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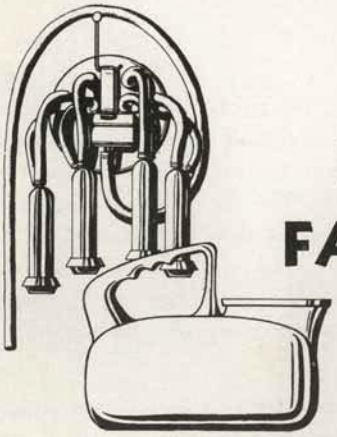

UPGRADING FARM DAIRY FACILITIES for MANUFACTURING MILK

R. V. Withers, J. L. Barnhart, J. E. Dixon

The large population centers which currently use Idaho manufactured milk products are raising health and sanitation requirements. Some already require that milk powder for human consumption be made of Grade A milk. Trends suggest other markets will adopt such regulations. Since Idaho producers do not control health regulations in consuming sections, they must choose between meeting new requirements or losing their market. This study examines the cost of converting to Grade A and considers the alternatives where conversion is not practical.

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Questions To Be Answered Before Upgrading

Assuming the trend toward Grade A milk powder will continue, the Idaho milk powder industry is faced with a problem of upgrading milk production facilities and practices. The farmer producing milk for powder will be most directly affected. If he desires to continue selling milk he will need to meet minimum Grade A requirements or be forced to accept a lower price in the event he can find a buyer.

Before a farmer decides to upgrade, he should consider such questions as: How much will it cost me to upgrade? Are there other enterprises which would bring a better return from this amount of investment? If I upgrade, should I continue with my present size of dairy herd or expand to better use my equipment? The answers depend upon many factors which each farmer must consider.

This study was organized to present material which would help the farmer decide how he can best meet the problem when it arises. The study attempted to answer the following questions:

1. **What are the costs and income of the present organization on farms producing milk for powder?**

2. **What would it cost to upgrade farm dairy facilities to meet minimum Grade A requirements?**

3. **If the farmer chooses to discontinue the dairy enterprise rather than to upgrade, what alternatives are available?**

A Summary of This Dairy Study

Changes are occurring in dairying, as in other enterprises, which will bring about some farm business adjustments. Some markets now require that milk powder be made from milk produced under Grade A conditions. Probably other markets will also adopt this rule. Since producers cannot determine health department requirements at the market their only recourse is to meet the requirements or lose the market.

The farmer delivering milk to butter-powder manufacturing plants must consider the costs of upgrading production or alternative enterprises to take the place of selling milk. Some farmers who upgrade may also want to increase the size of the dairy enterprise to increase efficiency.

In the Boise Valley and Jerome Area of Idaho where a study was conducted in 1960 and 1961 the average estimated cost of upgrading to meet Grade A requirements ranged from $610.33 on farms with more than 29 cows to $1,345.09 on farms where less than 10 cows were milked. For individual farms the range of estimated upgrading costs was from zero up to $5,000. In most cases it would be less feasible for farmers with small herds to upgrade than for those with 20 or more cows. However, small farms had fewer alternatives available than did the larger farms since resources were limited. Income was low on the smallest farms regardless of enterprise combinations budgeted.

In each of the six groups of farms studied, one or more alternatives besides improving the dairy enterprise was more profitable than the typical enterprise combination used. This indicates that satisfactory alternatives do exist for the farmer should upgrading be required. Each farm, however, must be studied separately as a unit. Some probably should give up the sale of milk and concentrate on other enterprises. This is especially true where feed supplies are short. Other farmers

may choose to upgrade and expand dairying to an economic unit of 36 or more cows. In any case the choice is an individual one. One factor which should not be overlooked is that a poorly managed farm is not likely to be profitable regardless of the enterprise combinations used. Also farmers must be aware of changes in market situations as well as changes in production facilities and practices if they are to succeed in today's rapidly changing markets.

The findings of this study are arranged as follows:

Acknowledgment

The authors wish to acknowledge the work of Scott Walker under whose direction this project was initiated and who collected many of the data for the study. Acknowledgment is also expressed to those farmers who cooperated in giving information about their own farms. Without their help this study would not have been possible.

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UPGRADING FARM PRODUCTION of MANUFACTURING MILK

R. V. Withers, J. L. Barnhart, J. E. Dixon

INTRODUCTION

Dairying is a major farm enterprise in Idaho. More than 11 percent of the cash received by Idaho farmers for products sold in 1963 was for dairy products. This amounted to nearly 52 million dollars.[1] Additional income is received from the sale of dairy cattle and calves. Large quantities of feed are marketed through dairy cattle.

Because of Idaho's location with respect to large centers of population, most of the milk produced is manufactured into products which can be stored and transported more readily than fluid milk. Over one-half of the manufacturing milk in Idaho goes into butter and nonfat dry milk.[2] Most of this milk powder is shipped to markets outside of the state. Such markets must be maintained if Idaho is to continue large-scale production of milk powder. Therefore, Idaho milk producers and processors must provide the quality of milk powder desired by the consumers in market areas.

Until the present, milk powder produced in Idaho has been able to compete quite well for the existing market. However, the market for dairy products now, as in the past, is changing.

Health and sanitation requirements have become more and more strict as society has progressed. The consumer wants and deserves to have the best quality and most healthful foods that can feasibly be produced. Producers of milk for manufacture cannot afford to ignore the consumer's plea for safe and sanitary milk products.

City and state health departments attempt to protect the public by various means. Food production and processing must meet certain standards. Some areas require that milk powder for human use be made from Grade A milk. It will probably be only a matter of time until other markets will adopt such a law. In addition the U. S. Public Health Service Milk Ordinance

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[1]Figures were derived from data in the **Dairy Situation** and the **Farm Situation**, USDA, ERS, Washington 25, D. C.

[2]United States Department of Agriculture, **Production of Manufactured Dairy Products, 1961**, Washington D. C. Statistical Reporting Service, Crop Reporting Board, July, 1962.

and Code requires Grade A dried milk to be used in Grade A milk plants where cottage cheese milk is fortified with solids.

Idaho milk producers and dairy officials have no control over health department regulations in other areas. Therefore, the only choice available to the milk powder industry is to meet requirements or lose their market. Since Idaho produces a small proportion of all milk powder her share of the market could easily be absorbed by other areas. It is not a matter of upgrading to expand the market, but to maintain the existing market.

PROCEDURE

Information for this study was obtained from randomly selected milk producers delivering milk to butter-powder plants in the Boise Valley and Jerome Area of Idaho. These producers provided detailed information on time spent, receipts and dollar expenses and other information pertaining to farms on which milk was produced. This not only included the dairy enterprise but all enterprises being practiced on these farms.

All dairy facilities were surveyed and an estimate of required improvements was made to determine the cost of upgrading. A building inventory was taken so that costs of changing existing buildings to various alternative uses could be calculated. These data were used in the following analysis. Budgets were worked out for the present system of operation and for several alternative plans for different farm sizes.

Three general types of producers were observed in the study. One was the dairy farmer with a dairy enterprise large enough to occupy most of his time either with dairying itself or in producing feed for his dairy cattle. Dairying was his major enterprise.

The second type of producer was one for which dairying was not the major farm enterprise. Dairy enterprises varied from very small to quite large on this type of farm, and were carried on to supplement other enterprises by providing year around employment and income.

The third type consisted of farmers with rather small farms. Dairying was the major farm enterprise but even this was on a small scale. The operator's time was not well utilized and returns were low. Many farms of this type were operated on a part-time basis with the operator working part or full-time off the farm.

Each of the three types of farms have different problems with regard to upgrading. The established dairy farmer is fairly well committed to dairying. He has the best facilities of any group and it would take less capital for him to upgrade his dairy. He will be most likely to stay in the dairy business.

The farmers in the second group obtained a major part of their farm income from crops or other livestock enterprises. Farmers in this group often had rather poor dairy facilities and were not firmly committed to dairying.

The third group of farms present several unique problems. Dairy facilities are often obsolete and in a poor state of repair. Considerable investment would be required to upgrade dairy facilities. There are likely to be fewer logical alternatives available to this group than either of the other two. Per-

haps the capital required to upgrade the dairy facilities could be better spent on some other enterprise or to provide the farmer with more land. There is also the possibility of selling or leasing the farm and seeking full-time work elsewhere.

Another factor that adds to the already complicated problems of the milk producer is the uncertainty of government action. This study does not analyze government policy but assumes a continuation of the present type of price support program. Any major change in the governmental dairy program or policies could obscure conclusions made in this study.

REQUIREMENTS AND COSTS OF UPGRADING

The requirements for producing Grade A raw milk on farms are set forth and well explained in the United States Public Health Service publication **"Milk Ordinance and Code."** This code has been adopted as the governing regulation in most states, large cities, and with other regulatory agencies. It is accepted, generally, as the final word on Grade A requirements.

Among the primary requirements for farms to produce Grade A milk as set forth in the **Milk Ordinance and Code**[1] are the following:

1. A sanitary supply of potable water free from sources of possible contamination must be available.
2. The farm must have a milk house or milk room of proper construction protected from fly invasion, equipped with running water, water heater, wash sinks, racks for storage of milking equipment, and other sanitary facilities.
3. Facilities to cool milk to below 50°F. within two hours after milking are required.
4. Floors and gutters of that portion of the barn or stable where cows are milked must be concrete or other impervious material. They shall be graded to drain and kept clean. No swine or fowl shall be permitted in the milking barn or stable. Horses, dry cows, calves, etc., if stabled in the milking barn, must be confined to pens, stalls, and stanchions which shall be kept clean and in good repair.

There are a number of other detailed requirements set forth in the code, but since those listed in the above paragraph may be the most costly to install, attention is focused primarily on them.

The following analysis considers farms by two classifications—size of farm by acres and size of milking herd by number of cows. Farms surveyed were divided into large, medium, and small sizes. Dairy herds were divided into the following classifications: those milking more than 29 cows, those milking 20 to 29 cows, those milking 10 to 19 cows and those milking from 1 to 9 cows.

Sanitation Deficiencies

The basis used in this study for sanitation requirements was the minimum Grade A requirements as outlined in the **Milk Ordinance and Code.** Over 66 percent of all Idaho farms surveyed had substandard water supply

[1]Milk Ordinance and Code, U. S. Health, Education, and Welfare, Public Health Service.

facilities. The most common problem was that the well pump was located in a pit below the ground surface and had no facilities to drain accumulated surface water. This problem did not appear to be related to the size of the herd. Farms with large herds were just as likely to be deficient in water sanitation as were the farms with smaller herds.

The second major deficiency in meeting requirements was failure to provide milk cooling facilities. The proportion of farms failing to meet the requirements varied from 33 percent on farms milking 30 or more cows to 78.5 percent on farms with less than 10 cows.

The third most common deficiency was lack of a milk house or milk-handling room. This problem was also related to the size of the herd. Of the farms with more than 29 milking cows 16.6 percent had no milk house or milk room. Sixty-nine percent of the farms where less than 10 cows were milked had this deficiency. Figure 1 gives the proportion of farms deficient in the above three areas by size of milking herd.

Other items needing attention on many farms included installation of concrete floors and gutters, other barn repairs, drainage of cow yards, and general cleanup.

Cost of Upgrading

Approximate costs for correcting the most common deficiencies were as follows: raising water pump to the surface, $250; adding a milk cooler, $600; adding new milk house or milk room, $650; and installing concrete, $20 per cubic yard. These costs would vary somewhat with area, amount of work done by the farmer, and size of enterprise.

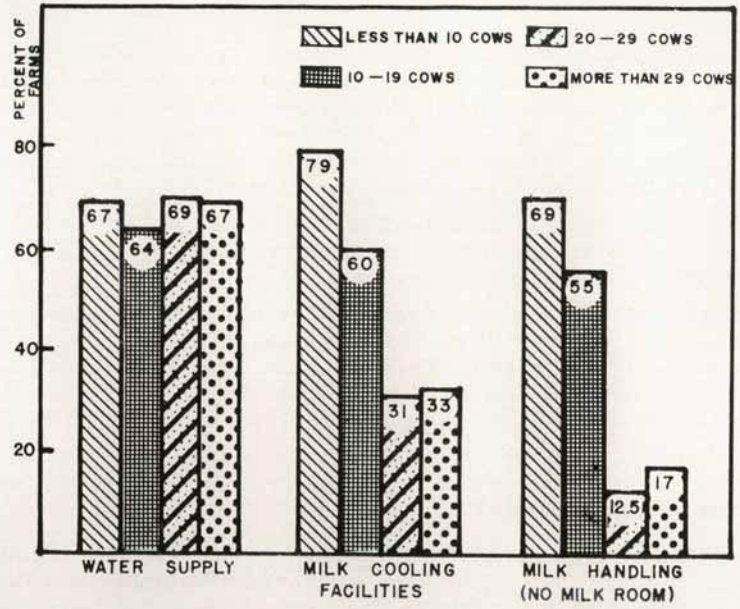

Figure 1. *Factors in which farms with different milking herd sizes were deficient in meeting Grade A production practices, Idaho, 1961.*

The average cost for upgrading farms with more than 29 cows was estimated at $610. For those with 20 to 29 cows the average cost was $847. Farms with 10 to 19 cows needed improvements estimated to total $1,168 and those with less than 10 cows an average of $1,345. Figure 2 illustrates these costs along with proportion of the cost needed for different purposes for average conditions.

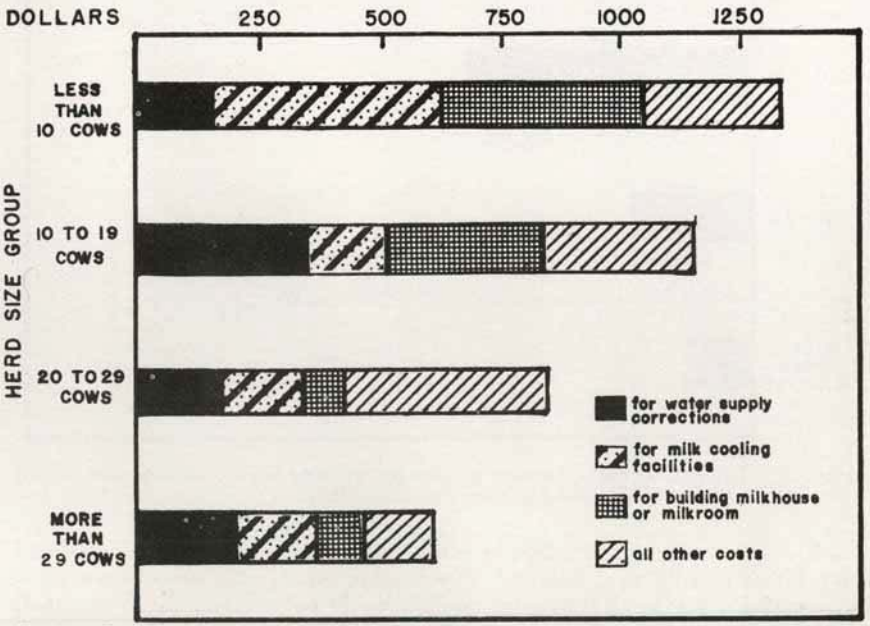

Figure 2. Average estimated cost per farm of upgrading production facilities for four herd sizes. Total cost is broken down according to individual items, Idaho, 1961.

Upgrading costs were figured on the basis of the existing herd size. One reason average costs were higher for small herds than for large herds was that larger herds tended to have more facilities and better equipment at the time of the study than did the smaller herds. Thus for an average situation farms with larger herds could upgrade much more easily than those with less than 10 cows.

Cost differences were even more obvious when figured as cost per cow rather than cost per farm. Average upgrading costs per cow ranged from $14.03 for herds with more than 29 cows to $166.65 per cow for herds with less than 10 cows. Figure 3, page 10, illustrates these differences.

No one can say that any certain number of cows is the minimum number for which efficient operation is possible but this and other studies have indicated many herds are too small for efficient low cost operation. One recent study in northern Idaho indicates 15 to 17 cows are required to cover operation costs with no labor income to the operator. The optimum size for a one-man dairy was 52 cows.[1]

[1]Brooks, Leonard K., Scott Walker, and Jack Weber, **Analyzing Dairy Farms for Maximum Profit**, Idaho Agricultural Experiment Station Bulletin 301, April, 1959.

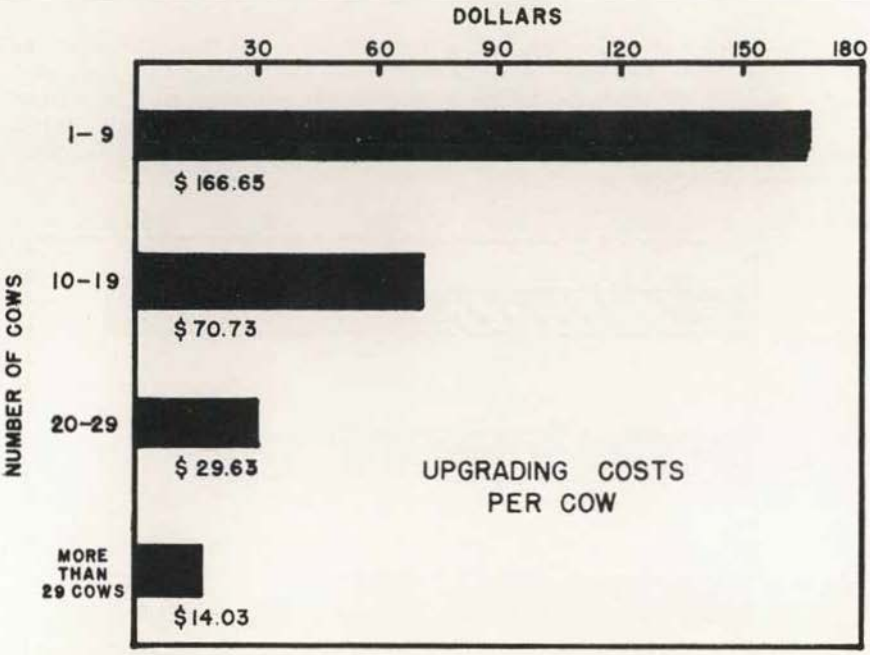

Figure 3. Upgrading costs per cow by size of milking herd on farms delivering milk to butter-powder plants, Idaho, 1961.

Another study indicates that at least 30 cows are required on specialized dairy farms to support a family.[1] Where other enterprises are carried on a farm, perhaps a somewhat smaller number could be justified. Even so, small herds become inefficient because minimum milking space and milk handling facilities are necessary to support a dairy of any size. Depreciation costs per cow for this equipment become prohibitive for a small number of cows (10 or less). For example, suppose a person sets up the minimum of Grade A equipment which may have $500 of depreciation per year. If only 5 cows were milked the depreciation cost would be $100 per cow. Since 20 cows could be milked with the same equipment, the depreciation cost becomes $25 per cow. Other items such as labor efficiency and feed handling favor larger herds.

When average costs of upgrading were figured for the different farm size groups, the medium-sized Boise Valley farms were lowest with an average of $871.81 per farm and the group with the highest average cost of upgrading was the small-sized farms in the Jerome Area with $1,391.80.

ALTERNATIVES TO PRESENT MILK PRODUCTION

Size of Farms Studied

Although size of herd was a convenient way to classify farms there was little relation in many instances between herd size and size of farm. Size of farm would be more meaningful than herd size when considering alternatives

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Shultis, Arthur, et. al. **Dairy Farm Management**, Berkeley, California, California Agricultural Experiment Station, Ext. Ser. Circular 417 Revised; Jan., 1963.

available to supplement or to replace dairying. The 102 farms in the study were divided into size groups. Since there are basic differences in the agriculture of the Boise Valley and the Jerome Area, farms in these two areas were studied separately. In each area the farms were divided into large, medium, and small farms on the basis of acreage. There were equal numbers of farms in each group.

Size Group	Boise Valley	Jerome Valley
Small	40 acres	80 acres
Medium	80 acres	130 acres
Large	175 acres	290 acres

Note that the Jerome Area farms were considerably larger than those in Boise Valley. On the other hand the Boise Valley had a wider variety of crops due to its longer growing season.

Cost of Expansion to a 36-Cow Enterprise

For many farmers who plan to continue to sell milk, milking herds are too small to make upgrading feasible. These individuals may consider expanding the size of the dairy enterprise as well as upgrading. For this reason, estimates were made of what it would cost a typical farmer in each of the size groups listed above to upgrade and expand to a 36-cow herd. This size would give the farmer an average of about 30 cows milking throughout the year, the others being dry. There is no magic in this size of herd which will assure success, but this is believed a minimum goal for a family expecting to gain a livelihood from a dairy enterprise. Smaller-sized herds are less likely to use buildings, equipment, and labor as efficiently as those milking 30 or more cows. In addition the lower volume of milk from smaller herds brings correspondingly lower receipts. In some cases smaller herds may be justified as a supplementary enterprise or on part-time farms.

Six farm situations were analyzed, each representing a size group—three for the Boise Valley Area and three for the Jerome Area. A typical farm was assumed for each area. Typical was used to mean the kind of a farm most likely to occur in each size group and in each area, being limited to farms from which milk was delivered to butter-powder plants. Typical is not necessarily average but the most probable to exist in a group. The farm situations analyzed were assumed to have buildings and enterprise combinations which were also typical for the area.

Besides upgrading, additional facilities would be needed to accommodate the 36-cow herd previously mentioned. It was assumed that the ordinary farmer would use his existing buildings in the expansion rather than build all new ones. For example, an old poultry building could be expanded and remodeled for a calf barn. An existing loafing shed might be expanded. Table 1 gives the requirements and costs used in figuring expansion cost. These were thought to be conservative costs and take into consideration that a major part of the work would probably be done by the farmer. No attempt has been made to provide an efficient layout of buildings and equipment. Consideration of efficiency in the layout and location of buildings could increase the investment costs shown here but would probably be justified by operating cost savings.

Table 1. Housing requirements and expansion costs for 36 dairy cows and 16 heifers and calves.[1]

Facility	Needed Space	Expansion Cost
Milk Room and Milking area	Same as Grade A requirements	Estimated by individual farm
Loafing area	60 sq. ft. per cow	90 cents per sq. ft.
Heifer shed	30 sq. ft. per heifer	90 cents per sq. ft.
Calf barn	20 sq. ft. per heifer	90 cents per sq. ft.
Hay storage	Assume outside storage	No building cost
Grain storage	50 cu. ft. per cow[2]	30 cents per cu. ft.
	25 cu. ft. per heifer[2]	30 cents per cu. ft.
Bedding storage	Assume outside storage	No building cost

Assume present buildings for overhead uses such as home, machinery storage, and shop, will be satisfactory for a 36-cow herd.

[1]Unit Building Costs from Neubauer, L. W. and A. B. Walker, **Farm Building Design**, p. 591.
[2]This figure assumes home grown grain with storage needed for a whole year's supply. If grain were purchased, enough storage for a four-week supply would be sufficient. An allowance of 8 to 10 cubic feet per cow would be appropriate.

An estimate of costs for upgrading and expanding the medium-sized Boise Valley farm is given in Table 2. When the study was made this farm had a dwelling house, a general barn, an old poultry house, a loafing shed, grain storage and machine storage. About half of the medium-sized Boise Valley farms had milking areas in buildings other than the general barn. Cost of additional cows was not considered in this analysis, but should not be overlooked. The herd could be increased by purchase of additional cows, or enlarged gradually with heifers raised on the farm.

Table 2. Cost of upgrading, remodeling, and expansion of dairy facilities on a medium-sized Boise Valley farm to a 36-cow unit.

Area or Facility	Present Conditions	Needed Requirements	Added Cost
Sanitation improvement	Variable	Grade A	$895[1]
Electrical service	60 ampere unit	200 ampere unit	$150
Loafing area	1,200 sq. ft.	2,220 sq. ft.	1,020 sq. ft. x.90=$917
Heifer shed	Remodeling poultry buliding 400 sq. ft.	480 sq. ft.	remodeling 400 ft.x.90x.3 =$108[2] Expansion 80 ft.x.90=$72
Calf barn	150 sq. ft.	80 sq. ft.	No added cost
Hay storage	Can be stacked outside		No added cost
Grain storage	2,000 cu. ft.	500 cu. ft.[3]	No added cost
Bedding storage	Can be stacked outside		No added cost
Total cost for remodeling and upgrading			$2,142

[1]Average of estimated costs for all farms in the group.
[2]In computation, remodeling costs were figured at 30 percent of new costs.
[3]Only current needs are stored. (Up to a four-week supply).

Upgrading and expansion costs for the remaining five groups of Boise Valley and Jerome Area farms were estimated as in Table 2. The results are given in Table 3.

Table 3. Cost of upgrading, remodeling, and expanding present dairy facilities to a 36-cow unit on farms of varying size, Boise Valley and Jerome Area of Idaho.[1]

Area and Size	Upgrading Costs	Expansion Costs	Total Cost Per Farm
Boise Valley:			
Small (40 acre)	$1,237	$2,042	$3,279
Medium (80 acre)	895	1,247	2,142
Large (175 acre)	1,043	1,324	2,367
Jerome Area:			
Small (80 acre)	1,437	1,869	3,306
Medium (130 acre)	1,084	1,632	2,716
Large (290 acre)	1,143	2,503	3,646

[1]Does not include additional cost for cows. These could be purchased outright or increased by heifers raised on the farm.

Alternatives To Present Milk Production

Changing the requirements of milk production for powder would be a serious matter if there were not alternatives available to farmers. Fortunately, there are a wide variety of enterprise combinations possible in southern Idaho. These range all the way from livestock farms to farms raising no livestock. Some of the most important enterprises available are shown in Table 4. The Boise Valley has a slightly longer growing season so that more fruits and vegetables can be grown than in the Jerome Area.

Table 4. Some crop and livestock enterprises of importance in the Boise Valley and in the Jerome Area of Idaho, 1961.*

Crops:		
Hay	Wheat	Red clover seed
Silage	Corn for grain	Alfalfa seed
Pasture	Beans	Vegetable seeds
Oats	Sugar beets	Sweet corn
Barley	Potatoes	Lima beans
Mixed grain	Peas	Onions
Livestock:		
Dairy	Hogs	Sheep
Beef	Poultry	

*There are many less common enterprises being carried on particularly in the Boise Valley that are not shown here.

The farmer should recognize that the combination of enterprises in which he is engaged may or may not be best for his farm under present conditions of price and production. However, it is not feasible to change enterprises often so a great amount of judgment on the part of the farmer is required in order to pick enterprises that can be carried on successfully into the future. For example, a farmer should not invest a great amount of money in a milk-

ing parlor if he is planning to shift over to beef in a few years. Once the barn is built and equipped the farmer is committed to dairying for many years. When the facilities are worn out he then has the opportunity to make a re-evaluation of his business and decide whether to continue dairying or change to some other enterprise which will better fit his situation.

Factors to Consider in Choosing Enterprises

There are many things a farmer should consider in choosing enterprises which he expects to carry on. First he must consider the size of his farm and the resources available. If he has grazing land he will likely choose a different enterprise than if he has none. The size of his family may determine the supply of available labor. If there are buildings on the farm he may choose enterprises which will make good use of these facilities. The farmer may be limited by capital available to him. If land is available nearby that he can rent, his choice of enterprise may be broadened.

Second, the farmer has certain preferences. An enterprise may be selected even though returns could have been maximized with some other combination. Along with this, consideration must be given to the education and specialized training of the farmer.

A third item of some importance is the location of the farm with respect to markets. Farmers near their market might find many enterprises profitable that would not be considered at more distant locations. This factor is also important for enterprises requiring large amounts of seasonal labor.

Another factor a farmer may consider is off farm employment opportunities. For those with small farms this might be one of the most feasible ways of increasing income.

Typical Farm Situations and Alternatives

The alternatives usually increase as the farm size increases. One problem in choosing enterprise combinations for a farm is that certain savings become available for the larger-sized enterprise. For example, if a farmer decides to grow potatoes he needs to have access to the specialized machinery and tools required. This usually means he must purchase the needed equipment. He needs to have several acres of potatoes just to pay for the depreciation. The more acres he can handle with one set of equipment, the lower his costs are likely to be. The same problem occurs in dairying. For this reason a small farm may have only one or two economically-sized enterprises while several may be possible on a larger farm. Thus the problem of enterprise combination is considerably different for the operation of a small farm than for the large farm operator.

Several alternatives were budgeted for each farm situation. The conditions assumed or established for the budgeting problems were as follows:

1. Yields were the averages of those found on 102 farms in this study.
2. Milk sold per cow was 8,000 pounds annually, the average for the herds studied.
3. Prices used were close to the average for the most recent 10 years with adjustments for current conditions. (See Appendix, Table A).

4. Typical management was assumed for the farms in the budgets.

5. In the analysis it was assumed that most of the acreage of the farms was tillable. A few farms actually had areas of waste and permanent pasture which could not be tilled or irrigated.

If prices, yields, or cost of production change for any one enterprise, the conclusions could also change. Also for any particular farmer, yields or milk production could be significantly different from those used in this study. Therefore, when referring to these budgets, one should consider them only as a guide to what a typical farmer can do. For any particular farmer, some or all of the items may need to be adjusted to fit his situation.

The Boise Valley Area

Three farm sizes were studied, corresponding to the smallest one-third, the medium one-third and the largest one-third according to acreage. These were a typical small farm of 40 acres, a medium-sized farm of 80 acres and a large-sized farm of 175 acres. Budgets were made for each size. (See Figure 4). Net farm income for alternatives budgeted on the 40-acre farm ranged from $1,100 to $4,249.[1] The net farm income of the typical farm in this group for 1961 was $1,736. This type of arrangement neither occupied the operator full-time nor yielded a satisfactory income to support a family.

The highest income of the combinations calculated for the 40-acre farm was obtained where 42 dairy cows were kept. It should be recognized, however, that in order to keep this many cows an added investment would be required and that the operator would have little or no time for other employment.

For example, where 36 cows were kept an estimated added investment of $3,279 was required to handle the cows and upgrade production. Even so, a net income of only $3,663 was estimated. One disadvantage of the larger herd size on 40 acres was that considerable amounts of feed had to be purchased.

Note from Figure 4, that two types of crop rotation with no livestock enterprise yielded better net farm incomes than that of the typical farm with only 12 cows.

Another alternative was considered. This was the buying of stocker beef calves in the fall, feeding through the fall and winter on hay and the aftermath from crops, and then selling in the following spring. This arrangement used a smaller amount of labor than dairying, but the net income was usually lower. The stocker calf arrangement was the least profitable alternative considered on the 40-acre and 80-acre Boise Valley farms. On the 175-acre farms the stocker calf arrangement was slightly better than the typical situation of 20 cows and a small beef feeder enterprise.

On the 80-acre farm the dairy enterprise again brought a fair return where 30 or more cows were kept; however, a good crop rotation with no

[1]Net farm income does not deduct the operator's labor or interest on the investment. Labor income would be considerably less than net farm income. For farms not fully owned or where borrowed money is used, interest payments are made from net farm income.

livestock was also a possibility. (See Figure 5). Over the year, risks tend to be greater on crop farms than on dairy farms.

For the 175-acre farms all alternatives budgeted yielded satisfactory returns as shown in Figure 6. Management becomes a more important factor as enterprise size increases. Each decision has a greater impact on net revenue.

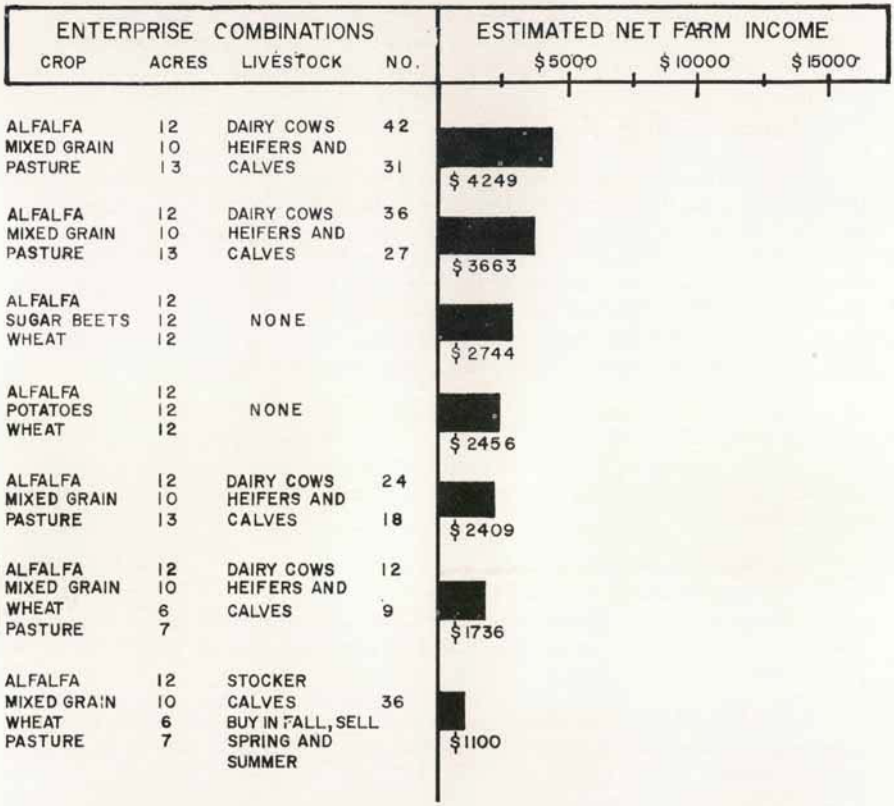

Figure 4. Enterprise combinations with estimated income for typical 40-acre Boise Valley farms selling milk to butter-powder plants.[1] The enterprise combination most typical at the time of the study is indicated with the line at the left.

The Jerome Area

Farms studied in the Jerome Area were divided into thirds as in the analysis of farms in the Boise Valley Area. An 80-acre farm represents the small size, a 130-acre farm represents the medium size and a 290-acre farm represents the large size farm delivering milk to butter-powder plants.

Budgets for several alternatives were calculated for each size of farm. Figure 7, gives estimated net farm income for the 80-acre farm. The reader

[1]The 40-acre farm represents the small-sized group in the Boise Valley Area.

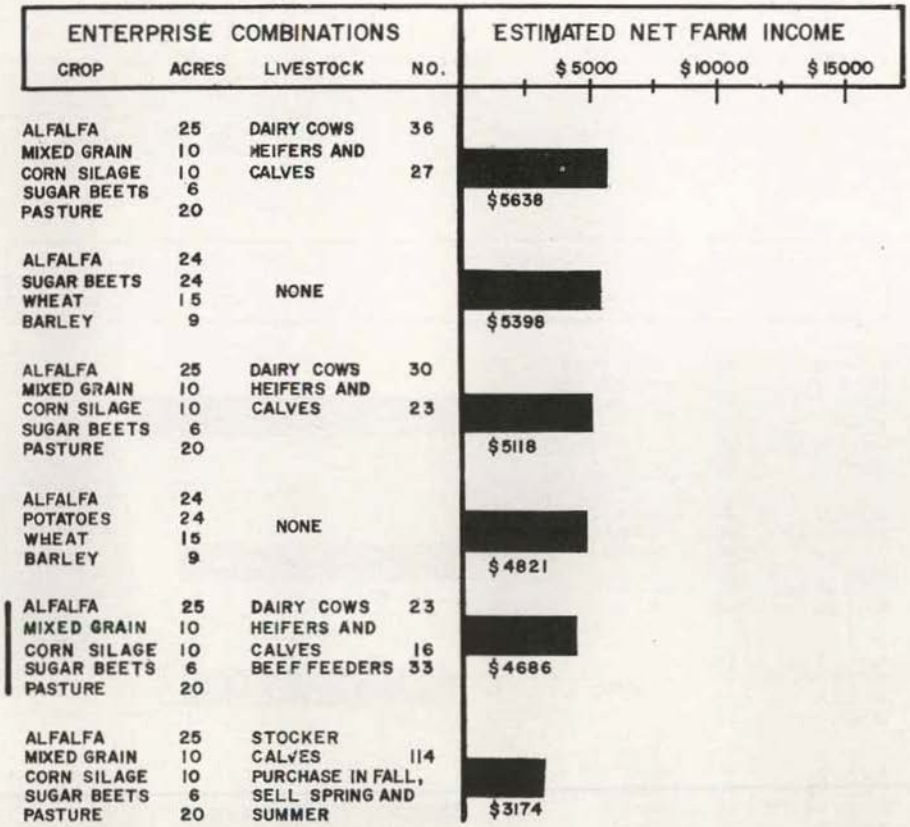

Figure 5. Enterprise combinations with estimated income for typical 80-acre Boise Valley farms selling milk to butter-powder plants.[1] The most typical enterprise combination at the time of the study is designated with the line at the left.

should keep in mind that nothing was discounted for the operator's labor and interest on the investment in arriving at net farm income. Therefore, any interest on borrowed capital would be deducted from net farm income to get actual income to the operator. Estimated net farm income for the various alternatives studied ranged from $1,624 to $6,157. The highest income alternative included a rather large dairy enterprise for which some feed would be purchased. The combination existing at the time of the study returned $3,677 with crop, dairy and livestock enterprises being carried. The 36-cow dairy returned about $5,000 as net farm income.

[1]The 80-acre farm represents the medium-sized farms in the Jerome Area.

Medium-sized farm budgets are shown in Figure 8. Estimated income for this group ranged from $3,097 with no livestock and no row-crops to $10,000 with a 50-cow dairy and more intensive farming. A close second

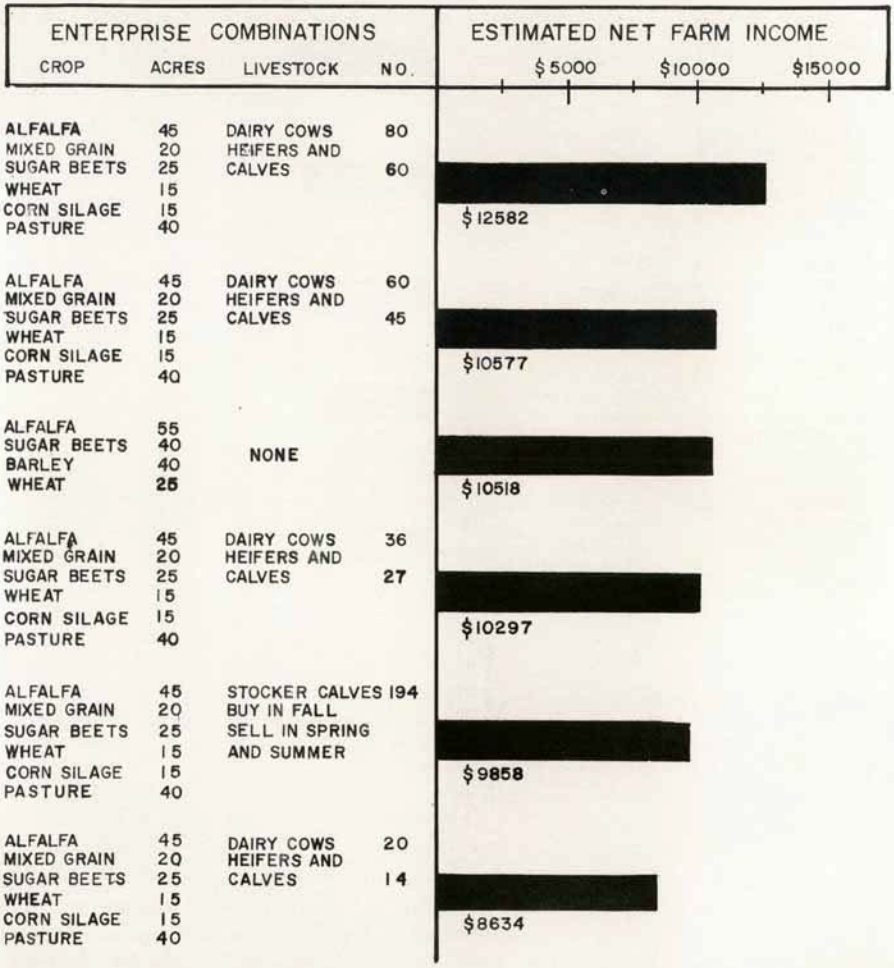

Figure 6. ***Enterprise combinations with estimated income for typical 175-acre Boise Valley farms selling milk to butter-powder plants.[1] The most typical enterprise combination at the time of the study is indicated by the line at the left.***

[1]The 175-acre farm represents the large farms in the Boise Valley Area.

alternative included no livestock but specialized in beans and potatoes. However, due to the great variation in prices of these two crops, dairying may be more dependable. The 36-cow dairy with some cash crops yielded a net farm

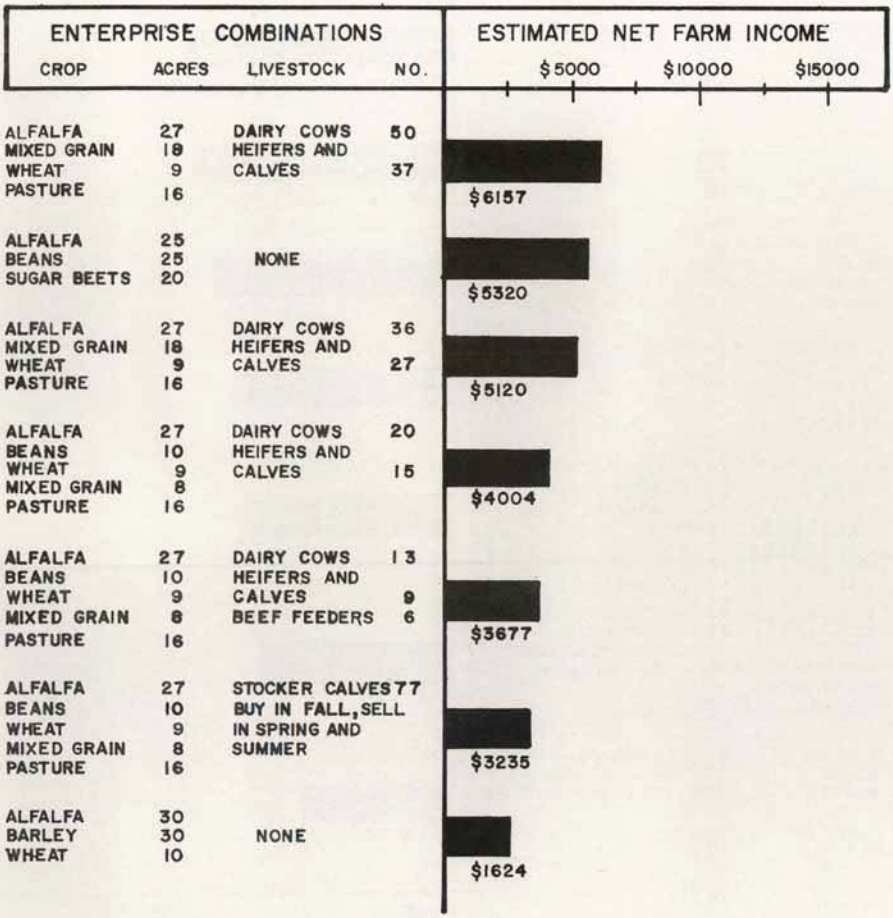

Figure 7. Enterprise combinations with estimated income for typical 80-acre Jerome Area farms selling milk to butter-powder plants.[1] The most typical enterprise combination at the time of the study is indicated by the line at the left.

[1]The 80-acre farm represents small farms in the Jerome Area.

Figure 8. Enterprise combinations with estimated income for typical 130-acre Jerome Area farms selling milk to butter-powder plants.[1] The most typical enterprise combination at the time of the study is designated by the line at the left.

[1]The 130-acre farm represents the medium-sized farms in the Jerome Area.

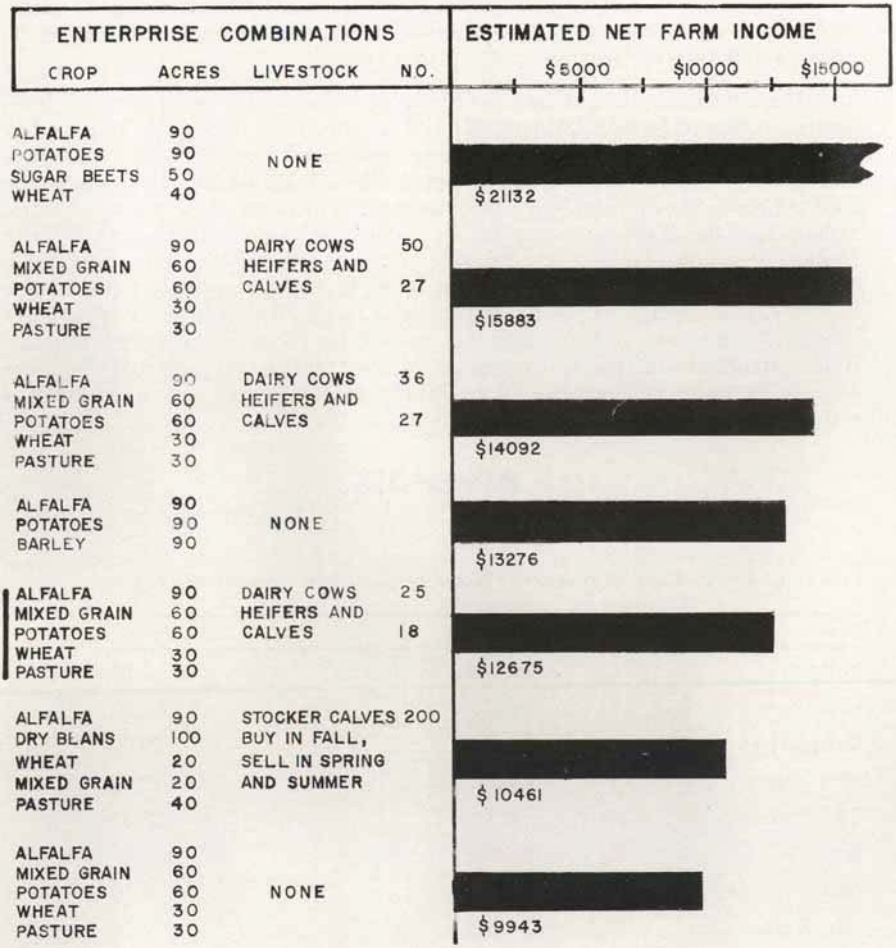

Figure 9. ***Enterprise combinations with estimated income for typical 290-acre Jerome Area farms selling milk to butter-powder plants.[1] The most typical enterprise combination at the time of the study is designated by the line at the left.***

[1]The 290-acre farm represents large farms in the Jerome Area.

income of $8,500. The typical situation on medium-sized farms at the time of the study included about 12 cows, some cash crops and was estimated to yield about $5,800 as net farm income. Someone with good ability as a buyer and seller of livestock may get a satisfactory income by buying stocker calves to feed through the winter. This alternative was estimated to yield a net income of about $7,200 when assumed prices prevail.

The alternatives considered for the large Jerome Area farm gave net farm incomes ranging from $9,943 to $21,132 as shown in Figure 9. Many other enterprise combinations could have been considered for this farm since alternatives were greater for the larger farms. On a farm of this size, where the land is practically all tillable the dairy enterprise is likely to be a supplemental rather than the leading enterprise. Crops held a major place on this farm. Under good management and favorable prices, crops could be more profitable than livestock enterprises. However, as in most cases, crops also held greater risk of price change or being adversely affected by weather. Perhaps the livestock enterprises add stability and use surplus labor in the winter months. Where livestock enterprises are kept on such farms they should be large enough to make efficient use of buildings and equipment so as to add to rather than subtract from net farm income.

APPENDIX

Table A. Prices Used in Budgets (Based on past and present prices).

Item	Unit	Price
Milk	cwt.	$ 3.25
Cull cows	head	150.00
Dairy calves	head	20.00
Beef calves	cwt.	28.00
Beef feeders	cwt.	25.00
Wheat	bushel	1.86
Barley	bushel	1.10
Mixed grain	bushel	1.10
Beans (cleaned)	cwt.	6.88
Potatoes (field run)	cwt.	1.57
Sugar beets*	ton	13.75
Alfalfa hay	ton	19.80
Property tax	acre	4.00-5.00
Irrigation water	acre	5.00
Interest on real estate	$100	5.00
Interest on capital	$100	6.00
Insurance (fire and liability)	acre	1.00

*Includes subsidy.

Table B. Annual production and yields for various enterprises included in budgets of farm situations (based on sample farm averages—1960-61).

Product	Unit	Annual Yield or Production	
		Boise Valley	Jerome Area
Wheat	bu. per acre	59	60
Barley	bu. per acre	71	64
Mixed grain	bu. per acre	71	64
Beans (dry)	cwt. per acre	..	21
Potatoes	cwt. per acre	200	200
Sugar beets	tons per acre	22	20
Alfalfa hay	tons per acre	·4.5	4.25
Milk	cwt. sold per cow	80	80

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UNIVERSITY OF IDAHO
COLLEGE OF AGRICULTURE EXPERIMENT STATION

MOSCOW—Home Station. 1,100 acres; Elevation 2,564 feet; Established 1892. Basic and Applied Research in all fields.

SANDPOINT — Branch Station. 98 acres; Elevation 2,100 feet; Established 1912. Research on The Cut-over Lands of Northern Idaho.

LEWISTON—Field Station. 22 acres; Elevation 1,413 feet; Established 1948. Basic and Applied Research on Fruits and Vegetables.

PARMA—Branch Station. 60 acres; Elevation 2,274 feet; Established 1935. Onion and Carrot Hybrids, plus research on other vegetables and fruits.

CALDWELL — Branch Station. 320 acres; Elevation 2,375 feet; Established 1906. Beef, Dairy Cattle and Sheep Nutrition and Management Research.

TWIN FALLS — Branch Station. 80 acres; Elevation 3,745 feet; Established 1950. The "Bean" Station with Research on New Varieties and Cultural Practices.

ABERDEEN — Branch Station. 238 acres; Elevation 4,400 feet; Established 1911. Potato Varieties, Disease and Storage and Cereal Grain Research, Wheat Quality Lab also located here.

TETONIA — Branch Station. 590 acres; Elevation 6,200 feet; Established 1919. Production and Maintenance of Foundation Seed Stocks of Grains, Grasses and Potatoes.

DUBOIS — U.S. Sheep Experiment Station - Western Sheep Breeding Lab. Established 1915. Nutrition Research and Breed Improvement—U. of I cooperating.