.

At St. Louis, Idaho had almost double the unloads as did Colorado in 1928-29. Minnesota is the heaviest shipper to this market during Colorado's shipping season. Nebraska also competes with Colorado for this market.

Table 23.—Comparative monthly unloads of potatoes at Fort Worth, July, 1928, to June, 1929

States of origin	Total cars	Number of cars per month											
		J	A	S	O	N	D	J	F	M	A	M	J
Colorado	163	—	14	18	22	22	19	26	23	11	3	5	—
Idaho	162	—	1	13	14	10	12	22	14	21	18	26	11
California	68	8	14	6	6	5	6	6	6	5	2	1	3
Nebraska	45	—	—	1	6	13	6	10	6	3	—	—	—
Utah	31	2	11	12	4	1	1	—	—	—	—	—	—
Others	213	69	25	19	7	2	—	4	10	9	22	25	21

Source: Market News Service, Denver. (Calhoun)

Table 24.—Comparative monthly unloads of potatoes at St. Louis, July, 1928, to June, 1929

State of origin	Total cars	Number of cars per month											
		J	A	S	O	N	D	J	F	M	A	M	J
Colorado	300	—	—	10	33	23	47	51	52	40	24	19	1
Minnesota	626	3	1	10	70	84	38	35	39	102	69	124	51
Idaho	549	5	—	7	40	52	73	89	59	77	65	64	18
Nebraska	192	—	—	12	33	11	10	41	25	49	10	1	—
Others	2018	392	148	110	63	37	38	45	65	90	143	266	621

Source: Market News Service, Denver. (Calhoun)

Altho Colorado shipped more potatoes to Chicago during the 1928-29 season than to any other one market, Idaho sent almost four times as many, with Wisconsin shipping even more potatoes

to this market. Here again, Minnesota and Nebraska are competitors of Colorado and in addition, Michigan, South Dakota and North Dakota are added to the list.

This competition is emphasized particularly because it is on this account that the problems of quality and pack become so important in this part of Colorado.

In order to consider the problems of the potato producer in Northern Colorado, the committee divided the discussions to include table stock, quality, the control of surpluses, growing the crop and marketing.

Two factors affecting the quality of table-stock potatoes were considered, namely, the ravages of the flea beetle and the practice of irrigating the potatoes too late in the season to give them time to ripen sufficiently. Work on the former has been carried on by the Experiment Station of the Colorado Agricultural College in cooperation with the United States Department of Agriculture. Further efforts are being made to devise ways and means of control.

Table 25.—Comparative monthly unloads of potatoes at Chicago, July, 1928, to June, 1929

State of origin	Total cars	Number of cars per month											
		J	A	S	O	N	D	J	F	M	A	M	J
Colorado	933	8	60	74	76	97	123	193	173	85	21	23	—
Wisconsin	3752	7	81	636	620	399	357	359	308	293	252	243	197
Idaho	3660	12	4	65	302	498	389	385	481	541	387	503	93
Minnesota	1440	28	145	161	388	286	66	54	37	52	82	91	50
North Dakota	574	—	—	19	171	186	30	26	20	49	35	37	1
Nebraska	549	1	106	178	105	58	7	30	25	31	8	—	—
Michigan	495	4	—	2	78	47	26	34	55	65	46	83	55
South Dakota	357	—	—	46	198	96	6	1	2	1	3	4	—
Others	4666	1275	1055	276	51	16	6	16	12	98	342	578	941

Source: Market News Service, Denver. (Calhoun)

Higher yields are necessary if the potato crop is to be profitable in this area. The amount of seed planted was given attention by the committee. There is a tendency on the part of some growers to skimp the quantity of seed per acre as a means of reducing costs. It has been demonstrated, however, that a larger amount than is usually planted per acre should be planted in order to insure higher yields per acre.

Many growers plant seed of poor quality expecting to get a high-quality potato at harvest time. It should be the practice of every potato grower, in the opinion of the committee, to plant the best possible seed obtainable.

One of the essentials of high yields per acre is to keep the plant growing vigorously throught the growing season. In many

cases this will mean earlier irrigation since the potato plants during the early part of the season frequently receive a set back on account of insufficient moisture to keep them growing.

The committee recognized that something needs to be done during years of overproduction so that prices will not be depressed to the point that potato production becomes unprofitable to the grower. Years of high prices are usually followed by years of expanded acreages. This practice causes surpluses that prove so disastrous to the grower. A close study of potato reports sent out from the United States Department of Agriculture should be made by the growers so that the acreage planted might be more in line with the market demand. The committee suggests that in years of surpluses, inferior grades be fed to livestock and be kept off the market for human consumption.

The problem of marketing is of very great importance at this time. After discussing this subject at some length, the committee felt that cooperative marketing should be urged to bring about better grading, even weighing of bags and orderly marketing.

Recommendations of the Potato Committee

The potato committee recommends :

1. Table-Stock Quality

- (a) That the Agricultural College be commended for the work on flea-beetle control already under way and that it be urged to concentrate all the efforts which their funds will permit in finding some practical control measures.
- (b) That all potato growers stop irrigation sufficiently early in the fall to allow potatoes to properly ripen.

The committee feels that in this northern district one of the big problems relating to the potato crop is the control of the flea beetle.

2. To Control Surpluses

A very complete report on actual plantings of early and intermediate states and intentions to plant of late states will be published by the U. S. Department of Agriculture about March 18. Past experience has shown that actual plantings closely follow intentions, and it is recommended that potato growers study these reports very closely in determining the acreage to be planted.

- (a) In years of surplus production it is recommended that growers definitely plan to feed this surplus to livestock,

keeping inferior quality from human consumption. In all years the sale and use of inferior grades tend to depress the general price level so it is believed that the full benefit of grading can only be realized by keeping these grades off the market.

- (b) That there be no expansion of acreage but rather a reduction and that this district plant only such acreages as will conform to best plans of crop rotations.

The present shortage of potatoes is due to weather conditions rather than to reduced acreage in 1929.

3. Growing the Crop

That in order to insure a more profitable crop, growers use the following practices:

- (a) Plant a larger amount of seed per acre than is generally used;
- (b) Use the best possible seed obtainable;
- (c) In irrigating potatoes, start sufficiently early in order that the plants make a continuous and vigorous growth thruout the growing season.

4. Marketing

Since better grading, even weighing of bags, and more orderly marketing are of value in properly disposing of the crop, growers are urged to consider cooperative marketing as a possible means of obtaining these results.

The committee feels that the problem of a surplus is the one vital factor affecting the potato growers and that it can best be solved by control of acreage, more effective grading and cooperative marketing.

W. C. Edmundson, Chairman
Greeley, Colo.

H. H. Simpson, Secretary
Greeley, Colo.

Grain and Seed Crops

The following grain and seed crops were considered by the committee: Wheat, barley, corn and oats. While rye is grown to some extent in this area, it is not considered an important grain crop.

Reports show that all of these crops have experienced a great deal of fluctuation in acreage during the last 11 years. The total grain acreage, including corn, in 1919 was around 275,000 acres. In 1929 the combined grain acreage was 273,000 acres.

Altho not much difference is noted in the total acreage for these 2 years an examination of the individual grain crops tells a different story. (Table 14).

In 1919 there were 163,000 acres of wheat, in 1929 only 96,000. Barley occupied 30,000 acres in 1919 and 96,000 in 1929. There were 43,000 acres of corn in 1919 compared with 48,000 acres in 1929, and 35,000 acres of oats in the former year in comparison with 33,000 acres in 1929.

The livestock feeding enterprise with the use of more barley in the ration has stimulated the production of barley. Fluctuations in wheat prices have had their influence upon the wheat acreage from year to year, while more corn is being produced on irrigated land to help meet the feeding requirement of livestock. Even at the present time large quantities of corn are being shipped in for feeding, not only from other sections of the state, but also from Kansas and Nebraska.

While there is a fairly good balance for the region as a whole between the acreages devoted to hay, grain and cultivated crops, there are many farms in the area that do not have a cropping system that allows for the proper rotation of crops. Many alfalfa fields are too old to be profitable, beets are grown too many years in succession on the same fields, and not enough attention is paid to the systematic application of barnyard manure or to the turning under of some green-manure crop to keep up the soil fertility.

The presence of smut in grain crops in the area exacts a heavy toll not only in yields per acre but in the quality of grain produced. Consideration by the committee was given to the treatment of all seed grain before planting in order to control smut and to increase the yield per acre and the quality of grain.

It was found that no attention was being given in some sections to the quality of seed planted. The committee approached the seed-crop problems not so much from the standpoint of growing large quantities for shipment out of the state, as for the purpose of assuring a good supply of the best seed for use within this region. While it is true that many farmers are growing registered seed for sale, it is also true that many farmers are paying little if any attention to the quality of seed that is planted.

Recommendations of the Grain and Seed Crops Committee

The committee recommends:

1. That there be no increase in acreage of corn, barley and oats on irrigated farms in Northern Colorado except as rotations demand.

The committee feels, however, that Northern Colorado does not produce feed-grain crops commensurate with livestock demands since this area imports considerable feed-grain supplies. Therefore, the efficient producer of feed crops can successfully compete with other areas in corn, barley and oat production.

2. Since corn, barley or oats are feed crops which are and should be grown on Northern Colorado farms according to the personal desires of individual farmers and the livestock which they select, that production of corn, barley and oats be increased not in acreage, but thru increased yield per acre by

- (a) More attention to seed;
- (b) Attention to cultural methods and irrigation; and
- (c) Seed treatment of barley and oats for smut.

3. Since some improved strains and varieties of field seeds adapted to Colorado conditions have been developed in Colorado, and have been proved and standardized by the Experiment Station, that these Colorado-grown, improved strains be given consideration as a basis for higher yields.

4. That more attention be given good cropping systems since maximum and most efficient production of corn, barley, oats and wheat can be secured by following some system of rotation adapted to the district and individual farm, and intelligent use of barnyard manure and commercial fertilizer.

5. That wheat be considered only as an early fall cash crop, demanding a minimum yield of 35 bushels per acre in order to pay production costs on irrigated land.

6. More attention to treatment of wheat for smut together with attention to seed selection and cleaning.

7. Group effort in marketing wheat or other crops in harmony with plans of the Federal Farm Board.

8. As a basis of successful farming, a long-time program of registered, local-grown seed corn every year (unless personal field selection is practiced). Further, that registered barley, oats or wheat be planted every fifth year or oftener to renew farm seed stock.

9. That rye for grain not be considered a profitable crop to be grown on irrigated farms in Northern Colorado.

Geo. Hoffman, Chairman
 Iliff, Colo.

Geo. E. Brown, Vice-Chairman
 Johnstown, Colo.

T. G. Stewart, Secretary
 Fort Collins, Colo.

Beans

Beans are a relatively important crop in Northern Colorado, not only from the standpoint of their place in the cropping system in assisting to maintain fertility but also as a cash crop.

The acreage in dry beans for market, both irrigated and non-irrigated, has seen a tremendous growth during the last 11 years. From 27,300 acres in 1919 as reported by the Colorado Yearbook, a peak of 153,400 acres was reached in 1926. From this point a gradual decrease is shown to 103,600 acres in 1929. (Table 26).

Prior to 1925 no figures are available for this area as to the proportion of the total acreage of dry beans for market that was produced under irrigation. In 1925, 26 percent of the acreage was on irrigated land; in 1926, 25 percent; in 1927, 40 percent; in 1928, 27 percent and in 1929 only 19 percent. During this period from 60 to 87 percent of the irrigated bean acreage was grown in Weld County.

Beans for seed have varied in acreage from as low as 700 acres in 1920 to as high as 18,500 acres in 1925. Figures for 1927, 1928 and 1929 for the area were not segregated from the total dry-bean acreage. In Weld County, however, about 15,000 acres of seed beans were produced in 1927, about 8,000 acres in 1928 and around 7,000 acres in 1929. The large decrease in 1928 was due to disease conditions in 1927. Weld County is the most important county in the area in seed bean production. With the exception of 1923 when only 64 percent of the seed beans were produced in Weld County, the acreage in this county has constituted from 90 to 97 percent of the seed-bean acreage in Northern Colorado.

Table 26.—Trend in the bean acreage in Northern Colorado

Year	Dry beans for market		Beans for seed*	Snap beans*
	Total	Irrigated		
1919	27,300	—	9,600	—
1920	20,000	—	700	—
1921	12,000	—	2,300	900
1922	33,700	—	7,600	1,000
1923	45,000	—	4,900	900
1924	112,000	—	8,000	1,200
1925	149,100	38,600	18,500	1,400
1926	153,400	37,700	9,700	800
1927	129,700	52,400	(†)	900
1928	118,300	32,100	(†)	1,100
1929	103,600	19,500	(†)	1,600

(*) Seed beans and snap beans are grown under irrigation in this area.

(†) The seed-bean acreage for 1927, 1928 and 1929 was not segregated, but is included in the irrigated acreage of dry beans for market.

Source: Colorado Yearbook, 1929.

Snap beans are chiefly produced for the canning factory. The acreage has varied from around 800 to 900 acres to the 1600 acres of 1929.

While the committee considered the entire bean industry in this area, special consideration was given to a discussion of the problems confronting the seed-bean grower. These beans are contracted by various seed companies at a stipulated price per pound of clean beans. In 1927 there were eight companies contracting beans in this area. In 1929, however, only five companies were in the field contracting seed beans. Some 42 varieties of seed beans are grown.

Since the crop is contracted by seed companies and the grower knows what he is to receive for his beans per pound before they are planted, the committee felt that most of the problems of the grower were those having to do with cultural practices. Accordingly the recommendations are largely devoted to this phase of production.

Recommendations of the Bean Committee

The committee recommends:

1. That there be a gradual increase in acreage planted to seed beans in the irrigated sections of Northern Colorado, this increase to be made by new growers starting with small acreages and increasing their acreage only as they acquire experience in raising satisfactory yields.

2. That seed beans be planted only on well-drained soils free from alkali.

3. In preparing seedbed that the land be plowed early in the spring where beans follow alfalfa or stubble; and worked with a springtooth harrow early where beans follow row crops. Later, immediately before planting, the land should be thoroly harrowed.

4. That the early maturing varieties be planted after June 10th.

5. That the amount of seed per acre be increased from 50 pounds, the amount now generally used, to 70 pounds per acre, to allow for some extra plants to be harrowed out.

6. That careful attention be given to this crop to see that a crust is never allowed to form, even tho it be necessary to harrow the crop after it is up and thereby tear out some of the plants.

7. That irrigation be light and frequent in order to keep the top soil moist at all times, as this is a very shallow-rooted crop and if allowed to get dry while blossoming it stops setting on blossoms and the yield is thereby curtailed.

8. That it pays to stack the beans rather than thresh out of the shock, as it lessens the risk of damage from wind or wet weather and avoids the condition of having some beans in the top of the shock dry enough to crack and others in the bottom damp enough to go thru into the straw pile when threshed.

9. That the grower be present when the tare is taken in order to see if there is any that he can eliminate by better handling and also to avoid any possibility of suspicion that the tare is unfairly taken.

10. That where beans are grown in a combination with other cash crops as beets and potatoes, they be given their full share of attention.

11. That the following are good rotations :

- (a) Alfalfa, potatoes, beans, small grain
- (b) Alfalfa, beans, beets, small grain
- (c) Alfalfa, beans or potatoes, beets, small grain
- (d) Clover, manure, potatoes, beans, small grain and alfalfa.

Wm. A. Carlson, Chairman

Walter S. Stratton, Jr., Secy.

Greeley, Colo.

FARM ORGANIZATION AND THE FARM BUDGET

As a result of a survey conducted by the home demonstration agents in Northern Colorado, the women's committees worked out a family living-expense budget for a farm family of 5 persons, consisting of 2 adults and 3 children.

The Farm Family Living Budget

Food -----	\$ 312.
Clothing -----	384.
Home Furnishings and Equipment ----	111.
Fuel, Light and Operating -----	125.
Education -----	200.
Health -----	100.
Recreation -----	65.
Church and Charity -----	55.
Personal -----	55.
	<hr/>
Total -----	\$1400.

In order to work out several suggested farming plans that might be expected under average conditions to provide this minimum cash requirement for the farm-family living, a committee on farm organization was selected.

Data collected over a period of years from a number of farms on a detailed cost route in this area were used in working out these plans. It was possible in the comparatively short time devoted to the conference to complete only one plan. Accordingly, the committee attempted to make one set-up for general farming where cattle might be fed during the winter months. In estimating yields, alfalfa was figured at 2.5 tons per acre, barley at 50 bushels, corn silage 8 tons, corn for grain 50 bushels, and sugar beets 16 tons per acre. The set-up was worked out for feeding 110 steers 150 days. The gain per day was figured at 1.8 pounds.

Following is the set-up worked out by the committee on farm organization:

EXAMPLE OF FARM BUDGET

160-Acre Irrigated Farm. Cattle Feeding and Sugar Beets.

(Crops)	Acreage	Yield per acre	Total amount
Alfalfa -----	58	2.5tons	145 tons
Barley -----	43.5	50 bu.	2,175 bu.
Corn silage -----	8	8 tons	64 tons
Corn, grain -----	6.5	50 bu.	325 bu.
Sugar beets -----	29	16 tons	464 tons
Pasture -----	4		
Farmstead, roads, etc. -----	11		

Feed Requirements

(Livestock)	Num-ber	Hay	Barley	Corn Pulp	Sil- age	Protein concen- trates
		tons	lb.	lb.	tons	tons
Horses -----	9	32	16,000			
Cows -----	3	12	5,000			
Hogs ---- (1 sow, 6 pigs)	1		3,500	3,500		
Chickens -----	75		1,000	1,000		3,000
Feeder steers -----	110	91	78,900	24,750	92	64
						16,500
						(Mash)
						(Cottonseed Cake)

110 steers purchased @ 792 lbs., @ \$7.26 per cwt., equals \$6,314.

On feed 150 days, gain 1.8 lb. per day.

Ration per day (pounds): Alfalfa 11, silage 7.5, wet pulp 10.2, barley 4.5, corn 2.25, and cottonseed cake 1.

Expenses

Labor:		Twine -----	\$ 18	
One man (regular)	\$960	Threshing -----	218	
Day (extra)	85	Fuel and oil -----	50	
Contract beet	725	Auto (cash) -----	200	
Repairs -----	200	Telephone -----	24	
Silo filling -----	128	Cattle marketing		
Wet pulp -----	100	costs -----	658	
Poultry mash -----	83	Insurance (bldgs.) -	8	
Cotton cake -----	412	Taxes -----	480	
Corn -----	391	Water -----	320	
Feed grinding -----	104	Federal farm loan*-	832	
Livestock expense		Life insurance* ----	250	\$6,508
(misc.) -----	26			
Seed:		Replacements:		
Beets -----	87	Horses 1 -----	100	
Barley -----	55	New machinery --	200	
Alfalfa -----	87	Depr. on auto ----	200	
		Depr. on bldgs. --	200	700

\$7,202

*Yearly payments based on a \$12,800 loan and a life insurance policy to cover the loan.

Receipts

109 steers sold @ 1062 lbs. @ \$9.54 per cwt. --	\$11,043	
Less purchase cost -----	6,314	\$4,729
Alfalfa, 9 tons @ \$12-----	108	
Beets, 464 tons @ \$7-----	3,248	
Figs, 4 @ 200 lbs. @ 9c-----	72	
Butterfat, 400 lbs. @ 35c-----	140	
Calves, 2 @ \$15 -----	30	
Eggs, 600 doz. @ 25c -----	150	3,748
		<hr/>
		\$8,477

Summary

Cash receipts -----	\$8,477	
Expenses:		
Cash -----	\$6,502	
Replacement -----	700	7,202
		<hr/>
Net cash for living expenses -----	\$1,275	

Division Between Landlord and Tenant

The division given below is on customary basis between landlord and tenant, with landlord receiving one-half alfalfa; one-third grain; one-fourth sugar beets and paying the tenant to feed the cattle.*

Tenant Receipts		Landlord Receipts	
Alfalfa, 27.5 T @ \$12 -----	\$ 330	Beets, 116 T @ \$7 --	\$ 812
Barley, 44,100 lbs. @ \$1.25--	551	Net on 110 steers --	4729
Corn silage, 43 T @ \$5.50---	236	Sale surplus alfalfa	
Corn, 7234 lbs. @ \$1.30-----	94	9 T @ \$12 -----	108
Sugar beets, 348 T @ \$7 --	2436		
Misc. livestock -----	392		
Labor feeding cattle -----	440		
	<hr/>		<hr/>
	\$4479		\$5649
Tenant Expenses		Landlord Expenses	
Labor (regular) -----	\$ 960	Feed from tenant ---	\$1211
Labor (day) -----	85	Insurance on bldgs.	8
Labor (contract) -----	725	Taxes -----	480
Repairs -----	200	Water -----	320
Filling silo -----	128	Cattle expense -----	658
Poultry feed -----	83	Pulp -----	100
Livestock expense -----	26	Cottonseed cake ---	412
Seeds -----	142	Corn -----	391
Threshing and twine -----	236	Feed grinding -----	104
Fuel -----	50	Alfalfa seed -----	87
Auto -----	200	Depr. on buildings --	200
Telephone -----	24	Labor to tenant ---	440
Life insurance -----	250		
Replacements:			
Horses 1 -----	100		
New machinery -----	200		
Depr. on auto -----	200		
	<hr/>		<hr/>
	\$3609		\$4411
Net income -----	\$ 870	Net income -----	\$1238

*If tenant feeds and buys landlord's share of the crops the net income for tenant would be \$1018 and for the landlord \$1190.

Where both landlord and tenant depend upon the returns from this set-up, both fall short of receiving enough net income to meet this minimum family living budget.

It will be noticed that the set-up worked out provides for \$1,275 cash for living expenses. This is a little below the budget worked out by the farm women. Many factors, however, govern the net cash income. It is possible to exceed the yields per acre listed in the set-up. This would lower the costs and leave a greater net cash return. Then, too, younger animals might be fed. Another factor that influences profits is the price paid for steers. Where feeder steers are higher priced and fat steers higher accordingly, a smaller feeding margin is necessary and a greater net return is possible from the feeding operation.

This committee was also asked to review farm-organization conditions in this portion of the state and offer suggestions that might be used in bringing about a better organization for the irrigated farms so that they would return a greater net profit per acre. The committee suggestions are incorporated in their recommendations.

Recommendations of the Farm Organization Committee

The committee recommends:

1. That at least one-third of the crop area should be in alfalfa.

2. That all feeds produced be fed on the farm in order to give employment the year round. It is not as profitable to sell such feeds at prevailing prices as it is to feed them.

3. That no more livestock be fed on the farm than enough to utilize farm roughage.

4. That farmers depend upon crop rotation, farm manures and green manures to maintain fertility.

The committee feels that such a program should result in acre yields of crops as follows:

Alfalfa -----	2.75	tons
Barley -----	50	bu.
Corn -----	50	bu.
Sugar beets -----	16	tons

5. A green-manure rotation supplemented by a farm flock of sheep, dairy cows, hogs or poultry is recommended where financial conditions will not permit the risk of extensive feeding of cattle or sheep. Another possibility would be feeding sheep or cattle on a contract basis to utilize all available feeds.

6. That the average farmer depend upon horses for power in order to become more independent and to reduce his cash expenses.

7. That the use of tractors be adopted on the larger irrigated farm.

8. That a truck be used where the farm is some distance from the market.

9. That the farmer on the medium-sized farm hire work done by tractor or truck rather than own them himself.

10. That the Extension Service call local meetings of farmers in districts covered by this conference to assist farmers in making plans to utilize the data obtained at this conference.

11. That each farmer use the following outline as a guide showing how to approach the problem of working out a satisfactory rotation and budget for his own farm.

The committee used 160 acres as an average-sized farm unit. In selecting a rotation to use as an example of farm organization, the committee attempted to choose crops that could be grown over as wide an area as possible. In any given locality this rotation should be modified to meet local conditions.

This selection was also made with the idea of maintaining the fertility of the soil.

The farm returns that the committee secured, based on the above farm set-up, would indicate that irrigated land is not worth the current market price.

C. L. Hover, Chairman
Longmont, Colo.

C. K. Monfort, Vice-Chairman
Greeley, Colo.

R. T. Burdick, Secretary
Fort Collins, Colo.

CONFERENCE DIRECTORY

Name	Address	Committee
Abbett, Leonard G.	Platteville	Poultry
Allen, A. C., Sec'y	Fort Collins	Swine
Ancell, P. Y.	Kennesburg	Sugar beets
Anderson, F. A., Director	Fort Collins	Program
Anderson, Fred	Fort Collins	Dairying
Andrews, C. F.	Longmont, R. 5.	Swine
Balcom, W. D.	Greeley	Beans
Ball, Geo.	Pierce	Irigation and drainage
Bartels, Clyde	Fort Collins	Sheep
Bartholomew, A. J.	Sterling, Mt. R. B	Sugar beets
Bartholomew, Mrs. A. J.	Sterling, Mt. R. B	Poultry
Bascom, D. C., Sec'y	Fort Collins	Sheep
Beeten, Forde L.	Johnston	Dairying
Benson, R. C.	Loveland, R. 3	Dairying
Bickling, H.	Greeley	Potatoes
Birkle, Lou	Platteville	Irigation and drainage
Bliss, E. R.	Greeley	Potatoes
Bliss, Robert	Greeley	Grain and seed crops
Borgman, A. H.	Longmont	Alfalfa and irrigated pastures
Borguson, Joe	Greeley, R. 6	Beans
Brooks, A. A.	Eaton	Sugar beets
Brown, C. E.	Littleton	Turkeys
Brown, Mrs. C. E.	Littleton	Turkeys
Brown, Geo. E. Vice-Ch'mn	Johnstown	Grain and seed crops
Burdick, R. T., Sec'y	Fort Collins	Farm organization
Burdorf, Henry	Eaton	Beef cattle
Calhoun, Wendell	Denver	Potatoes
Callendar, W. F.	Washington, D. C.	Program
Carlson, Wm. A. Chairm'n	Greeley	Beans
Carroll, rFank H.	Longmont	Dairying
Chapin, C. H.	Fort Morgan	Sugar beets and grain seed crops
Clark, Ralph	Eaton	Sheep
Clark, R. W.	Fort Collins	Irigation and drainage
Clark, S. K.	Lucerne	Sugar beets
Clay, E. G.	Omaha, Nebr.	Swine
Collins, H. L.	Denver, 715 Min. Ex. Bldg	Potatoes
Condon, Raymond	Platteville	Grain and seed crops
Connell, Tom	LaSalle	Dairying
Cuykendall, F. F.	Roggen	Beef cattle
Dalby, W. E.	Wellington	Alfalfa and irrigated pastures

Name	Address	Committee
Danielsen, D. Alfred	Brush	Bees and honey
Davis, B. F.	Fort Lupton	Beef cattle
Davis, E. B.	Fort Lupton	Cattle
Davis, Mrs. E. B.	Fort Lupton R 1	Poultry and turkeys
Davis, Frank B., Chairm'n	Greeley	Irrigation and drainage
Decker, H. J.	Fort Collins, R. 5	Poultry
Dickens, Will	Longmont, R. 5	Alfalfa and irrigated pastures
Diedrick, Wm.	Brighton	Grain and seed crops
Dillon, J. P.	Sterling	Sugar beets
Drage, Vivian	Loveland, R. 2	Swine
Dressor, Francis W.	Greeley	Grain and seed crops
Dowling, P. H.	Longmont, R. 5	Farm organization
Dutcher, James A.	Windsor	Bees and honey
Eberharter, Henry	Boulder, R. 1	Swine
Edmundson, W. C. Chm'n	Greeley	Potatoes
Elder, Chas. M.	Boulder	Poultry
Elliott, F. A.	Greeley, R. 4	Dairying
Erickson, Oscar	Lucerne	Farm organization
Erickson, Mrs. E.	Greeley, R. 5	Turkeys
Evans, Chas.	Greeley	Sugar beets
Evans, Harry C.	Fort Collins	Dairying
Evans, W. E.	Fort Collins, R. 1	Bees and honey
Felts, R. H.	Fort Collins	Program
Finch, C. A.	Eaton	Potatoes
Fisher, W. C.	Windsor	Dairying
Flood, V. H.	Greeley	Bees and honey
Forster, Mrs. Cora		
DeFrance, Sec'y	Berthoud	Turkeys
Foster, R. F.	Loveland, R. 3	Swine
Freeman, Walter R.	Fort Collins	Dairying
Glasier, John	Denver	Sugar beets
Griffith, S. D.	Greeley, Court House	Rabbits
Gustafson, C. H.	Lincoln, Nebr.	Beef cattle
Harter, F. M.	Kennesburg	Sugar beets
Hartman, Frank, Ch'm'n	Longmont	Sheep
Hartman, Grant	Longmont	Beef cattle
Hartshorn, Denzel	Longmont, R. 2	Alfalfa and irrigated pastures
Hanson, W. W.	Denver, R. 2	Dairying
Hanna, Mrs. Ralph, Ch'n	Wellington	Turkeys
Henry, C. W.	Greeley	Dairying
Henthorne, N. L., Ch'm'n	Greeley	Bees and honey
Hicks, John	Henderson	Grain and seed crops

Name	Address	Committee
Hill, E. D.	Eaton	Beef cattle
Hill, Russell J., Vice Ch'n	Greeley	Poultry
Hoffman, Geo. Chm'n	Iliff	Grain and see crops
Holt, A. D.	Longmont	Irrigation and drainage
Hover, C. L., Chairman	Longmont	Farm organization
Isham, Mrs. Mary	Brighton	Program
Johnson, Clarence F.	Longmnto, R. 2	Swine
Johnson, Forest	Longmont	Grain and seed crops
Johnson, J. G.	Fort Morgan	Potatoes
Johnson, Wm.	Brush	Sugar beets
Kaschke, A. J.	Sedgwick	Dairying
Kelly, Wm. R.	Greeley	Irrigation and drainage
Kerlee, O. R.	Greeley	Poultry
Kezer, Alvin	Fort Collins	Grain and seed crops
King, Ben	Denver, Capitol Bldg.	Grain and seed crops
King, J. H.	Sterling	Alfalfa and irrigated pastures
Kruse, Ernest	Greeley, R. 1	Beans
Lamb, P. C.	Greeley, R. 5	Dairying
Lane, A. M.	Fort Collins, R. 5	Dairying
Larkin, R. E.	Eaton, R. 2	Poultry
Lindblad, S. Aug.	Windsor	Farm organization
Litel, A. L., Vice Ch'mn	Sterling	Sugar beets
Lory, Dr. Chas. A.	Fort Collins	Program
Lumry, S. Earl	Boulder	Poultry
Markham, E. H. Chm'n	Meade	Sugar beets
Maxwell, R. G.	Fort Collins, R. 3	Alfalfa and irrigated pastures
Maynard, E. J., Sec'y	Fort Collins	Sheep
McCarty, A. J.	Longmont	Bees and honey
McClave, Ray E.	Fort Lupton	Dairying
McCrimmon, G. E., Sec'y	Julesburg	Sugar beets
Merritt, E.	Washington, D. C.	Program
Melzer, Carl, Chairman	Littleton	Poultry
Monfort, C. K., Vice Ch'n	Greeley	Farm organization
Monfort, Warren H., Ch'n	Greeley	Beef cattle
Moon, Floyd	Fort Collins	Farm organization
Morrison, J. E., Sec'y	Sterling	Alfalfa and irrigated pastures
Mumper, A. L.	Greely	Potatoes
Myers, A. H.	Eaton	Irrigation and drainage
Myers, D. C.	Greeley	Rabbits
Myers, J. N.	Ault	Grain and seed crops

Name	Address	Committee
Myers, Vincent	Ault	Grain and seed crops
Nance, J. M., Chairman	Englewood	Rabbits
Nelson, Arthur	Longmont, R. 3	Irrigation and drainage
Nelson, Mrs. Eric	Fort Collins, R. 4	Poultry
Nelson, S. O.	Greeley, R. 1	Swine
Oldemeyer, C. L.	Brush	Potatoes
Oliver, Ross	Greeley	Irrigation and drainage
Pancake, J. D.	Greeley	Sugar beets
Parker, H. D.	Greeley	Dairying
Parshall, R. L., Sec'y	Fort Collins	Irrigation and drainage
Phillips, John H.	Brighton	Dairying
Plumb, Chas. O.	Greeley	Farm organization
Preston, Mrs. C. B.	Fort Collins, R. 4	Poultry
Prunty, O. C.	Greeley, R. 6	Irrigation and drainage
Prunty, Mrs. O. C.	Greeley, R. 1	Poultry
Psalsgraph, Ben	Windsor	Sugar beets
Rannels, Ben	Longmont, R. 5	Alfalfa and irrigated pastures
Reiser, T. A.	Fort Collins	Dairying
Rice, L. R.	Greeley	Bees and honey
Rieke, Mrs. Louise E.	Sterling, R. 2	Poultry
Richmond, R. G., Sec'y	Fort Collins	Bees and honey
Robertson, D. W.	Fort Collins	Grain and seed crops
Rochford, L. H., Sec'y	Fort Collins	Beef cattle
Sandhouse, H. A., Sec'y	Brighton	Beef cattle
Schofield, Geo.	Laporte	Beans
Schofield, Mrs. Geo.	Laporte	Turkeys
Schwab, A. G.	Grover	Grain and seed crops
Shannon, Roy	Lafayette, R. 1	Poultry
Simpson, H. H., Sec'y	Greeley	Potatoes
Smith, C. A., Sec'y	Fort Collins	Dairying
Smith, E. D.	Fort Collins	Program
Smith, Geo. R., Sec'y	Longmont	Sugar beets
Spangler, D. W.	Longmont	Bees and honey
Stephens, Ross, Chm'n	Longmont	Alfalfa and irrigated pastures
Stewart, T. G., Sec'y	Fort Collins	Grain and seed crops
Stitt, C. M.	Fort Morgan	Sheep
Stratton, Walter S. Jr. Sec.	Greeley	Beans
Streck, Mrs. Geo. M.	Greeley, R. 6	Turkeys
Stroh, Chas.	Johnstown	Beans
Stroh, Lilliam	Milliken	Poultry

Name	Address	Committee
Tams, Carl C.	Greeley	Potatoes
Tedmon, A. H., Sec'y	Littleton	Rabbits
Tetsell, Mrs. A. H.	Sterling	Poultry
Tidwell, W. Vay	Sterling	Beef cattle
Tinsman, J. L.	Severance	Sheep
Thomas, Dr. E. S.	Wellington	Farm organization
Thompson, Geo. H. Chm'n	Julesburg	Swine
Tobin, John H.	Montrose	Beef cattle
Tolliver, J. O.	Fort Collins	Dairying
Ufford, O. C., Sec'y	Fort Collins	Poultry
Vanderlip, Harve	Greeley	Poultry
Wallace, J. K.	Washington, D. C.	Beef cattle
Wallace, Mrs. J. K.	Washington, D. C.	Poultry
Walter, E. E.	Greeley	Potatoes
Watts, Ira	Timnath	Sheep
Webb, Ed	Longmont, R. 1	Swine
Whitmore, Bruce	Severance	Swine
Whowell, J. W.	Johnstown	Dairying
Winger, L. T., Chm'n	Brush	Dairying
Winger, V. A.	Brush	Sugar beets
Working, D. W.	Denver, R. 2	Alfalfa and irrigated pastures, and farm organization

LIBRARY
 COLORADO AGRICULTURAL COLLEGE OF A. & M. A.