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Introduction

The economic conference of farmers, farm women and business men for the purpose of drawing up a basic program for the agricultural development of the Flathead Irrigation Project was held at Polson, March 17 and 18, 1927. Charles Leavell of Polson presided as chairman and L. B. Miller, county agricultural agent of Lake County, was secretary.

The conference organization included special committees on farm management, grain and forage, livestock, dairying, horticulture, poultry, bee-keeping and farm living. These committees, whose membership consisted of leaders in the various lines of agriculture that have a part in the farming systems of the Flathead Project, were appointed several months before the conference and each made careful investigations of production and marketing conditions. This publication presents some of the factors which have a direct bearing upon the agriculture of the project and also gives the conclusions and recommendations of the committees.

The Flathead Project

The Flathead Irrigation Project is on the Flathead Indian Reservation which was opened to settlement in 1910. It is in western Montana on the Pacific slope of the Rocky Mountains and comprises parts of Lake, Sanders and Missoula counties.

The project is administered by the Bureau of Indian Affairs. It is proposed to irrigate 125,000 acres of land of which 112,000 are now under the ditch. An extensive canal system has been constructed to collect the waters of the several sources of supply, leading them to reservoirs of which eight are now being used either to full or part capacity. Four additional reservoirs are proposed but have not been constructed. Lateral systems carry the water from reservoirs and canals to the irrigable areas. Water is delivered to each farm.

There are three main divisions of the project—the Mission Valley division in Lake County; the Camas division in Sanders County and the Jocko division in Missoula, Lake and Sanders Counties.

There are 10 towns on the project: Polson, Pablo, Ronan, Charlo and St. Ignatius in the Mission Valley division; Hot Springs and Camas in the Camas division, and Arlee, Ravalli and Dixon in the Jocko division.

Polson, with a population of 1,500 is the largest town on the project and is also the county seat of Lake County. Ronan, with a population of 600, is the next largest town. The population of all towns on the project is approximately 3,500.

The irrigable area is divided into about 2,500 farms with gross areas of from 40 to 160 acres per farm. The average irrigable area per farm is less than 50 acres. Many of the farms that are close to towns have been divided into small tracts. The total population of the project is about evenly divided between the farms and towns. Large dry farming areas bordering the irrigable areas also have a considerable farm population.

Consolidated high schools and grade schools are maintained at Polson, Pablo, Ronan, Charlo, St. Ignatius, Dixon, Arlee, Round Butte and Moiese Valley. Consolidated grade schools are maintained at Hot Springs, Lone Pine, D'Aste, Valley View and Post Creek. In addition there are several one-room school houses in outlying communities. Free transportation is furnished to pupils attending consolidated schools.

The main line of the Northern Pacific Railroad passes through the Jocko division of the project. A branch line leaves this railroad at Dixon and runs through the Mission Valley division to Polson. Plains and Perma on the main line are shipping points for the Camas division of the project. Coast-to-coast and park-to-park highways cross the project. These highways are gravel surfaced. Lateral highways are maintained by the counties and, although still generally unsurfaced, furnish good means of transportation.

The water supply for the Jocko division is obtained from the Jocko River and its tributaries and Revais Creek. The water supply for the Camas division comes from the Little Bitter Root River and its tributaries. The Mission Valley division is supplied with water from the Jocko River and from numerous creeks rising in the Mission Mountains.

The greater part of the Project area was allotted to Indians of the Flathead Tribe before the opening of the reservation to settlement. Since then the Indians have sold much of their land to white settlers. The remainder of the irrigable area was opened to homestead entry in 1910 and there are now no unentered lands. A considerable area of irrigable land is still in the ownership of the State of Montana. Most of the lands have some improvements and much is well improved. Land values range from \$20 to \$150 per acre, depending upon the location and improvements.

Precipitation on the Project varies from 12 to 16 inches per year, the heavier precipitation coming near the mountains. Both winter and summer seasons are marked by the absence of extreme temperatures. In winter, temperatures seldom fall below the zero mark and in the summer, nights are cool. There is a noticeable absence of high winds throughout the year. The irrigation season is about 150 days. The elevation of the irrigable land ranges from 2,500 to 3,200 feet above sea level.

The land on the project is generally rolling. There is very little alkali or hardpan. The top soil is black, sandy loam in most parts of the project and yellow, clay loam in other parts. The subsoil is mostly clay with gravel in limited areas. The average duty of water is less than two acre feet per acre. Lands with gravelly subsoil require from two to five acre feet per acre.*

Lake County

Lake County, in which the major portion of the Flathead Irrigation Project is located, has a total area of 1,500 square miles. The population of the county is estimated at 15,000.

*Note: The above information on the Flathead Project was furnished by the local office of the Bureau of Indian Affairs.

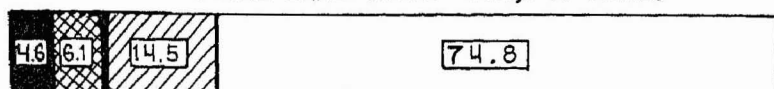
Towns in addition to those on the irrigation project are Big Arm, Elmo, Dayton, Proctor and Rollins, all of which are located on or near the shores of Flathead Lake. Each of the towns have grade schools.

Fruits and truck crops are the chief products of the non-irrigated farms in the Flathead Lake region. Wheat is the principal crop in the open dry land sections, while the wooded hillsides provide grazing for cattle and sheep. Sheep have increased from a few thousand in 1923 to 15,000 in 1926 and dairying has increased approximately 50 per cent in four years.

LAKE COUNTY

LAND AREAS AND VALUATIONS

TOTAL LAND AREA - 963,840 ACRES



(FIGURES REFER TO PER CENT)

TOTAL PRODUCTIVE LAND 252,191 ACRES



TOTAL ASSESSED VALUATION - PRODUCTIVE LANDS



\$4,311,749



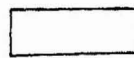
IRRIGATED



NON-IRRIGATED



GRAZING



NON-PRODUCTIVE

TILLABLE

Fig. 1

Table 1—Distances and Freight Rates—1927

Ronan to:	Distance Miles	Freight Rates			
		Single Deck Car Cattle	Hogs	Per 100 Pounds Wheat	Potatoes
Spokane	231	\$ 96	\$76.50	.28	
Portland	608	130	96.00	.35	
Seattle	611	130	96.00	.35	
Minneapolis	1313			.48	.57
Wallace, Ida.					.25

Fig. 1 shows how the irrigated and non-irrigated lands of Lake County compare in area and valuation. The figures used are from the 1926 report of the State Board of Equalization.

The absence of large consuming centers on the Project puts agriculture almost entirely on an export basis. Table 1 shows the distances and freight rates on certain products between Ronan and important markets.

Local enterprises and organizations which are factors in the marketing of products produced on the Project are the Polson Milling Co. at Polson; the Lake Flour Mill at Ronan; the Polson Creamery at Polson; cheese factories at St. Ignatius and Pablo; two cream stations at Arlee, one at St. Ignatius, two at Charlo, two at Ronan and two at Pablo; a cooperative live-stock shipping association, and a cow testing association, both with headquarters at Ronan.

While the conference gave some consideration to the problems of land settlement, no definite report was made covering this important question. At a similar conference for the irrigated areas in northern and central Montana the subject was carefully studied and definite recommendations based upon the experiences of older irrigation projects in the state were adopted. Since many of these recommendations have a direct application to conditions on the Flathead Project they are presented with this report.

Since the conference at Polson, arrangements have been completed for the construction of a beet sugar factory at Missoula. This provides opportunity for including an important cash crop in the farming systems in many parts of the Project and necessarily affects some of the farm types and rotations recommended at the conference. The references to sugar beets in the following committee reports were added after the conference was held, and are based upon experiences in other sugar beet areas of the state.

Conference Organization

Charles Leavell, Polson, Chairman

L. B. Miller, Ronan, Secretary

E. J. Haslerud, Thompson Falls, Ass't Secretary

Farm Management Committee

A. B. Inkster, Lonepine, Chmn.

C. H. Gordon, Ronan, Vice-Chmn.

E. J. Price, Moiese

A. Huston, Arlee

Ray Proud, Dayton

A. J. Brower, Ronan

J. A. Repas, St. Ignatius

L. L. Marsh, Polson

Ed. Ekman, Rollins
F. L. White, Seines
D. A. Dellwo, Charlo
J. H. Johnson, Polson

Art Schmidt, Charlo
F. A. Halverson, Lonepine
W. W. Van Sagen, Lonepine

Poultry Committee

A. L. Meek, Polson, Chmn.
J. C. Howser, Lonepine, Vice-Chmn.
J. L. Olson, Seines
C. E. Mutchler, Polson
Mrs. W. Smith, Moiese
H. Fowler, Arlee

J. U. Williams, Polson
E. P. Goodearl, Proctor
I. Campbell, Lonepine
John Camp, Lonepine
Fred Kopp, Lonepine

Horticultural Committee

Max Garbe, Pablo, Chmn.
L. Bohannon, Big Fork
James Harbert, Polson
Mrs. Charles Leavell, Polson

R. R. Tower, Polson
J. A. McGeorge, Ronan
E. F. Beaudreau, Lonepine

Grain and Forage Committee

James Wood, Jr., Charlo, Chmn.
C. P. Howser, Lonepine, Vice-Chmn.
W. Martz, Alee
L. A. Gipe, Polson
J. J. Corrigan, Ronan
C. B. Hogan, Charlo

G. Beckwith, St. Ignatius
Roy Bras, Lonepine
Will Patton, Lonepine
J. H. McGuffy, Moiese
Carl Mahlgren, Rollins
D. Morris, Charlo

Livestock Committee

Clyde Weythman, Polson, Chmn.
John T. Camp, Lonepine, Vice-Chmn.
Neil Bratton, Camas
Earl Spencer, Moiese
O. M. Larson, Arlee

Charles Merritt, Camas
J. A. Johnson, Polson
Guy Dean, Lonepine
Fred Denny, Lonepine
W. M. Kinney, Ronan

Farm Living Committee

Mrs. C. B. Hogan, Charlo, Chmn.
Mrs. A. B. Inkster, Lonepine, Vice-Chmn.
Mrs. Mae Kaiser, Ronan
Mrs. W. Von Sagen, Lonepine
Mrs. John Martin, Ronan
Mrs. Leon Thomas, Moiese
Mrs. A. W. Miller, St. Ignatius
E. F. Beaudreau, Lonepine

Joe Lemire, Ronan
F. A. Halverson, Lonepine
Mrs. Bessie Marble, Proctor
Mrs. H. Graves, Polson
Mrs. Mabel Riley, Big Fork
Mrs. Wm. Orville, Arlee
Mrs. F. S. Odle, Rollins
Mrs. Liebel, Ronan

Dairy Committee

T. L. Cope, St. Ignatius, Chmn.
John Innis, Arlee
W. E. Bennett, Ronan
O. B. Selfors, Ronan
Mrs. M. Dols, Moiese
P. Peterson, Dayton

H. Hanson, Polson
B. L. Burbank, Charlo
V. L. Pitts, Ravalli
C. Dewey, Lonepine
R. Taylor, Lonepine

Beekeeping Committee

F. M. Hillman, Lonepine, Chmn.
E. D. Kinney, Moiese, Vice-Chmn.
D. F. Carlin, Polson
E. Gould, St. Ignatius

R. Drawatsky, Ronan
J. L. Taulbee, Charlo
Argus Camp, Lonepine
Tenor Bras, Lonepine

Representatives Montana Extension Service Who assisted with Conference

J. C. Taylor, Director, Montana Extension Service
Fred Bennion, County Agent Leader
Miss Blanche Lee, State Home Demonstration Leader
R. L. Waddell, Livestock Specialist
A. J. Ogaard, Agronomy Specialist
V. D. Gilman, Farm Management Specialist
I. O. Tretsven, Dairy Specialist
E. E. Isaac, Horticultural Specialist
Miss H. E. Cushman, Poultry Specialist
Miss Edith Mott, Clothing Specialist
A. B. Miller, County Extension Agent, Lake County
E. J. Haslerud, County Extension Agent, Sanders County

Report of the Farm Management Committee

A. B. Inkster, Chairman

During the past five years, 19,000,000 acres of crop land have gone out of use in the United States. At the same time there has been a marked decline in land values from an average of \$57 to \$40. There was some decline in crop acreage in Montana immediately after the deflation of 1920 but there has been an increase in the amount of tilled land in the last three years in spite of a decrease in the number of farms of from approximately 57,000 to around 47,000. During the five year period acre values have declined from an average of \$19 to \$11 per acre.

Table 2—Figures Showing Development of the Flathead Project, 1921-1926

	1921	1922	1923	1924	1925	1926
Number of farms	1,105	1,008	786	1,028	1,091	1,131
Number of people on farms	2,302	2,094	1,828	2,093	2,412	2,585
Number engaged in agriculture	1,105	1,008	711	1,039	1,171	1,215
Value of farms	\$4,572,930	\$3,926,930	\$3,452,485	\$3,751,980	\$3,946,155	\$3,861,164
Total value of stock	588,654	542,992	525,433	583,939	640,315	838,369
Total area cropped (acres)	22,821	28,769	17,400	29,409	31,435	33,838
Total value of crops	\$ 456,588	\$ 522,680	\$ 345,258	\$ 560,968	\$ 641,795	\$ 631,637
Per acre value crops	\$ 15.84	\$ 18.05	\$ 19.84	\$ 19.07	\$ 20.42	\$ 18.67
Irrigated and cropped (acres)	28,821	28,769	17,400	29,409	31,435	33,838
Irrigated not cropped (acres)	1,664	1,588	1,095	431	1,052	580
Acres irrigated	30,485	30,357	18,495	29,840	32,487	34,418
Counted twice	-----	-----	-----	-----	-----	417
Net acreage irrigated	30,485	30,357	18,495	29,840	32,487	32,947

The conditions during the past few years have brought about great changes in the agriculture of the country and the Flathead Irrigation Project has been no exception to the rule. An indication of the acreage changes is shown in the following figures taken from project census reports:

	1920	1926
Alfalfa	15,342 acres	16,757 acres
Miscellaneous Hay	4,661 "	2,149 "
Wheat	12,415 "	4,085 "
Oats	4,062 "	1,717 "
Barley	488 "	582 "
Corn	56 "	297 "

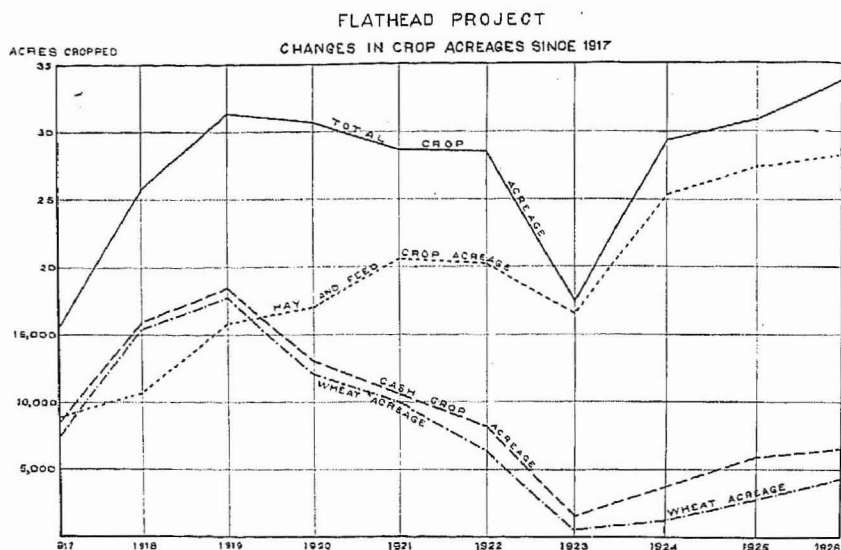


Fig. 2

Fig. 2 even more strikingly illustrates the changes in production on the Flathead Project in recent years. Up to 1919 the total crop acreage showed an abrupt increase. From 1919 to 1923 cash crop acreage declined almost to the vanishing point but since then has made some recovery. Hay and feed crops production has continued to increase throughout the entire period with the exception of a slight falling off from 1921 to 1923. It is significant that up until 1923 the line representing the total cash crop acreage and the one representing the wheat acreage remained almost parallel and during this period there was comparatively little acreage devoted to cash crops other than wheat. Since 1923 both the total cash crop acreage and the wheat acreage have shown increases but there is an increasing proportion of the total acreage devoted to cash crops other than wheat.

Wheat Acreage Reduced

From the lower half of Fig. 3, comparing wheat acreage with the price of wheat, it is apparent that the abrupt drop in wheat price was

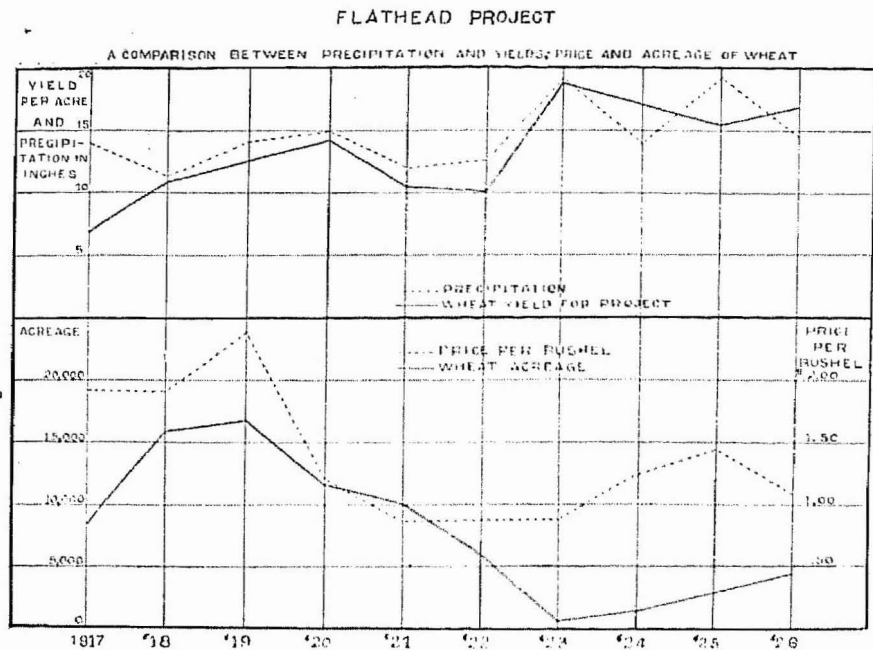


Fig. 3

mainly responsible for the drastic decline in wheat acreage. The upper half of the figure indicates that low yields also were a contributing factor. Apparently, the fact that farmers had water available for irrigation had little effect upon per acre yields. The comparison between per acre yields and precipitation shows that yields fluctuated almost directly with the seasonal rainfall up until 1923. Since 1923 yields still have been too low for profitable production but it is apparent that there is a more judicious use of water. The line showing per acre production for the three year period 1923-26 remains quite uniform despite marked fluctuations in rainfall.

While crop production methods have shown some improvement in the past few years, yields still are far below the reasonable expectation under conditions that exist on the Flathead Project. Table No. 3 shows a comparison between the Lower Yellowstone and Flathead Projects showing 1926 acreage, average yields per acre, yields that may be expected with proper methods and the additional revenue that would have been received had the reasonably expected yields been obtained.

Table 3—Effect of reasonable increased yields on project income
(LOWER YELLOWSTONE)

Crop	1926 Acreage	10 year Av. yield per A.	1926 Yield per A.	Reasonable Expectation	Increased Revenue to project over 1926*
Alfalfa	6,552	2.1 T.	2.4	3 T.	\$42,000
Beets	5,180	9.1 T.	9.7	11 T.	41,000
Corn	961	27 bu.	18.7	40 bu.	15,000
Wheat	4,136	17.2	21.8	35 bu.	100,000
Other Crops					2,000
					\$200,000

(FLATHEAD PROJECT)

Alfalfa	16,757	2.2 T.	2.4	3 T.	80,000
Miscellaneous Hay ...	2,149	1	1	3 T.	34,000
Wheat	4,085	13.6 bu.	17.5	35 bu.	70,000
Corn	1,717	24.8 bu.	30.1	60 bu.	35,000
Barley	582	17	24.3	45	8,500
Corn	297	25	20	30	2,500
					\$230,000

*Alfalfa \$8 per ton; corn, barley and oats 70c; wheat \$1 per bushel. Increased farm income if yields were increased to reasonable expectations.

As is true on all of Montana's irrigated areas, livestock is the foundation for the agriculture of the Flathead Project. There may be room for more or less specialty crop production but in general the successful irrigated farm must produce hay, feed and pasture with enough livestock to consume the feeds. The degree of success depends largely upon how efficiently the feeds are converted into beef, dairy products, wool, mutton or pork. The fact that the Flathead Project has had no major cash crop which could be generally grown has been an important factor in establishing livestock types of farming, particularly when wheat was found unprofitable. This situation is reflected in Table 4 showing the number of livestock per 100 acres for the Lower Yellowstone, Huntley and Flathead projects.

Table 4—Showing number of Livestock per 100 Acres
Montana Irrigation Projects

Livestock	Lower Yellowstone	Huntley	Flathead
Horses	9	10	10
Beef Cattle	8	7	11
Dairy Cattle	8	10	15
Sheep	14	35	30
Hogs	12	8	15
Fowls	91	120	147

Sugar Beets Important

With the establishment of a beet sugar factory at Missoula farmers of the project are provided with an opportunity to grow a much needed cash crop which should result in a materially higher per acre income and the establishment of more satisfactory crop rotations. However, the intro-

duction of sugar beets does not decrease the importance of livestock production.

On the subject of land utilization the committee makes the following recommendations:

The production of high yields of alfalfa hay and the establishment of pastures of high carrying capacity as a foundation for livestock production are considered essential.

Need More Pasture

At present there is more alfalfa hay produced than is consumed locally, a condition which may be remedied by increasing the pasture acreage to the ratio of about one acre of pasture for every two acres of hay, and making a corresponding increase in the number of livestock. This is considered more desirable than to decrease the alfalfa acreage to bring it in line with the present amount of pasture. In general hay is not a profitable cash crop and the committee recommends against its production for export.

Even the best land may be used profitably for alfalfa and pasture when used for producing livestock on the farm. It is estimated that good pasture, carrying two animal units per acre for five months, will yield at least a gross return of approximately \$20 per acre.

Where non-irrigated grazing land is available the committee calls attention to the possibility of increasing the carrying capacity of such grazing land by deferred and rotated grazing.

A system of straight wheat farming is considered unprofitable on irrigated land. Wheat may have a place in the irrigated farm rotation which includes legumes and in which provisions are made for the maintenance of soil fertility by the application of manure. The production of sugar beets made possible by the establishment of a beet sugar factory at Missoula will fill a long felt need for an intertilled crop to be included in the rotation.

There are a few farms on the project of around 40 acres in size but profitable production is possible on such small areas only on the best land lying close to market, permitting the production of such high revenue crops as potatoes, vegetables and fruits. Such crops are necessary to go along with the maximum dairy production and especially high yields must be secured if farming is to pay on such small units.

The 80-acre farm is more typical and offers opportunities for more successful operation. On the dairy farm of this size one man with family labor and some hired help at haying time can run from 12 to 15 cows providing there is the proper proportion of alfalfa hay and pasture. Such farms should also have several brood sows to furnish a profitable market for skim milk.

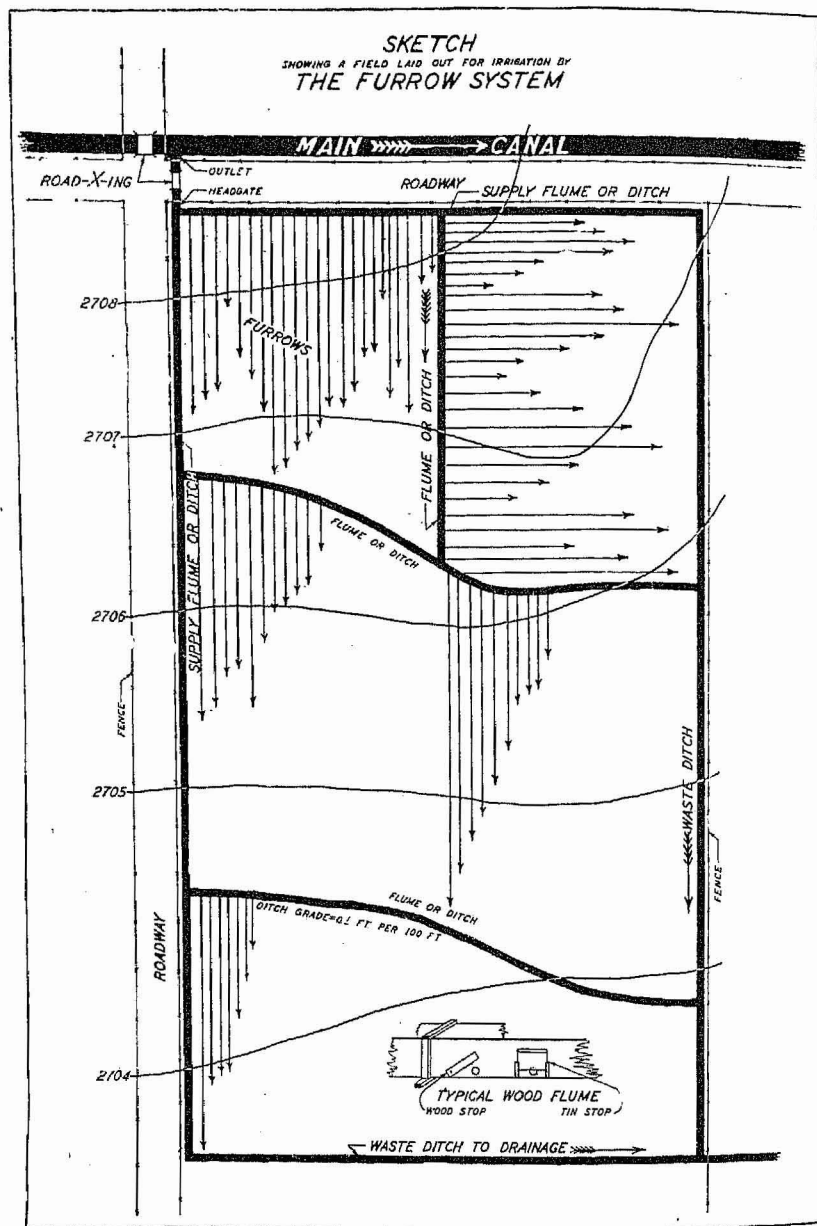


Fig. 4

SKETCH
SHOWING A FIELD LAID OUT FOR IRRIGATION BY
THE BORDER DYKE SYSTEM

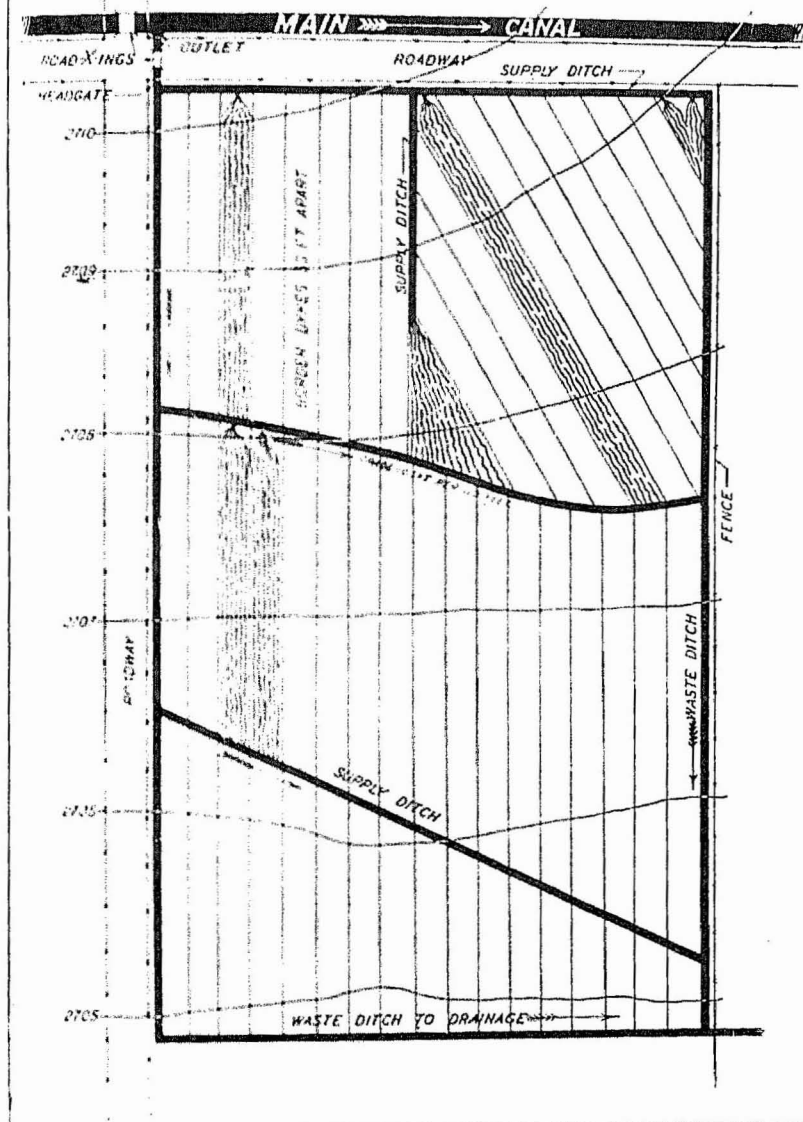


Fig. 5

On dairy farms of this type and where other conditions are favorable the production of clover seed may be included in the farm system as this enterprise does not conflict seriously with dairy operations. In all cases sufficient grain feeds should be produced to supply the needs of the livestock. Wheat may be included as a cash crop. Commercial fruit or vegetable production is undesirable on this type of farm because of the added labor requirements of such crops.

Larger Dairy Farms

If it is desired to increase the number of dairy cows on this type of farm the number should be raised to at least 20 and in this case the enterprise becomes a two-man farm with increased hay, pasture and feed crop acreage. A larger dairy farm of this kind should have from 120 to 160 acres.

Where sugar beets are grown the farmer should plan to bring his sugar beet acreage up to about 20 acres on farm units of 80 acres, according to the best experience of sugar beet growers in the older beet-growing areas. The sugar beet farm rotation must include hay and feed grains as well as pasture, for livestock is essential to maintain soil fertility.

Since it is not considered desirable to produce sugar beets on farms more than five miles from a railroad there are many farmers on the Project who must depend almost entirely upon livestock. For those who do not care to engage in dairying, sheep or cattle offer an alternative. On small 80-acre units sheep probably offer the best possibilities. Larger farm units and more extended operations are possible where both irrigated and non-irrigated land is available.

In some sections of Montana where no major intertilled cash crop can be grown the rotation includes a year of summer fallow along with alfalfa, feed grains and wheat; the summer fallow being introduced to take care of the weed problem and to insure good seed bed preparation.

Land Settlement

Following are the observations and recommendations of the committee on the land settlement problem:

At present much of the farm land on the Project has not been deeded over to the settlers. Such land is not being taxed which in turn adds to the tax burden of those whose lands are subject to taxation. The settler on undeeded land also is at a disadvantage particularly when it is necessary to borrow money. Without land as security interest rates are especially high.

Taxes on land on the Project average about one dollar per acre. Water costs at 40 cents per acre foot, vary from 40 cents to two dollars per acre, averaging about \$1.50 per acre.

Since idle land is a burden upon those who are operating farms and affects the general prosperity of the project new settlers are needed. In the meantime much good might be accomplished if farmers now on the Project would take advantage of neighboring idle land and bring it into production.

Only those of proven ability should be encouraged to settle on the Project and the newcomer should have at least enough capital for one year's operations. Successful farming is dependent not only upon land but also upon adequate operating equipment. A man of ability is seriously handicapped without operating capital and is unable to make the fullest use of his land and labor.

There is a need for means of financing farmers in the purchase of livestock. Careful consideration of the opportunities offered by some such agency as the Agricultural Credit Corporation of Minneapolis is urged.

Supplementary Report on Land Settlement

At agricultural economic conference for the irrigated lands of northern and central Montana, committees on land utilization made careful study of the land settlement problem. The general portions of the reports presented by these committees are submitted herewith since many of the conclusions and recommendations apply as well to the Flathead Project.

"In order to bring the lands of this area into their fullest utilization and productiveness, there must be wholehearted cooperation between land owners, business men, railroads and all individuals and organizations interested in agricultural development.

"One of the factors which has retarded the settlement and development of the lands in this territory is the lack of houses and shelter for new settlers and their livestock. Another factor has been the difficulty of interesting practical farmers who have sufficient capital to make a down payment on land and have enough capital left to bring raw land into production.

"In view of these conditions the following recommendations are made:

"1. Where the land owner is not using his land it should be subdivided into suitably sized farm units and made available to settlers at the best terms possible. If there are no buildings, provisions should be made for their construction. If the owner does not care to sell or cannot sell without a heavy down payment he should offer his land for leasing, giving the renter an option to purchase at a stipulated price and terms. The lease should call for definite crop rotations, specified acreages for certain crops and should permit careful supervision of farm operations by the owner or his agent to see that the provisions of the lease are lived up to.

"2. Where the land is unimproved and the owner agrees to provide the necessary improvements, the maximum cost should be \$1,000, this to be added to the price of the land. In some cases it may be necessary for the

owner to provide the improvements on credit. In such cases the purchaser should be required to pay one-third of the cost of the improvements at the time of purchase, one-third at the time of the first harvest and the final third a year after the first harvest.

"3. Where land is sold the owner should be willing to accept improvements costing not less than \$500 in place of a down payment. The settler should be relieved of payments on the principal for the first two years but he should be obliged to pay interest at six per cent, water charges and taxes.

"4. The crop payment plan has been found successful in the sale of land in many parts of the state. This plan provides for the payment of one-fifth of the beets, one-third of the grain, and, as a rule, one-half of the hay, the last mentioned depending somewhat upon what the landowner may furnish in addition to the land. Under the crop payment plan the amounts received by the landowner is applied to the payment of interest and principal indebtedness, while taxes and water charges are payed out of the share received by the purchaser.

"5. There should be experienced farm management supervision in connection with the operation of irrigated farms."

Report of the Grain and Forage Crop Committee

James Wood, Jr., Chairman

The Flathead Project is in the midst of a period of transition in crop production. As farming systems gradually shift to a livestock basis, cash grain crop acreages are decreasing and feed crops show corresponding gains. The recommendations of this committee are based on the assumption that in general, the successful farm system of the Project must be based upon a livestock-feed crop foundation. With the introduction of sugar beets a new cultivated cash crop is added providing a new source of income and more desirable crop rotation possibilities, but livestock still remains the key to a successful agriculture with alfalfa as the cornerstone.

Alfalfa

The average yield of alfalfa is too low due largely to light, low-yielding stands, particularly on the heavier soils; improper irrigation systems; poor curing methods, and failure to cut at the right time. Better stands may be obtained by the careful preparation of a level, firm seed bed; heavier seeding; by using the corrugated irrigation system to avoid crusting of the soil, and by applying barnyard manure. The quality of alfalfa may be improved by cutting the crop a little earlier than has been customary, this applies particularly to the first cutting. Quality also will be improved if the hay is cured in the windrow or bunch instead of allow-

ALFALFA TREND — 1917-1926

FLATHEAD PROJECT

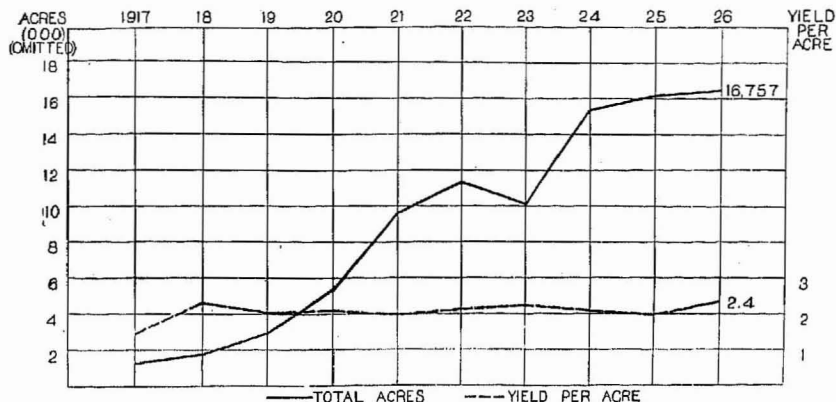


Fig. 6

ing it to dry in the swath which results in a loss of leaves. Alfalfa should not be permitted to turn dark green or otherwise show signs of suffering from lack of water. Water should be applied long enough before cutting to allow the land to dry properly for the use of haying machinery.

Irrigated Pastures

The lack of sufficient pasture is one of the most serious problems confronting the farmers of the Project. More hay is produced than can be consumed by the livestock on hand. Increase in livestock is dependent upon increase in pasture.

Native pasture is limited in area, grass is short, and carrying capacity is undependable and erratic. After mid-summer it fails to support stock properly for best results. Tame grass pasture must be provided.

Good irrigated land may be used profitably for pasture. On a hay-replacement basis, returns of from \$30 to \$50 per acre have been obtained. Mixed grass pastures have carried from one and a half to two cows per acre for five months. Frequent irrigation and rotation grazing will give best results. The best grass mixtures for the different soils must be determined by local tests and experience.

PASTURE MISC. HAY AND CLOVER HAY TREND FLATHEAD PROJECT 1917-26

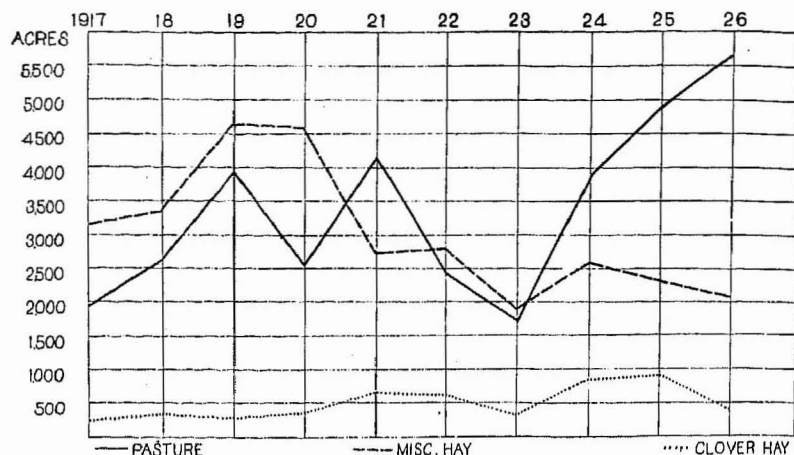


Fig. 7

Sweet clover pastures are especially promising, having a high carrying capacity and fitting well into the rotation with beneficial effects upon the soil. If planted with barley as a nurse crop sweet clover will furnish fair pasture the first fall. It should be planted at a higher rate than is generally the case at present to insure the desired thick stands under irrigation. Sweet clover should be pastured heavily under a rotation system of grazing to avoid tall, coarse, woody growth. There are few cases of bloat from this crop on the Project where it is continually used by the stock. Sweet clover brings about as much soil improvement in one year as does alfalfa in three or four years.

Small Grain Feed Crops

Barley will produce more small grain feed than any other crop adapted to the Project, providing the crop is given a favorable place in the rotation, adapted varieties are used, seeding is done early and proper attention is given to seed bed preparation. Trebi, a six-rowed barley, is recommended for irrigated land where grain feed is desired, and Faust's Beardless Blue Hulless is recommended when barley is to be used for hay or pasture purposes.

BARLEY AND OAT TREND - 1917-26 FLATHEAD PROJECT

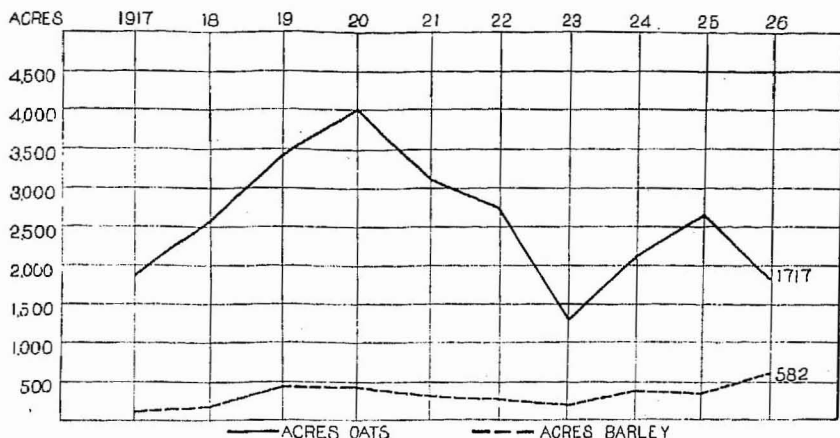


Fig. 8

If oats are grown the Victory variety is recommended. Local tests of Markton, an early smut-proof variety, are recommended as a part of the crop standardization program.

Where hard red spring wheats are of poor quality, white wheats such as Dicklow and Federation are recommended. The Supreme strain of Red Bobs is recommended in place of Marquis in the areas where hard red spring wheats are adapted. Montana 36 is the recommended variety of hard red winter wheat. Newturk, a beardless winter wheat, should be tested locally.

Smut Control

The copper carbonate dust treatment is recommended for the control of stinking smut or bunt of wheat, the formaldehyde treatment for oat smut and the two-hour soak treatment for barley smut.

General Grain Crop Recommendations

Local nursery and variety tests are recommended to establish a safe foundation for standardization of crop varieties. The barley acreage should be increased and the wheat acreage decreased. Small grain crops should be limited largely to their use as nurse crops. They should not be grown on new land not previously manured or cropped to a legume.

Corn

Local corn strain tests are recommended to determine the varieties adapted to the varying conditions found on the Project. Where corn may

be grown profitably it may be counted on to supply the need for an intertilled crop in the rotation. Methods of production and utilization must involve a light expenditure of man labor. Early flint varieties such as Gehu should be tested to determine their value for hogging-off purposes.

Crop Rotations

The problems of soil fertility, weed infestation and labor distribution are becoming more serious and increased attention must be given to the fundamentals of good crop rotations. A good rotation must include a legume crop, an intertilled crop and there must be a systematic return of organic matter to the soil. Alfalfa and sweet clover meet the requirements for a legume. There has been a serious need for an intertilled crop which might be generally grown, a deficiency which may now be supplied in many parts of the Project by growing sugar beets. Corn and potatoes offer additional intertilled crop possibilities. By growing alfalfa and sweet clover and applying barnyard manure and straw to the land the supply of organic matter in the soil may be maintained.

Seed Crops

The general results obtained in alfalfa seed production on the Project do not warrant a material increase in alfalfa seed acreage, particularly at this time when the outlook is for a gradual reduction in prices.

The more promising results obtained in the growing of red clover seed would justify further careful tests to determine the possibilities of this crop.

Under present market conditions seed pea production offers limited possibilities.

Sweet clover seed production offers some opportunity where it does not interfere with other small seed production, providing sufficient quantities are grown to permit standardization and efficient marketing.

Weeds

The weed problem is still in its early stage and the opportunity for complete eradication still exists. Annual weeds may be controlled by proper farming systems. Perennial weeds require united effort. It is recommended that steps be taken immediately to organize a campaign of education and cooperation designed to wipe out the isolated and spotted infestations of Canadian thistle, wild morning glory and similar weeds.

A Supplementary Report on Sugar Beet Production*

*The recommendations and conclusions on sugar beet production were adopted at the Milk River Economic Conference at Malta, November 15-16, 1927, and are included with this report because the principles presented also apply to the Flathead Project.

Successful sugar beet production is limited to those areas which are not more than five miles from a railroad. On farms where they may be grown, sugar beets must be considered the key crop around which rotations must be built. A basic rotation which will apply to the general conditions prevailing in this area where sugar beets may be grown successfully is as follows: Alfalfa, three to five years; small grain on alfalfa sod; beets on fall-plowed, manured, small grain stubble; beets following beets; small grain on unplowed land to be used as a nurse crop for alfalfa. To the extent that intertilled crops like potatoes may be profitably produced they may take the place of small grain after alfalfa. Beets do best after a cultivated crop or after a small grain crop. Barnyard manure is applied to the land after removing the grain crop. Sweet clover may take the place of alfalfa where it can be profitably utilized and where a short rotation and more rapid soil improvement are desired.

Some of the more important problems connected with the growing of sugar beets are covered in the following recommendations:

Early fall plowing is recommended where soil and climatic conditions permit. Deep plowing is important. Barnyard manure and legumes increase beet yields considerably. Plant 18 pounds of seed per acre for most seed bed and soil conditions found on the Project. Uniform stands are highly important in obtaining maximum yields. Leave the large, vigorous plants at thinning time and "block" to a distance of about 12 inches. Reduced stands and weakened plants caused by soil crusting, particularly in the heavier soils, may be avoided by going over the surface of the field just before the plants emerge with a home-made, light harrow or a corrugated roller. Wherever the fall or slope of the land is slight fields should be leveled carefully to prevent damage from standing pools of water following irrigation. Beets should be planted early, from April 10 to May 10.

Two-way plows are desirable for small farms as dead furrows are eliminated. The use of the disk in seedbed preparation is discouraged in favor of implements of the duckfoot type. For best results, spike toothed harrows should be weighted as their effectiveness is reduced in preparing the seed bed under most soil conditions found on the Project. Levelers should be at least 24 feet long for best results.

All farm work should be so planned as to give beet pulling operations the right-of-way as soon as the crop is ready. Timeliness in all beet operations is highly essential.

Table 5—Flathead Project Crop Production, 1921-1926

	1921		1922		1923		1924		1925		1926	
	Acres	Yield	Acres	Yield	Acres	Yield	Acres	Yield	Acres	Yield	Acres	Yield
Beans	3½	78	8	80	8	124	22	79	175	1,930	36	149
Beets, Sugar			8½	70	6	73	19	113	14	48	3	25
Clover Seed	51	211			43	86	44	133	156	322	171	366
Millet Seed					3	75			2	30	12	25
Peas	1	10	8½	248	350	3,932	1,622	1,678	1,416	13,562	729	8,415
Timothy Seed					12	33					83	21,600
Wheat	10,004	108,790	6,941	70,226	886	16,141	1,580	27,542	2,823	45,901	4,085	71,877
Alfalfa Hay	9,708	18,962	11,457	24,948	10,111	23,256	15,235	31,028	16,126	52,017	16,757	38,956
Clover Hay	645	856	645	1,025	297	539	774	1,380	896	1,346	462	734
Hay, Misc.	2,703	3,261	2,776	3,443	1,778	2,702	2,616	3,569	2,342	2,793	2,149	2,380
Pasture	4,208		2,417		1,761		3,850		4,822		5,729	
Barley	459	6,794	389	6,873	263	5,403	433	8,841	385	10,672	582	14,130
Corn	29½	784	86	2,191	1,385	4,468	303	6,036	334	8,282	297	6,349
Corn Fodder	6	16	76	324	111	971	134	206	145	576	30	90
Oats	3,147½	85,000	2,716	70,934	1,303	51,336	2,188	60,846	2,677	57,814	1,717	53,847
Rye	9	54	124	819	58	874					57	698
Mangels									5	76	4	52

Report of Livestock Committee

Clyde Weythman, Chairman

The number of pounds of beef, pork, lamb wool or butter fat produced per acre will determine, to a large extent, the success of the Flathead Project. The entrance of sugar beets as another cash crop possibility,

RELATION OF FEED CROPS TO ANIMAL UNITS AND RELATION OF HAY TO PASTURE FLATHEAD PROJECT

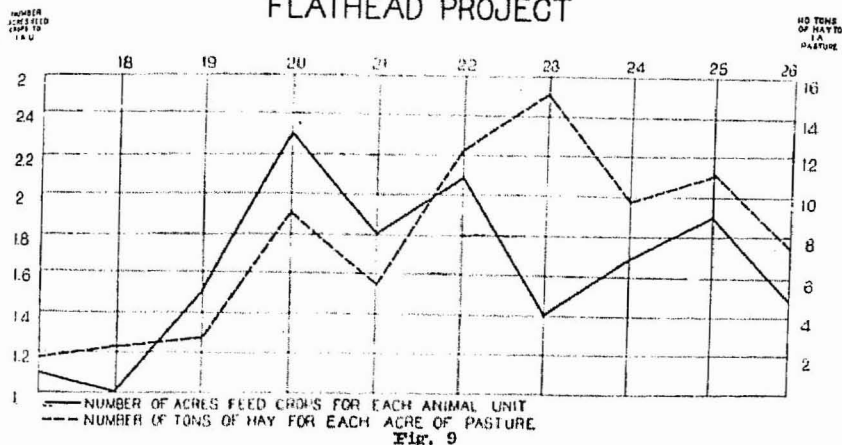


Fig. 9

rather than diminishing the importance of the various kinds of livestock, makes them all the more important since barnyard manure is necessary to maintain beet yields and since sugar beets provide valuable livestock feeds as by-products which must be turned into cash if best growing is to bring its most profitable returns.

BEEF AND DAIRY CATTLE TREND 1917-26 FLATHEAD IRRIGATION PROJECT

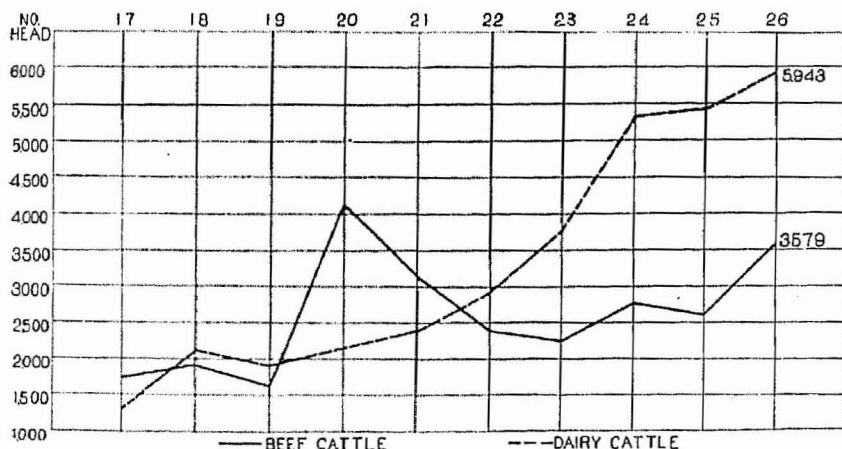


Fig. 10

That farmers of the Project appreciate the prominent place of livestock in the farming system is indicated by figures 10 and 11 showing that from 1917 to 1926 hogs have increased from little more than 2,000 to more than 5,000; sheep from less than 100 to more than 10,000; dairy cattle from less than 2,000 to nearly 6,000 and beef cattle have more than doubled, although inclined to be somewhat erratic in their increase.

SHEEP AND HOG TREND 1917-26 FLATHEAD PROJECT

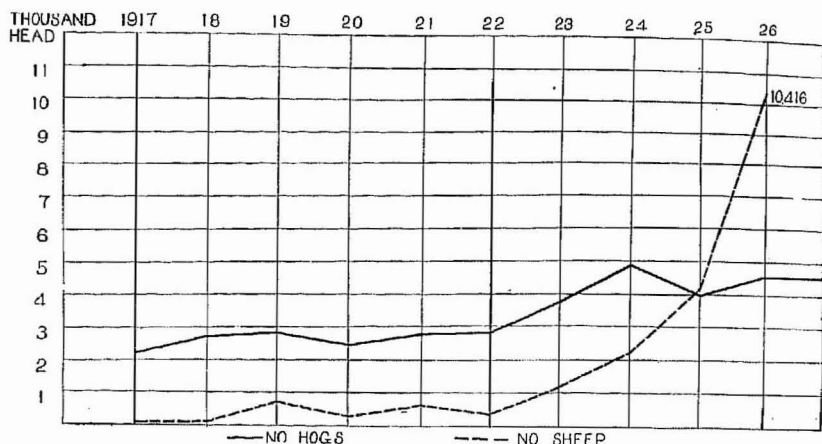


Fig. 11

The general trend away from wheat production to increased acreages of alfalfa—from less than 2,000 acres in 1917 to more than 16,000 acres in 1926—and pasture—from less than 2,000 acres to more than 5,500 acres—also indicates that farmers are devoting increased attention to livestock.

As pronounced as has been the increase in livestock in recent years it appears that there still is room for improvement. The swing to livestock since 1920 has been brought on largely through force of circumstances. With the failure of the wheat crop as a dependable source of profit, brought on by reduced yields and lower prices, with no other generally adapted cash crop to turn to, livestock has been adopted as a last resource.

If livestock is considered as a means of tiding over an emergency, to be abandoned when conditions may favor cash crop production, no substantial progress has been made toward establishing an enduring agriculture. Livestock is fundamental and the great problem is to increase the numbers to the point of maximum efficiency and to improve production methods so that the greatest returns may be realized.

The committee can make no recommendations as to the kind of livestock that should receive the most attention. The choice of kind and breed must be left to the individual farmer and his decision should be based upon his own preference and the conditions found on his farm. To base

judgment upon temporary market conditions is inadvisable, since successful livestock production is a long time, not a seasonal or yearly, enterprise. There appears no fundamental reason why hogs, sheep and beef cattle should not be increased beyond their present numbers. It is probable that hogs have not received the attention they deserve.

With such local modifications as varying conditions on the project may require, the following general recommendations adopted at the Agricultural Economic Conference for western Montana, held at Missoula, March 15-12, 1927, also apply to the Flathead Project.

As rapidly as finances are available the district should increase its livestock to full carrying capacity.

Considerable expansion in pork production is justified to supply a deficient west coast market that may be reached by an advantageous freight rate. Dairy by-products, cheap forage and high yields of barley and soft wheat, all of which make for economical gains, put this section in a favorable position in the competition with other regions.

The production of quality livestock is essential and should be encouraged in every way. Pure bred sires of the approved type must be used for the production of stock that will meet present market demands. A general effort should be made throughout the area to cull out off-type and undesirable females.

Cooperative marketing of livestock and livestock products is recommended where the volume of business will justify the employment of competent management. As improved quality is one of the primary objectives of this system of marketing, it is most important that each cooperative marketing association be responsible for the quality of the products sold.

There should be rigid enforcement of the state law relating to the running of bulls on the range.

Winter feeding of beef cattle is recommended as a desirable way of marketing surplus hay.

Figure 6—Flathead Project Livestock, 1921-1926

	1921	1922	1923	1924	1925	1926
Horses	3,392	2,927	2,591	3,435	3,318	3,278
Cattle, Beef	3,166	2,473	2,265	2,789	2,635	3,579
Cattle, Dairy	2,398	2,924	3,737	5,282	5,468	5,943
Sheep	720	490	1,294	2,358	4,373	10,416
Hogs	2,865	2,892	3,869	4,998	4,020	4,563

Report of Dairy Committee

T. L. Cope, Chairman

In 1926 there were 5943 head of dairy cows on the farms of the Flathead Project, an average of a little more than five head per farm. The average for the State of Montana at the same time was 4.7 cows per

farm. Thus the Flathead Project is slightly above the state as a whole but is still entirely too low in its dairy cow population for farmers to obtain the best results from the dairy possibilities of the Project.

Unquestionably, the Flathead Project is one of the state's most favored dairy areas, largely because of the possibilities for low cost production. Records of the Lake County Cow Testing Association for the three-year period ending 1926, show that through the use of good irrigated pastures and alfalfa hay, butter fat is being produced at an average cost of 14.5 cents per pound.

Dairying on Increase

That farmers realize the opportunities in dairying is indicated by the increase of 100 per cent in dairy cows on the Project during the four-year period ending 1926. The possibilities for greater pasture acreage to properly balance the present hay acreage and the further possibility of greatly increasing the average carrying capacity of present pastures justifies still greater development in dairying.

There also is much room for increasing production averages per cow. The average annual production of the more than 250 cows in the Lake County Cow Testing Association in 1927, approximated 8,000 pounds of milk and 330 pounds of butter fat. This figure is approximately double the average for all cows on the Project. To bring all cows up to the average of those in the testing association would add at least \$300,000 to the annual income of the farmers of the Project. That this production is not unreasonable is indicated by the fact that the association herds with the best records for each month produced at the rate of 420 to 644 pounds of butter fat per year. The yearly average based upon the production of the top herds each month is more than 500 pounds of butter fat and 11,000 pounds of milk.

Recommendations

With these conditions in mind the committee makes the following recommendations:

Since the dairy situation as a whole is favorable for further expansion and since the Flathead Project is especially well adapted to economical dairying, production may be greatly increased in this area of Montana. The expansion should come largely through increased production per cow based upon improved breeding, cow testing association work and better management.

There are still a large number of grade and inferior bulls in use so that it will be advantageous to continue the practice of introducing pure bred sires of known high producing ancestry. Bull associations are recommended wherever conditions are favorable for their operation.

Dairy barns may be greatly improved from the standpoint of sanitation, cow comfort and the saving of labor, but it is not advisable or necessary, under present financial conditions, to spend large sums for elaborate barns and equipment.

Among other things, an abundant supply of water is necessary for maximum milk production. Every farmer should arrange to give cows all the water they will drink at least twice a day during the winter.

While silos may have a place on non-irrigated farms and under certain conditions, their value is questionable on the irrigated farms of the Flathead Project where cheap alfalfa hay and choice pasture are available in abundance.

Cow testing association records indicate little need for the feeding of grain. Only enough grain should be fed to keep cows in good, thrifty condition.

More attention should be given to the fitting of dry cows for the coming lactation period. If good condition cannot be maintained on roughage alone a few pounds of grain should be fed daily. Cows should be dry at least six weeks.

The practice of cross-breeding and frequent shifting from one breed to another is to be condemned because of the off-colored, inferior animals that result. Uniformity in appearance and close adherence to breed characteristics are valuable factors which along with good production are reflected in higher prices.

The area testing plan for the eradication of bovine tuberculosis is recommended. Steps should be taken to make both Lake and Sanders counties modified accredited tuberculosis-free areas.

As contagious abortion is one of the most destructive diseases of dairy cattle in the United States, every farmer who has a clean herd or who wishes to establish a clean herd should use every precaution when buying animals to prevent the introduction and spread of the disease. A blood test by a reliable veterinary laboratory will indicate the presence of the disease.

Bone meal is recommended for dairy cattle wherever there is a deficiency in mineral matter in the ordinary feeds. Potassium iodide is recommended for the prevention of goitre in calves.

Since conditions are favorable on the Project for the production of high quality butter which brings a higher price, a rigid cream grading system with the scale of cream prices based on quality is favored. Every farmer is urged to use his best influence to bring about the general application of those practices which result in higher quality. Local creameries should be patronized providing satisfactory prices are obtained.

Dairy bulls should not be allowed to run with the herd. The safety bull pen is recommended as the best means for keeping the herd sire.

There are a large number of poorly developed dairy cows and calves throughout the Project, a condition which can be largely avoided by the general adoption of standard practices in growing dairy calves.

Report of Horticultural Committee

Max Garbe, Chairman

In 1926 only four per cent of the total cropped area of the Flathead Project was devoted to horticultural crops—apples, beans, fruits other than apples, garden truck, onions, peas and tomatoes. In 1917 these crops accounted for only 2.3 per cent of the total crop acreage. Thus, in spite of the fact that horticultural products are still receiving far less attention than they deserve for a balanced agriculture, some progress is being made.

Production Erratic

In the past there has been too great a tendency to swing to a certain crop for a year or two and if results were not satisfactory, to turn to something else. In this way it is doubtful if many of the horticultural crops tried have been given a fair trial.

The point is well illustrated by potatoes. In 1917 there were 163 acres of potatoes on the project. In 1920, in the frantic effort to find a cash crop to take the place of wheat, there were 616 acres. Evidently results were unsatisfactory for in 1921 the acreage was almost cut in half, followed by an increase to 584 acres in 1922, and then another abrupt drop in 1923 to 120 acres. Since then there has been a more gradual steady climb, until in 1926 there were 281 acres of potatoes on the Project.

In other crops the tendency has been much the same. There were 175 acres of beans on the Project in 1925 and in 1926 there were only 36 acres. In 1924 there were 76 acres of apples, in 1926, only 40 acres. Onions evidently looked promising in 1921 when there were 25 acres, in 1926 there was only one acre grown. The pea acreage jumped to 1,622 acres in 1924 and then dropped to 729 acres in 1926. Even gardens have reflected the uncertainties and irregularities of cropping plans. In 1919 there were 368 acres of gardens and in 1923, only 219 acres. In 1926 there were 287 acres devoted to garden crops.

Conditions Favorable

It is very evident that more careful attention should be given to many of the horticultural crops. Without question, conditions are favorable for efficient and profitable production of many of them providing proper methods are used. Occasional off-years when prices or yields are low are not a fair basis for determining the value of a crop.

The following recommendations are made:

Well cared for orchards on the Flathead Project when located on the right soil types are successful and the cost of production is less per box than in the apple-growing districts farther west. The McIntosh, the leading

variety on the Project, brings a better price on the market than any other apple. There is opportunity for moderate plantings of new orchards. The vitality of old orchards should be restored to bring them into maximum production of high quality fruit.

While the McIntosh is the only variety recommended for commercial plantings, such varieties as Yellow Transparent, Wealthy, Jonathan, Rome Beauty, Vanderpool Red, Grimes Golden, Newton Pippin and Florence and Hyslop crabs, are being grown successfully and may have a place in the home orchard, although the McIntosh should make up from 50 to 80 per cent of the plantings.

The establishment of marketing organizations is recommended to promote orderly marketing and better grading and packing.

Cherries and Other Fruits

The western Montana sour cherry is bringing a premium as a canning product and increased plantings are recommended in favorable areas. The development of the canning industry must be borne in mind if plantings are made on a commercial basis. The large Montmorency and the English Morello varieties are recommended. Planting should be made at the rate of about 90 per cent Montmorency and 10 per cent English Morello, the latter being planted for pollination purposes.

Sweet cherries are grown on some farms and should be planted for home use only. Lamberts, Royal Ann and Tartarian are leading varieties.

The Italian and Tragedy prunes and most plum varieties can be grown for home use.

Pear blight is prevalent in the district and plantings of this fruit should be made lightly, if at all.

There is room for increased strawberry production on the Project but plantings should be limited to small acreages. The Progressive (everbearing) and Senator Dunlap are among the leading varieties.

The red raspberry also may be grown on a commercial scale but only small plantings are justified. The Latham is a leading variety.

Farmstead Improvement

The improvement of the farm home grounds by the planting of trees, shrubs and flowers, and shelter belts where needed, is strongly recommended. Such plantings improve living conditions, add greatly to the comfort and enjoyment of farm life, provide shelter and protection for the home, livestock, garden and orchard and add to the intrinsic value of the farm.

Potatoes and Truck Crops

In some parts of the Project soils are adapted to commercial potato production. Since the Netted Gem sells at a premium on many markets this variety is recommended for commercial planting. Where conditions

are favorable potatoes deserve more favorable attention than they have received. "Plunging" should be avoided. A fairly constant acreage should be planted each year.

For commercial potato production only standard varieties should be grown, preferably the Netted Gem, and potatoes should be sold under United States Standard grades. Only No. 1 or fancy grades should be placed on the market, culls and No. 2's should be left on the farm. Only clean sacks and packages should be used.

A low unit cost of production is necessary in a district so far from markets as the Flathead Project. Since yields per acre largely determine cost of production the use of inferior seed stock must be discontinued. Certified seed has demonstrated a higher production than common seed and its use is recommended. Farmers growing high producing strains should at least plant enough certified seed to check with their own stock.

Certified seed production deserves a place in the agriculture of the Flathead Project but present markets will not justify greatly increased production. The effort being made to extend the market for Montana certified seed in western states deserves the hearty encouragement and support of the farmers of the Flathead Project.

The following general suggestions on irrigation practices are important for best results with potatoes:

Where the sub-soil does not contain sufficient moisture to produce maximum growth, the first water should be applied when the tubers are setting. Irrigating at this time has a tendency to increase the set.

Succeeding irrigations should be made only as water is needed to maintain maximum growth.

If the soil is allowed to dry out enough to check growth the application of water is likely to cause suddenly renewed growth, resulting in knobby potatoes.

Vegetables

Nearly all vegetables do well on the Project when given ordinary care. Every farm should produce enough of the common garden products for home use and there is a possibility for producing certain vegetables on a commercial scale to meet local market demands.

Report of Poultry Committee

A. L. Meek, Chairman

Poultry production is one of the neglected phases of farming on the Flathead Project. With climatic conditions as favorable for poultry as in any part of Montana and with known low-cost feed producing possibilities,

poultry should have an important place on every well organized farm, deserving far better care and greater attention than is being given at present.

The 1926 Project census shows 47,368 head of poultry on the farms of the Project—averaging about 80 birds per farm. Present numbers may be entirely satisfactory until new markets have been developed and efficient marketing organizations established to justify an increase. The greatest demand at present is for increased production per hen. An average increase of 10 eggs per bird per year would mean at least 40,000 dozen eggs more than are now produced. It is not unreasonable to assume that with proper housing, feeding, breeding and management, average production may be increased considerably more than this.

Turkeys Increasing

Turkey production rightfully is attracting increased attention. No figures are available to show the growth made in this branch of the poultry industry, but there has been a very encouraging increase both in numbers and in quality. A cooperative turkey marketing association has been established for Lake County resulting in greater attention to quality and a better all-around appreciation of the value of the crop. Turkeys deserve a leading place in the agriculture of the Project.

The committee makes the following recommendations:

The number of eggs produced on the Project at the present time is not sufficient to warrant joining the Western Montana Cooperative Egg and Poultry Association as a unit, although many individuals may find it to their advantage to do so.

Since the necessary feeds for preparing the desired poultry rations are not always available throughout the year, poultrymen should secure their winter feed supply in the fall to insure a uniform laying ration throughout the winter. Dealers may assist by carrying adequate supplies of standard feeds so that they will be available at all times.

A more uniform egg production throughout the year results in a more uniform price from season to season. Production may be stabilized to some extent if more of the chicks are hatched in February to insure their starting production in August and September.

Where individual growers wish to supply special egg markets the flocks should be large enough to maintain production that will supply the market throughout the year. Neighboring farmers may cooperate in establishing and supplying such special markets. Such individuals may find it particularly to their advantage to affiliate with the Western Montana Cooperative Egg and Poultry Association.

More rigid culling of flocks will increase profits.

Where the grower is not primarily interested in egg production dual purpose birds are recommended. Farm flock owners will usually find it to their advantage to replenish their flocks by the purchase of day-old chicks.

Better adapted poultry houses are needed. Either the old houses may be remodeled or new houses built but in either case factors as light, ventilation, temperature and sanitation must be given the most careful attention. The model poultry house recommended by the Montana Extension Service is adapted to conditions found on the Project.

Greater attention should be given to the prevention of losses from worms, vermin and disease.

Expansion Advised

Conditions are favorable for the expansion of turkey production on the Project, particularly in the areas where range is available. Inexperienced growers should not attempt to go into turkey production on too large a scale. For the ordinary farm, where turkeys are a side line, the turkey flock should consist of one tom and not more than 12 hens.

Where coyotes are a menace turkey growers should cooperate with the United States Biological Survey in the employment of a hunter for the extermination of these predatory animals.

The recently established county pooling plan, whereby turkeys and other poultry are marketed in large lots, will undoubtedly be to the advantage of the grower since this system of marketing insures better grading and shipping and stimulates improvement in quality, resulting in higher prices. With this system of marketing capon production offers possibilities and deserves careful trial on farms where there is sufficient feed and where the capons may be kept away from other poultry.

Buyers of day-old chicks, hatching eggs or adult breeding stock of chickens or turkeys should secure their supplies from accredited hatcheries and flocks. Poultry growers on the Project who plan to establish a breeding stock, hatching egg or day-old chick business should have their flocks or hatcheries accredited.

Report of Beekeeping Committee

F. M. Hillman, Chairman

Until recently the number of colonies of bees on the Flathead Project have shown an increase almost parallel with the increase in sweet clover and alfalfa acreage as indicated in Fig. 12.

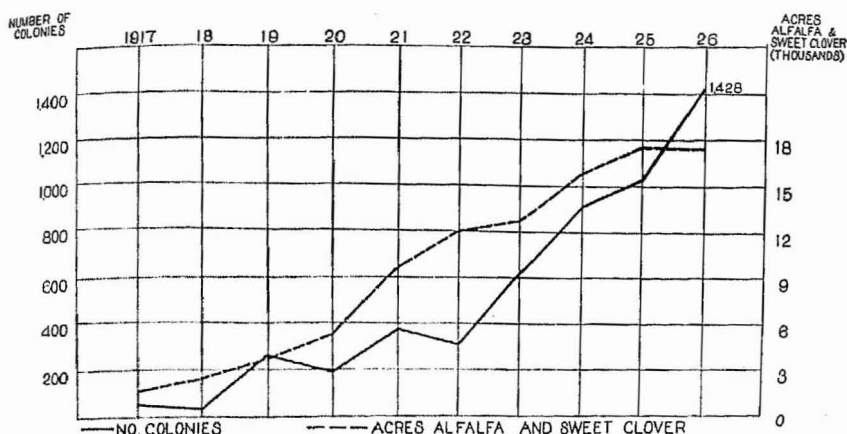
BEE TREND - 1917-26
FLATHEAD PROJECT

Fig. 12

It will be noted from the figure that, except for the last few years, there has been an abundant source of feed for bees. In 1922 there were approximately 36 acres of alfalfa and clover for each colony. In 1926 this ratio was reduced to one to fourteen. On the Camas Division of the Project where there are 422 colonies, the ratio is one to six.

On this Project bees obtain all of their surplus honey from alfalfa and sweet clover. With a decrease in acreage of alfalfa devoted to seed and increase in the practice of cutting hay in its early blossom stage, the bee-carrying capacity of the project is not increasing, in spite of a generally increased alfalfa acreage. An increase in sweet clover pasture would improve the situation.

Of the surplus honey gathered by bees, five per cent comes in June, forty per cent in July, forty-five per cent in August and ten per cent in September. In the latter part of April and May, bees usually gather enough honey for their own maintenance.

Many of the beekeepers have only enough colonies to supply their home needs and many are in the business on such a small scale that it does not pay them to take care of their bees properly. On the Camas Division, 28 per cent have from 20 to 100 colonies; 12 per cent have from 10 to 20, and 60 per cent have less than 10.

The average production per colony in Montana is 80 pounds and it is doubtful if the Project average will exceed this amount. Variations in production per colony range from 0 to 300 with the Project average ranging between 50 to 125 pounds from year to year. Through efficient management one beekeeper reports an average of 125 pounds over a period of years.

Ordinarily from 30 to 40 pounds of honey are left in the hive for wintering. Most of the commercial beekeepers protect their colonies during the winter by packing, but such protection is not generally provided by others.

The Project as a whole is comparatively free from disease, some localities being entirely free, others reporting losses of from five to twenty per cent from American foul brood.

Beekeepers do not use high grade queens to any extent. Some re-queen from their own stock when necessary.

It is estimated that it is necessary to obtain at least 85 pounds of honey to pay cost of production.

Honey has not yet been produced in sufficient quantity to provide carlot shipments and yet production is much greater than is necessary to supply local markets. At present the beekeepers of the Project are in an undesirable marketing position.

It is recommended that there be no further expansion in number of colonies where there is less than seven acres of alfalfa and clover to each colony of bees.

The Flathead Project is a good commercial honey producing section but more intense specialization is necessary to successfully meet competition of other districts. There are too many beekeepers with too few colonies to pay to take care of them properly. For the good of the industry as a whole as well as for the individual farmers it is recommended that no one keep bees except those who can maintain at least 20 strong colonies.

Local beekeepers associations should be formed to stabilize local prices, to handle the marketing of surplus honey and to provide pools for purchase of cans and other supplies.

Provisions should be made for adequate state inspection for the control of foul brood.

Sweet clover should be planted wherever it can be efficiently used as a feed crop.

The use of high grade queens should be encouraged.

Report of Farm Living Committee

Mrs. C. B. Hogan, Chairman

Improved methods and increased efficiency in the productive farm enterprises are worthwhile only as they, directly or indirectly, are reflected in a more comfortable and satisfying farm life and a higher standard of living.

The interest and attention that is being given to the improvement of production methods is a mark of progress but it is an even greater mark of progress that the men and women of the farms of the Flathead Project

are giving increasing thought as to how the results of these improved methods can be translated into the maximum benefits for the farm family, the farm home and the farm community. It is recognized that economic progress is the foundation upon which farm life rests and that foundation must be sound and substantial.

Making the farm financially successful deserves the best thoughts and energies of all members of the farm family. The use to which financial success, whether it is small or great, is put deserves an equal amount of attention.

This report of the home living committee for the Flathead Project considers the highly important phases of farm life which are centered about the farm home.

The recommendations and conclusions of the committee are:

The amount of money spent for the family living is not necessarily indicative of the standard of living maintained. What the money is spent for is fully as important as how much is spent in determining that standard.

Among the essentials of a good standard of living are comfort, convenience, sanitation, satisfaction, hospitality and opportunity for relaxation, entertainment and self-improvement.

In general there is wide opportunity for improving conditions which will relieve the irksomeness of many of the more laborious duties of the farm woman such as washing, ironing, scrubbing and cleaning. Many homes do not have water systems or adequate provisions for sewage disposal.

To remedy many of the more important conditions which need correcting the committee recommends the installation of water systems involving the use of stationary engine, siphon, gravity, hydraulic ram or cistern, whichever best meets conditions.

Septic tank, cesspool or open drain systems are recommended for sewage disposal.

The pipeless furnace or circulating hot air system are desirable heating arrangements for the rural home.

Electric light or carbide lighting systems are highly desirable but the better kerosene mantel lamps are considered more practical at present.

The time and labor involved in carrying on the ordinary duties of the farm home can be decreased by a better arrangement and use of present equipment. The farm woman may well give more thought and study to means and methods of conserving time and energy through increased efficiency.

Food and Health

Health records for Lake County show that 46 per cent of the children of Lake County are underweight and of the underweight children, 27 per cent are seven and a half per cent or more below the standard. While

these figures indicate a condition similar to that found in many other parts of the country they do suggest opportunity for much improvement.

The most common physical defects are rickets, bad posture, bad teeth, infected tonsils and adenoids, frequent colds, constipation and intestinal troubles. Most of these can be avoided by greater attention to food and diet and the correction of physical defects.

The daily food schedule should include a good breakfast; no tea or coffee for children; at least three cups of milk; two vegetables other than potatoes (one should be a leafy vegetable); two servings of fruit; a raw fruit or vegetable or canned tomatoes; whole grain in bread or cereal; one serving of any two of the following: cheese, eggs, meat, dried beans or peas; and four or five glasses of water. There should be no sweets between meals.

The farm should be made to furnish as much of the family food supply as possible. Cheese should be made at home when milk is plentiful and the price of butter fat is low.

Parents should cooperate with the teacher and county superintendent of schools in establishing one hot dish for the noon meal at school. Children should bring milk to school.

Clothing

Clothing which is comfortable, suitable, attractive, serviceable, reasonable in price and hygienic is another essential for a good standard of rural living. Most rural women of Lake County have sewing machines and do all or part of the family sewing but there is opportunity for organized study and effort in the construction and selection of clothing.

The committee believes that all rural women should do some home sewing, the kind and amount to be determined by the materials on hand; cost; availability and comparative values of suitable ready made garments versus home made garments; training and experience of the women and girls of the family; sewing equipment available; time and strength of homemaker; age, number and sex of children.

The fourth essential to a good standard of living is time and opportunity for mental and spiritual development to be secured through education for both adults and juniors, to include the reading of good literature, music, nature study and recreation. In this connection the committee favors the mother's vacation camp idea.