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Getting A Start In Dairying In Alaska

Alaska Agricultural Experiment Station
PALMER, ALASKA

FACTS TO CONSIDER BEFORE YOU START A DAIRY

1. Your capital investment will be high.
2. Your income will be steady and dependable, but not spectacular.
3. Your labor requirements will be great and supply must be regular.
4. You must have enough cleared land to raise all your roughage.
5. You must have a market near the farm.
6. You should be experienced in handling dairy cattle.

SOME DISADVANTAGES OF DAIRY FARMING

Dairying has some disadvantages that you should know before you start. Capital investment is higher than for most other types of farming. Labor requirements are high and continuous every day of the year. You cannot take a day off without providing for the feeding and milking.

Both of these disadvantages can be partially overcome. You can operate with less capital if you are willing to build up your dairy herd gradually by raising your own cows. You can grow your own roughage and eliminate the necessity for buying it. The daily routine of caring for your herd is constant but you can cut down the length of time required for milking and feeding each day by efficient management.

ADVANTAGES OF DAIRYING IN ALASKA

The income is steady month after month and year after year. A properly managed dairy farm stocked with high producing cows will furnish a steady income in good times and bad so long as a market for milk exists.

The dairyman is never without a job. Mainly because many persons object to the regularity of dairying it is not overdone to the point of huge surpluses. Alaskan milk production has not kept up with the increase in population and there probably will be no surplus of fluid milk for a long time to come.

GETTING A START IN DAIRYING

IN ALASKA

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Dairying in Alaska probably will always be confined to areas where milk can reach city markets readily. The demand for fresh milk, even at present prices, exceeds the supply. Probably the dairy farmer always will be able to produce milk in competition with fluid mlik shipped in from the States if he is a good manager and has high producing cows. A farmer with low producing cows can show a profit at present prices, but if the price of milk dropped two dollars or more per hundred, he would have a tough time making both ends meet. It is doubtful if other dairy products can be produced in Alaska to compete with stateside prices.

HOW TO START A DAIRY IN ALASKA

There are only two ways of getting started in dairying in Alaska other than buying one already established. You can either build up and stock a farm that has some cleared land or begin by homesteading on uncleared land.

Buying an established dairy is a simple operation but prices are high and a substantial down payment usually is required. An important advantage is that you have an immediate income. You should make sure that this income is adequate to take care of all expenses as well as payments. The farm should include cleared land to raise all the roughage for the entire herd. Purchased roughage must be kept at a minimum if you expect to stay in the dairy business.

A long hard struggle can be expected if you homestead or buy an undeveloped farm, but it can be done. Most homesteaders find jobs and develop their farms in their spare time. Building a house is the first task to be done; clearing land is next. The first cleared land usually is used for potatoes or for some other cash crop. As more land is cleared, roughage is grown. A few heifers or calves are then obtained. In the meantime, a shelter should be built to protect the stock during the winter. The heifers should be bred when old enough and the herd can be increased gradually. A barn, milkroom and milking room are built while the herd is growing. If money is available you might want to buy a few more heifers the year before you are ready to start in Grade A. Breed them to calve in the fall so that you will have more cows to milk at the beginning. The main idea is to raise as many cows on the farm as possible. Heifers raised on the farm require a smaller cash outlay than buying cows. Raising heifers will also give you valuable experience.

Qualifications for Dairying—You should have certain qualities to be successful in operating a dairy. These are farming experience, initiative and ambition. Valuable experience can be gained by raising calves and heifers before attempting Grade A production. It is often desirable to work for another dairy farmer for a season or more before you start out for yourself.

A herd demands careful observation, planning and attention to details. Dairying is not automatic. It needs someone to put it into operation and to keep it moving. A man who is inexperienced, indifferent or not alert will neglect many important duties and decisions such as getting cows bred at the proper time in order to have them calve when desired.

A successful dairy should have a herd large enough to bring in an adequate income and keep the farmer busy. You should not hire help for any dairy work, if it is a one-man operation. A good dairyman will be able to handle a 15- to 20-cow herd. This herd size, with young stock, constitutes a one-man operation. You will need to hire extra help for planting and harvesting but at no other time. A beginner will probably not have this many cows but he should work toward that goal. If you want to hire a man the year around, plan for a two-man operation. After the dairy has been operating a number of years and debts are cut to a low level, you might be justified in hiring someone to do your work, but not until then. This is true of any business.

What Breed Should be Kept?—Some factors to consider when selecting a breed are:

1. breeds most common in the community
2. availability of good bulls of the breed selected
3. personal preference
4. how milk is sold and priced

If you are the only one in a community to own a particular breed, you will have to provide and feed your own bulls. This can be an expensive addition to your costs.

The most important consideration is how the milk is sold and priced. When milk is sold on the butterfat basis alone, it makes little difference what breed you have as far as income is concerned. But even then it is better to keep the breeds popular in the area because of the convenience of bulls. Most milk in Alaska is sold as whole milk at a certain price per hundred pounds containing four percent butterfat. Ten cents per hundred pounds is added or deducted for each point above or below four percent. For this reason the high testing breeds are less profitable than the low testing, heavier milking breeds. The following records made by first calf heifers in the Experiment Station illustrate this principle. The first example compares two heifers from the same cow, one a pure bred Guernsey and the other a Guernsey-Holstein cross. The second comparison uses two heifers from the same cow, one a pure bred Guernsey and the other a Guernsey-Red Dane cross.

Table 1. Difference in gross income of high testing breed and heavy milking breeds.

	Lbs. milk	Lbs. fat	Test	Price of milk*	Yearly value of milk
High testing breed	6,000	348	5.8	$11.80	$708
Sister, but from heavy milking breed (Holstein)	8,500	357	4.2	10.20	867
High Testing breed	6,200	341	5.5	11.50	713
Sister, but from heavy milking breed (Red Dane)	8,400	370	4.4	10.40	873

*Calculated at $10 per 100 pounds for 4 percent milk, $.10 per butterfat point.

Figure 1. These two sisters are from the same cow—one by a Red Dane sire, the other a pure bred Guernsey. Their records as 2-year olds: Red Dane—8,400 pounds of milk, 371 pounds of fat; Guernsey—5,893 pounds of milk, 295 pounds of fat.

The difference shown in the first comparison is $159 more income from the heavy milking cow. The high producer in the second instance showed $160 more income. This extra income is for 10 months on first calf heifers, and this ratio will hold for the rest of their lives.

The advocates of the smaller, high testing breeds will say that it takes much less feed for the smaller breeds. Just how much more feed did it take for these records? These high producing heifers averaged 250 pounds more in weight. This means that for the full ten months about 2,500 pounds more silage (or 1,200 pounds hay) and 800 pounds more grain is required. Estimating silage at $12 per ton and grain at $7 per hundred, these heifers would cost about $71 more the first year. This means about $88 more profit from the heavy producing heifers the first year. This could be the difference between a good profit and none at all.

Should a Dairyman Keep a Bull?—If you live in an isolated location where artificial insemination cannot be used, or where the semen cannot be shipped readily, you should consult your neighbors and, if possible, lease a bull from the Experiment Station for the group. If you are located where you can use artificial insemination you cannot afford to keep a bull. If you feed a cow the roughage a bull would eat she will produce enough milk to pay the breeding fees for your herd, plus making a profit.

The average dairyman who is going to stay in business should raise his herd replacements and additions. It costs no more to raise heifers from good bulls than from poor bulls, and much less than buying replacement cows.

Alaska dairymen are very fortunate in being able to use bulls from the Dairy Research Branch in Beltsville, Maryland. These bulls are the best that can be obtained anywhere in the United States. The production of the daughters from these Alaska bulls has been very high as is shown in Table 2.

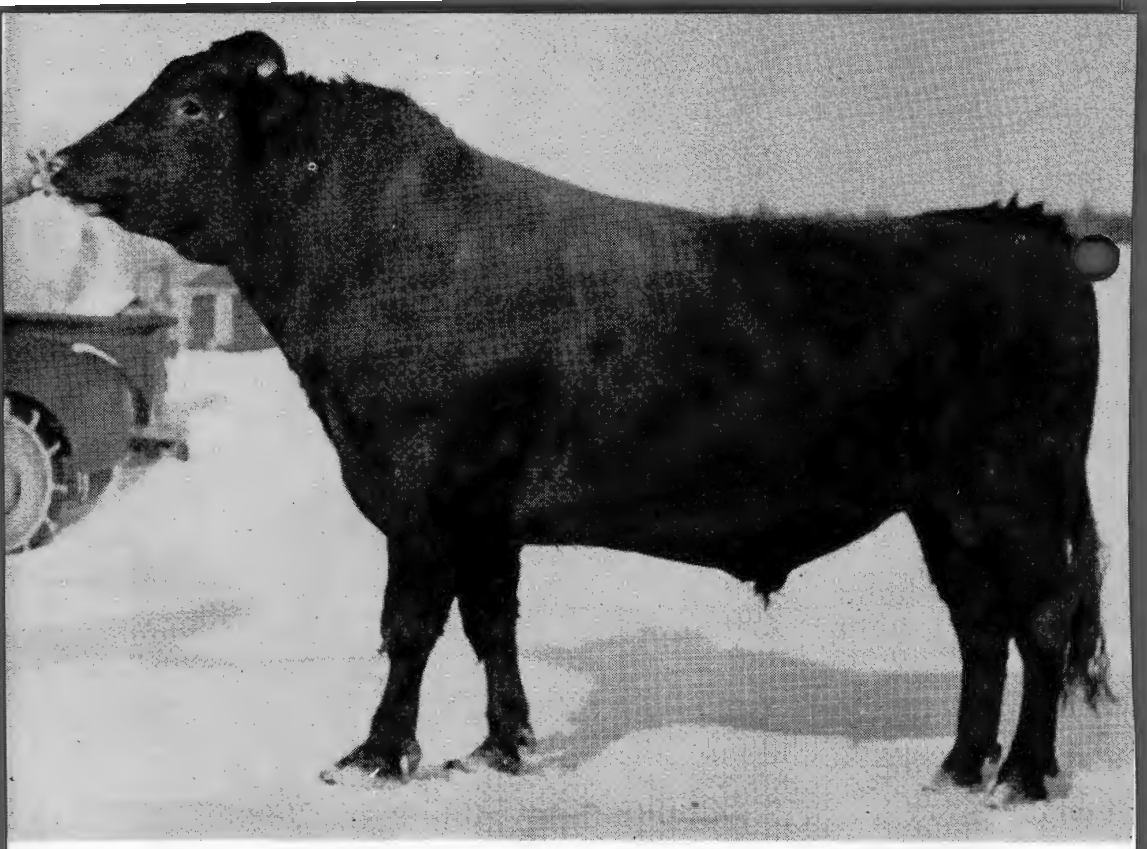


Figure 2. Pure bred Red Dane bull No. D-17

Table 2. Breeding records of the two older bulls in the artificial breeding program.

Holstein 2595			
39 daughters	55 records	11,831 pounds milk	439 pounds fat
31 dams	42 records	9,684 pounds milk	368 pounds fat
Red Dane D-597			
22 daughters	29 records	10,117 pounds milk	431 pounds fat
19 dams	24 records	8,244 pounds milk	362 pounds fat

With this kind of production from cows sired by these bulls, can you afford to keep a bull? Of the two breeds, Red Dane and Holstein, which will do the better? From the records shown in Table 2 it looks as if it makes little difference. The Dane bull was used on lower milk producing cows and raised the production of his daughters 1,873 pounds of milk and 69 pounds of fat. The Holstein bull increased milk production of his daughters 2,147 pounds of milk and 71 pounds of fat.

One herd in the Matanuska Valley had five daughters from Experiment Station bulls that completed their first records in the year 1953-54, as shown in table 3.

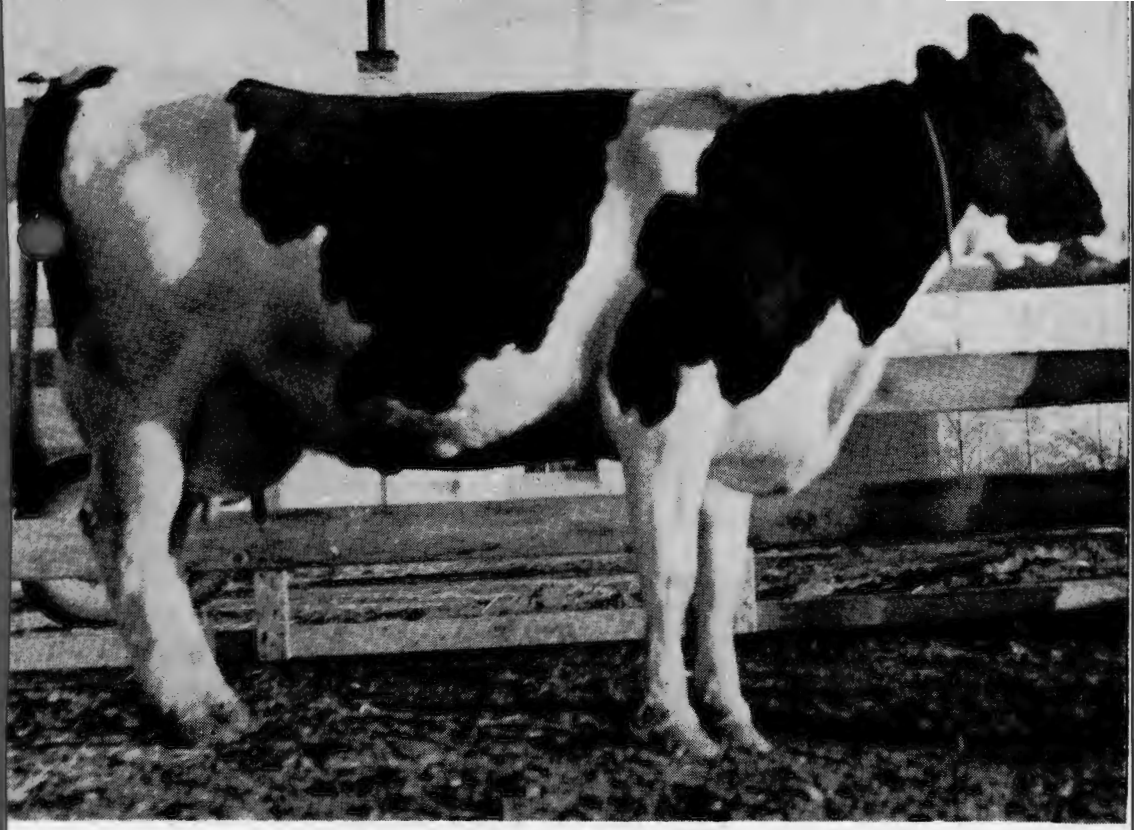


Figure 3. One of the first heifers born through artificial breeding in Alaska is this daughter of Holstein bull 2912. Her record as a 2-year old for 305 days: 17,023 pounds of milk and 575 pounds of fat.

Table 3. Record of first calf heifers of Red Dane and Holstein bulls

Heifer	Date born	Calving date	Sire	Age at calving	Lbs. milk	Lbs. fat
1	8-30-51	10-14-53	D-597	2-1-14	11,491	423.5
2	4-25-51	8-28-53	D-597	2-4-3	12,268	453.0
3	6-25-51	8-22-53	2912	2-1-27	13,369	496.3
4	10-13-31	11-2-53	2595	2-0-19	10,393	356.5
5	5-11-51	7-4-53	2595	2-2-23	11,410	424.1

Numbers 1 and 2 are Red Dane heifers that averaged 11,879 pounds of milk and 438 pounds of fat. The three remaining heifers are Holsteins and averaged 11,725 pounds of milk and 426 pounds of fat. These heifers are all from good cows as well as from good bulls. These records show that either of the two breeds will produce good heifers if proper feed, management and good sires are used.

The following records were made on second and third calf heifers in the Experiment Station herd for 1954:

Cow	Pounds milk	Pounds fat
Pure bred Holstein	11,946	423
Pure bred Red Dane	10,994	411
Guernsey-Holstein cross	9,251	410
Guernsey-Red Dane cross	9,713	397
Pure bred Holstein	12,060	396

Figure 4.—Cow No. 221, Holstein-Guernsey cross, was sired by Holstein bull No. 2595, out of Guernsey No. 104. Her 10-month record at 2 years of age: 8,789 pounds of milk, 337 pounds of fat. Her dam produced 5,240 pounds of milk, 292 pounds of fat.

FEED SUPPLY

In Alaska, with a few exceptions, it is very important to grow all your own roughage. There are very few places in Alaska that can produce pasture more than three months of the year. This means you should have enough roughage to feed for nearly nine months. Eight to ten tons of silage are required to carry a 1200-pound cow through the winter. If you feed any hay, the amount of silage necessary may be reduced at the ratio of two and one half to three pounds of silage to one pound of hay. It is difficult to make high quality hay in Alaska because of summer rains which ordinarily start in early July. Bromegrass and timothy are probably the best choice for hay production since they make good early growth and cure rapidly and, if the weather is favorable, can be harvested before the rainy season starts.

Some growers harvest hay late in the fall with a grain binder, then leave it shocked in the field and depend on the wind or freezing to dry the crop. Losses from weather can be considerable when hay is handled in this manner. A great deal of labor is required to pick up shocks once they are frozen to the ground and covered with snow.

Figure 5. This pure bred Red Dane produced 10,994 pounds of milk and 410 pounds of fat in 10 months.

You should grow some grain to reduce the amounts of purchased concentrates and to furnish straw for bedding. **One of the most important principles in guiding any farmer, especially a dairy farmer, is to sell as much produce as possible, to buy as few supplies and hire as little help as absolutely necessary, consistent with good management.**

Land for Winter Feed—About two acres of well fertilized oats and peas will supply all the silage needed for one cow. One acre more of bromegrass per cow is added insurance that you will have an adequate feed supply. In most years straw from a half to one acre of grain will supply the bedding necessary for one cow. The amount of land needed for pasture depends on the variety and stand of grass and whether it is all cleared land, or part woods pasture. In most cases one and a half to two acres per cow will be sufficient.

Table 4. Acres and amounts necessary to supply a 1200-pound cow for winter

Pounds of milk produced annually	Silage		Grain		Bedding
	Acres	Tons	Acres	Pounds	Tons
7,500	2 - 2½	10	1 - 1½	2,000	1 - 2½
8,500	2 - 2½	10	1¼ - 1¾	2,250	1 - 2½
9,500	2 - 2½	10	1½ - 2	2,600	1 - 2½
10,000	2 - 2½	10	1¾ - 2¼	2,750	1 - 2½

One pound of hay will replace two and a half to three pounds of silage. For each yearling heifer, plan to have from one half to three fourths the amount of roughage required for a cow, plus 300 pounds of grain.

Silage Storage—Silage may be stored in several ways.* Both upright and trench silos are popular in Alaska. Silage stored in upright silos freezes in from the wall, making removal difficult in cold weather.

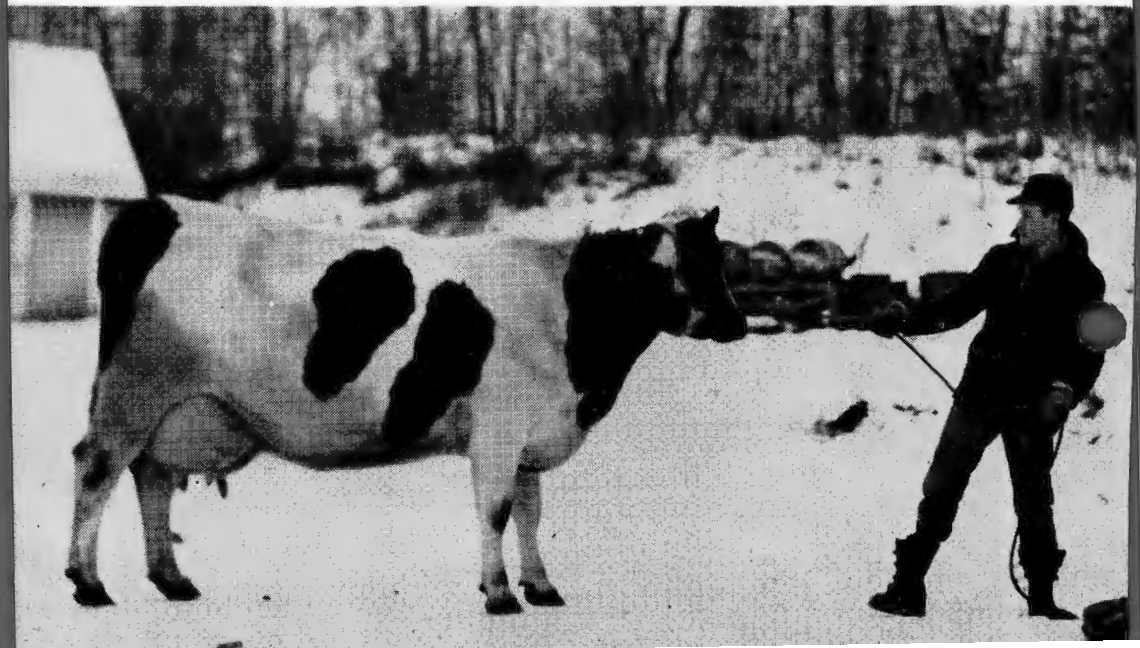
You can build silos from rough lumber, poured concrete, concrete blocks, finished wood silo staves, or steel. Trench silos can be made by using boards or concrete as a lining material. Unlined excavations are occasionally used if nothing better can be built. You can make satisfactory silage from either long or cut material. Of course, the cut material is easier to handle. If long silage is used it can be removed with a hay knife.

You should pile silage uniformly in the silo and pack it well. Whatever method of storage is used be sure that all air is sealed out. Trench silos often are covered by a heavy asphalt-filled kraft paper with a shallow layer of dirt or sawdust. Upright silos usually are not covered as the amount of spoilage is relatively small compared to the total volume in the silo.

Since most clovers and alfalfas will not live over winter in Alaska you do not need to worry about preservatives or too much moisture in the crop. Once in a while a young pea and oat crop will have too much moisture to make good silage, but this kind of crop can be put into a pit that has no floor. This enables the excess moisture to drain out. Also, it may be slightly wilted in the field and it will then make excellent silage.

*"Tips on Making Silage in Alaska" University of Alaska Experiment Station, Extension Circular No. 23, March 1954.

Figure 6. Holstein cow No. 11, Alaska Perfection Clothilde, was sired by No. 7969, Carnation Royal Perfection. Her record at 2 years of age: 10,423 pounds of milk and 345 pounds of fat. Her total for 3 years, 8 months: 37,671 pounds of milk and 1,317 pounds of fat with an average of 10,292 pounds of milk and 360 pounds of fat.



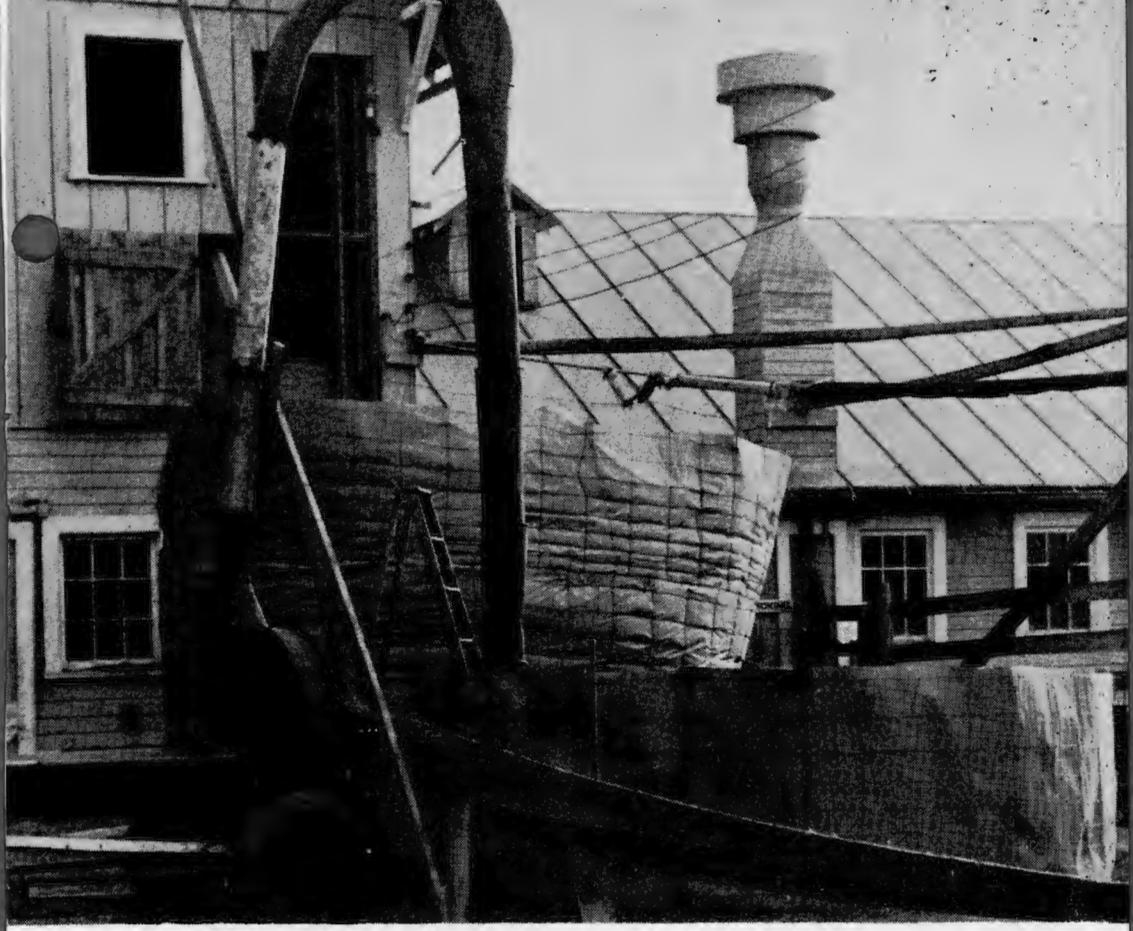


Figure 7. Temporary silos are made from fence and sisal-kraft paper.

Hay Storage—If you plan to grow hay for part of the roughage you must also plan on a hay storage area. With the loose housing system of dairy management hay storage usually is provided on the same level as the livestock. Self-feeders or movable feeding racks often are used to save labor with the racks being moved as the hay is used.

Loose hay requires about 600 cubic feet of storage space per ton, chopped hay about 225 cubic feet per ton, baled hay from 150 to 200 cubic feet per ton. The amount of hay storage required will depend upon your feeding program. The cost of producing silage is considerably less than the cost for its equivalent feeding value in dry hay. For this reason you probably will want to feed a minimum amount of hay.

Bedding—The amount of bedding needed will depend on the type of barn used to house the cows. A stanchion barn will require about a ton to one and a half tons of straw, or a comparable amount of other bedding per cow for the winter season. A loafing shed may require up to two and a half tons per cow depending on where cows are fed and the general arrangement of the shed.

DAIRY STRUCTURES*

You will need certan minimum structures if you are planning to work into the dairy business gradually by raising heifer calves. In planning shelter for dairy animals consider the direction of the prevailing storms and other likely extremes of weather. Most sections of Alaska are subject to extremes of weather when animals, especially young stock, need more protection than usual. In the Tanana Valley very low temperatures are apt to occur. In the Matanuska Valley the condition most dangerous to livestock health is the strong winter wind.

During these extreme conditions you must provde some special care for your livestock, especially animals under six months of age. Calf pens may be kept warmer by placing older anmals in the same enclosed area. If animal heat is relied on for protection in cold wather the structure must be free from drafts and should be insulated. Cattle that are warmly housed will not develop the natural protection to survive outdoors for long periods of time during normal winter weather. Less protection is needed for stock over six months of age if they become accustomed to the weather. A straw covered shed of wind-proof frame shelter with doors on the side away from the prevailing winds could be used as a satisfactory shelter for young stock and heifers. Milking cows should have more substantial shelter. Abrupt management changes should not be made in the winter.

Stall Barns—Whether you are buying an existing dairy farm with established buildings or starting to build a dairy farm you must consider your eventual system of dairy management. There are two different systems of management adaptable to dairy operation. The older, more familiar system requires a stall or stanchion barn. Cows are kept inside the stall barn in stanchions most of the time. The development of Grade A milk codes has resulted in rigid sanitation requirements for a stall barn. Concrete floors, clean painted walls, considerable window area, and a satisfactory ventilation system are required. These features result in a high total investment.

Cows kept in stanchions most of the time require a minimum barn temperature of 35 to 40 degrees F. This is an important consideration in Alaska. Large amounts of moisture exhaled by cows make it necessary to have an effective ventilation system to maintain good animal health. You should give careful attention to insulation in a stall barn. A vapor barrier also is needed to protect the barn from rotting caused by moisture in the wood members.

The stall type barn appeals to many dairymen. It is a comfortable place to work and requires less bedding. If mechanical barn cleaners prove successful in Alaska they will ease the problem of manure handling. Cows in stalls are easier to handle for grooming, artificial insemination, and medical treatment.

Insulation and Ventilation—A frame barn of the Alaska Experiment Station at Fairbanks, Alaska was insulated with a minimum of six inches of fill insulation, and a vapor barrier was carefully applied. Although provided with an emergency heater there have been only a few times when the heater was needed to maintain a temperature of 40 degrees F. In this barn an electric fan removes 60 cubic feet of air per minute per cow. An additional 60 cubic feet per minute per cow is removed when the temperature rises to 45 degrees.

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*The assistance of Mr. Wallace Ashby and Mr. Thayer Cleaver, Farm Building Section A.R.S., is greatly appreciated in furnishing materials for Figures 1, 2, 3, 4, 5 and 6, and in providing reference materials.

Figure 8. These single pens are for calves up to 60 days of age.

"Face-in" or Face-out"—Satisfactory plans for either method of facing cows are available and your preference should guide you in planning your barn. The "face-out" arrangement probably simplifies chore problems. Ohio Research Bulletin No. 706 indicates that 75 to 80 percent of the work in caring for cows in a stanchion barn is done in the area behind the cows and only 20 to 25 percent of the work in front of the cows.

If you are considering the use of mechanical barn cleaners, it is cheaper to build a "face-out" arrangement. If they are used, 16- to 18-inch gutters. are suitable.

Stalls—Stalls should be made to the following dimensions:

Weight of cow	Width	Length
800 pounds	3 ft. 6 in.	4 ft. 6 in.
1,200 pounds	4 ft.	5 ft.
1,600 pounds	4 ft. 8 in.	5 ft. 8 in.

To the above lenghs add 4 inches if a "cow trainer" is used. This device consists of a crossed wire shaped like a coat hanger which is suspended 1½ to 3 inches above the cow's back and 18 to 24 inches behind the stanchion line. It is connected to an electric fence controller and trains the cow to step backward before arching her back so that the more of the droppings fall into the gutter.

Figure 9. Portable calf pens are convenient and sanitary.

Cattle Pens—Recommended dimensions for cattle pens are:

Type	Length and width (ft.) Minimum	Maximum	Height (ft.)
Cow pens	10x10	12x12	4½
Individual pens for small calves	3x5	6x6	4
4-calf pens	10x10	12x12	4½

Allow 20 to 30 inches of manger space per calf.

Doors for a Stall Barn—Single doors for cows should be 4 feet wide and double doors should be 6 to 8 feet wide. Litter-alley doors in drive-through barns should be 9 to 10 feet wide. Sliding doors are convenient since they open readily even with heavy snow and ice. Care should be used in mounting to make them as tight as possible.

Stall Barn with Milking Room—Some Alaskan dairymen use a modification of the stall barn in which a milking room is used in conjunction with the stall barn. It provides adequate housing at a lower cost than a Grade A milking barn.

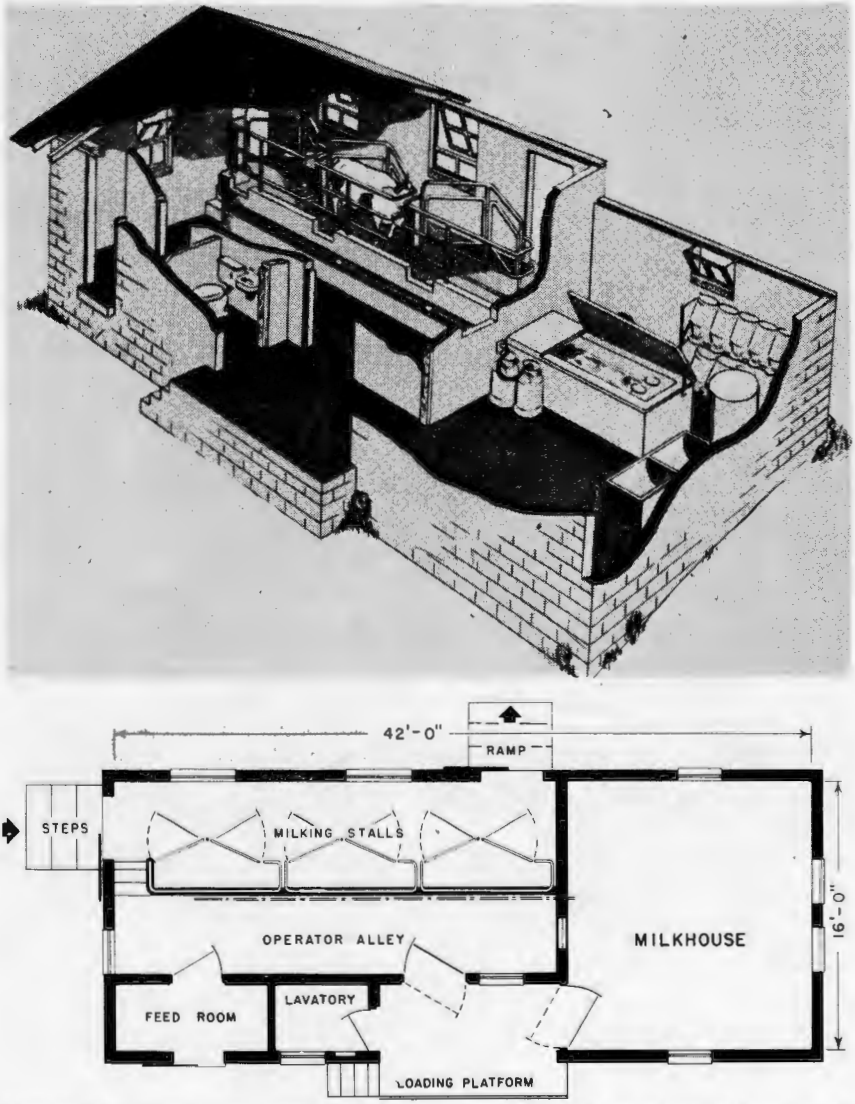


Figure 10. This three-stall tandem milking plant is adaptable to loose housing and speeds dairy chores.

The stall barn can be equipped with home made wood stanchions and the initial construction cost can be reduced in many ways. A pole frame barn can have a wood or dirt floor. Sawed rough lumber can be used instead of finished lumber. No painting is required and native materials such as sawdust, shavings, ground spagnum moss, or chopped straw can be used for insulation. With this type of management a temperature of 30 to 40 degrees F. is desirable in the barn, and an effective method of ventilation is needed. Stall barns require much less bedding than loose housing.

Milking Room—In addition to cattle housing, provision must be made for a milking room, often called a milking parlor, in which the cows are milked and fed concentrates, and also a milkroom, or milkhouse, in which milk is cooled and stored. Both of these areas must conform to the sanitation requirements of the Alaska Department of Health. The local representative should be consulted before spending money on any particular arrangement.

Both the milking room and milkroom should have concrete floors. Floor drains should be installed. Hot and cold water usually are required in the milkroom. Running water in the milking room is not a necessity but it is a great convenience.

In most areas of Alaska a frame construction on a concrete foundation will provide the most suitabe building in which to house the milkroom and milking room. Poured concrete or concrete block construction is permanent and fireproof but requires some type of insulation. Frame structures with a proper vapor barrier can utilize cheaper types of insulation such as sawdust, shavings or moss.

Loose Housing in Dairy Management—Within the last ten to fifteen years a method of dairy management called "loose housing" has developed which differs greatly from the older system. This method appeals to

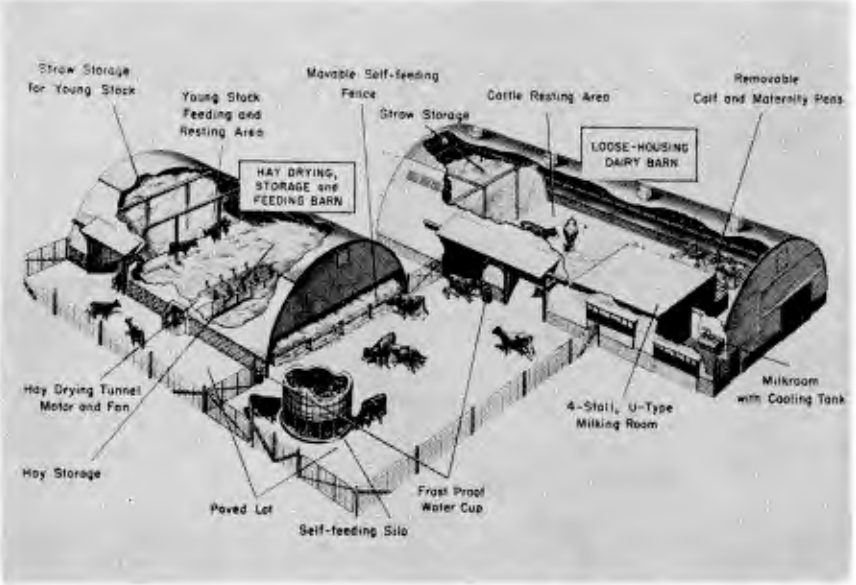


Figure 11.—A complete loose-housing layout for adult and young dairy cattle.

many dairymen since the initial investment often is one-third to one-half the amount needed for the stall barn system. The main reason for its lower cost is that large structures such as the barn, and hay and bedding storage need not be built to Grade A requirements. Only the milking room and milkroom must conform.

In this type of dairy management five major areas are necessary. These are: a resting or loafing area, an exercise area, a feeding area, a milking room, and a milkroom. A separate area for the young stock is recommended.

Excellent bulletins on loose housing of dairy cattle are available from Michigan State College, University of Wisconsin, Ohio State University and the U. S. Department of Agriculture. Before deciding on the system of dairy management you want, you should study the suggestions in these bulletins. Indications are that the following requirements need to be met for a satisfactory loose housing system:

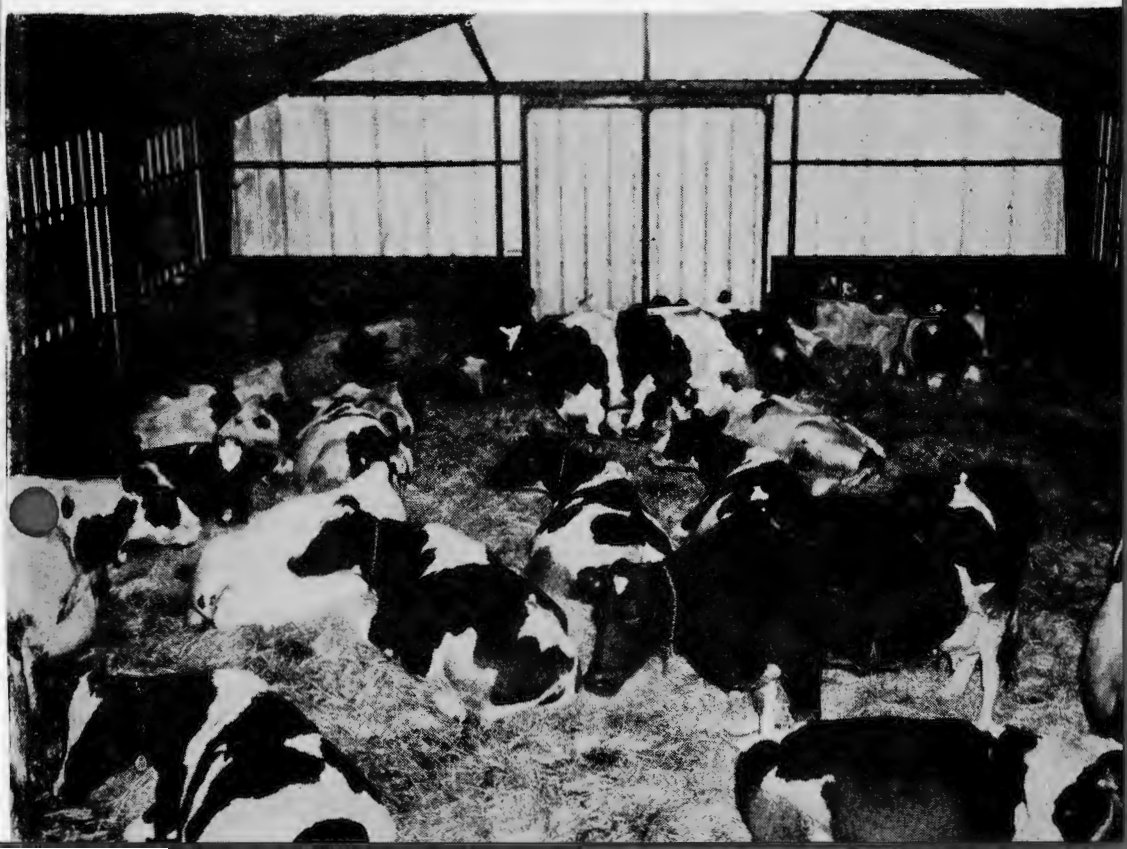
FLOOR AREAS

Resting area—50 to 70 square feet per cow if cows are fed outside the loafing area. A space that is nearly square is better than a long narrow one.

Exercise area—75 to 100 square feet or more per cow of paved barn yard. Up to 200 square feet per cow is recommended for unpaved yards.

Feeding area—25 to 30 square feet per cow. If fed twice daily each cow needs 24 to 30 inches of manger space. If roughage is always available, 12 to 18 inches of space are sufficient.

Figure 12. Resting areas with deep manure packs provide shelter and warmth during the winter. The door shown in the background can be opened for removal of the manure.



Milking room—adequate to provide a clean, sanitary, and efficient place for feeding concentrates and milking two to four cows.

Milkoom—120 square feet minimum.

WINDOW AREAS

Resting and feeding areas—1 square foot glass or plastic for each 20 to 30 square feet of floor space.

Milking room—4 square feet of glass per cow or 20 percent of the floor space, whichever is greater.

Milkroom—15 percent of floor area.

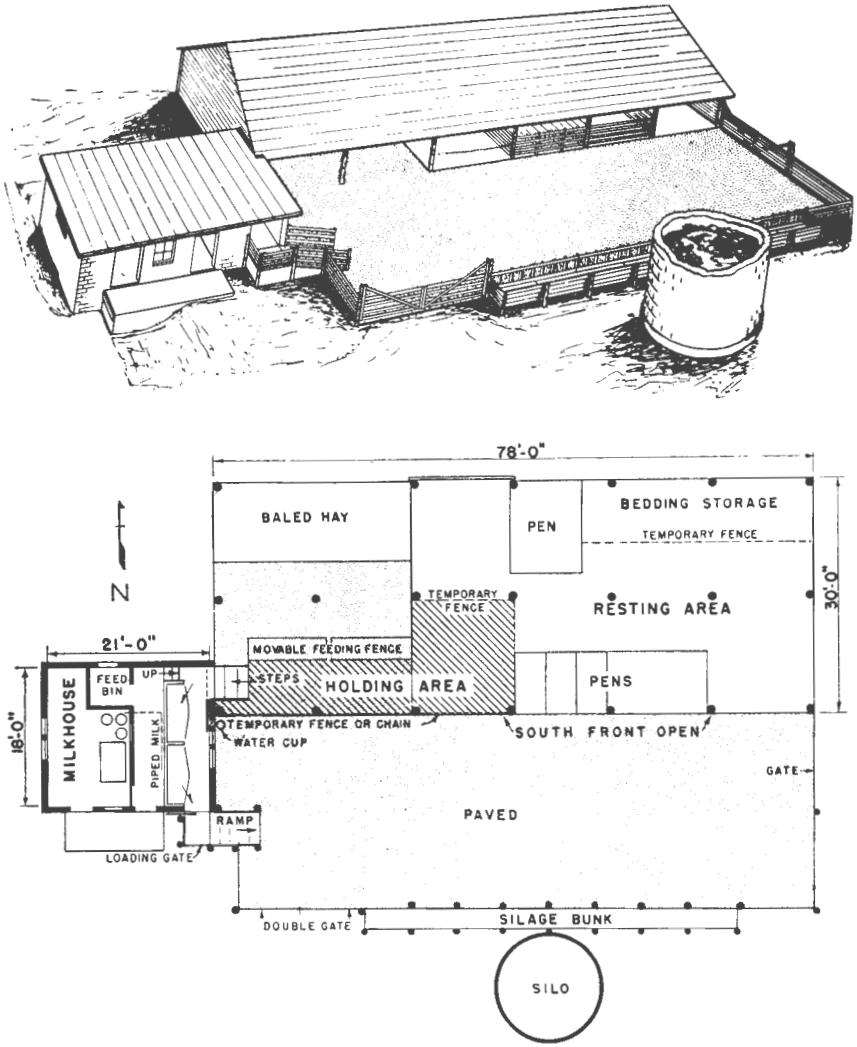


Figure 13. A loose-housing layout adapted for a 20-cow herd. It is also ample for 25 cows if young stock are housed elsewhere.

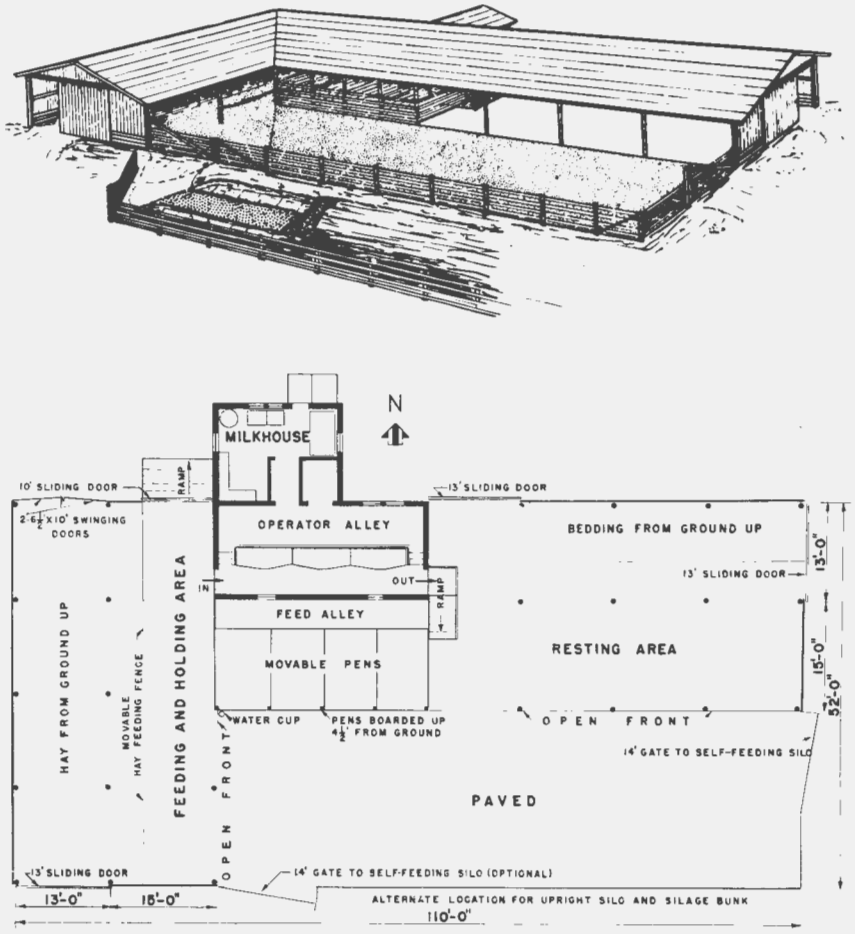


Figure 14. An L-shaped loose-housing layout designed to give protection from winter winds. The feeding area slopes upward to the milking room.

VENTILATION

Resting and feeding areas—adequate to prevent condensation and prevent the accumulation of stale, musty, or damp air.

Milking room—air movement adequate to prevent condensation and accumulation of foul air.

Milkroom—air movement adequate to keep room air fresh and clean. Open windows or ventilators must be screened.

ARTIFICIAL LIGHTING

Resting and feeding areas—minimum of one 50-watt bulb for each 1,000 square feet of floor space is recommended.

Milking room—minimum of one 100-watt bulb, or 50 watts of light per cow.

Milkroom—minimum of one 100-watt bulb, preferably one 100-watt bulb each over wash vats and over water cooler and can rack.

CEILING HEIGHTS

Resting and feeding areas—10 to 12 feet.
Milking room—7 feet over cow stalls.
Milkroom—7 feet.

FLOOR CONSTRUCTION

Resting area—dirt, no slope necessary.
Feeding area—inside feeding area should be concrete and sloped to the outside; outside feeding area should be compacted dirt, stone, cinders, or other material which will not become excessively slippery in freezing weather, sloped away from barn.
Barn yard—dirt, sloped away from barn. May be paved if desired.
Milking room—concrete, ½ to 1 inch per foot slope for adequate drainage.
Milkroom—concrete, tile, or other impervious material, ½ to 1 inch per foot slope for drainage.

FOUNDATION WALLS

Resting area—minimum of 4 feet above floor level to protect sidewall from manure pack. Wood should not come in contact with the ground.
Feeding area—as required to protect sidewalls.
Milking room—elevated concrete curb to prevent rotting of sills.
Milkroom—elevated concrete curb to prevent rotting of sills. Lower 12 inches of wall should be waterproofed.

VESTIBULE

No vestibule is required in Alaska when the milking room is effectively separated from the resting and feeding areas and is used for no other purpose than milking.

DOORS AND OPENINGS

Resting and feeding areas—10 to 12 feet wide, high enough to permit tractor and spreader to pass through.
Milking room—4 feet wide, self-closing.
Milkroom—as required.

RAMP OR STEPS TO MILKING ROOM

Ramp recommended for exit—2-foot rise to 8-foot run.
Steps recommended for entrance—6-inch rise 18- to 29-inch run.

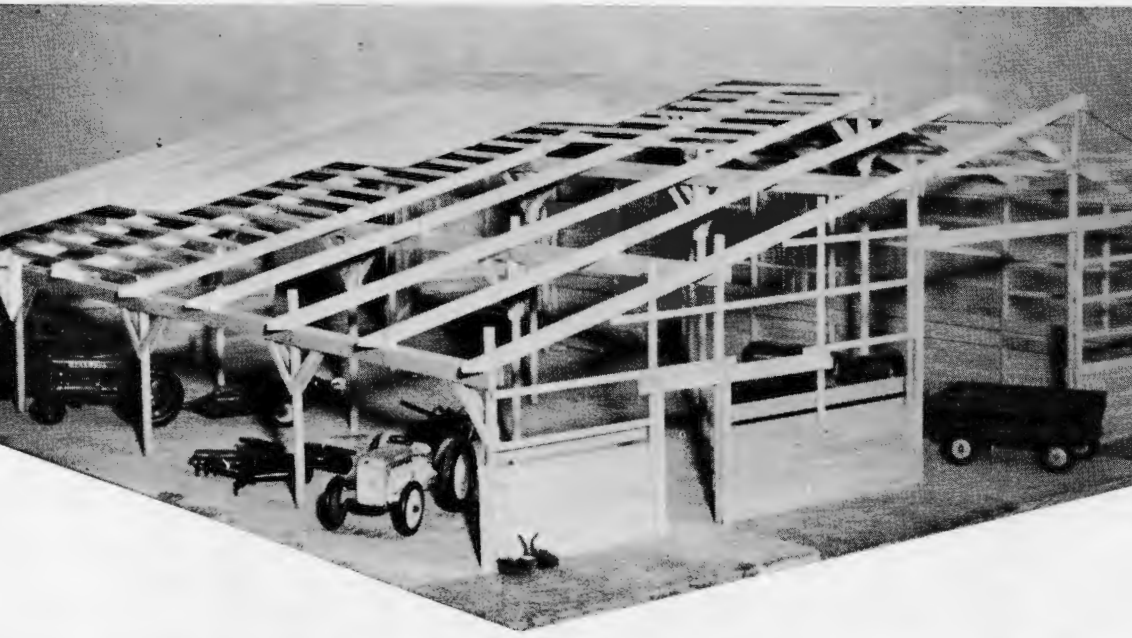
BEDDING

Resting area—as required to maintain clean manure pack; will take 8 to 16 or more pounds straw per cow per day.
Feeding area—outside, none; inside, as desired.

STORAGE CAPACITY

Straw—1½ to 2½ tons per cow.
Hay—as required.
Space required: Loose hay—600 cubic feet per ton.
Loose straw—600 cubic feet per ton.
Baled hay—150 to 200 cubic feet per ton.
Baled straw—300 cubic feet per ton.

Pole Frame Barns—Barns constructed with pole frames are the cheapest satisfactory loose housing for dairy animals. During recent years many authorities have proposed pole frame buildings to reduce the cost of the farmstead. Such plans assume that there is an available supply of pressure-treated poles which should last 35 to 40 years. Pressure-treated poles are not readily available in Alaska; however, native spruce poles can be



Utility pole-frame building illustrated in Extension Bulletin No. 194, University of Idaho, Mosc

treated on the farm. A farm-treated native spruce pole will last 10 to 15 years. Poles which rot off at or below the ground can be spliced by setting short treated posts beside them and bolting them together in the same way that telephone poles are often repaired.

Minimum Cost of a Pole Frame Barn—The following costs have been calculated on a basis of present prices of materials for a 52- by 52-foot pole barn with a metal roof. It is assumed that the farmer would do the construction and no allowance is made for labor. In some phases of the construction, such as in the erection of the poles, a small amount of additional labor would be necessary.

ESTIMATED COST FOR A 52- by 52-FOOT POLE BARN, WITH METAL ROOF, NOT INCLUDING LABOR

Quantity	Material	Unit cost	Purchased materials	Local materials
36	Pressure-treated poles	$25.00	$900.00	
36	Butt-treated poles (local)	10.00		$360.00
4,800	Bd. ft. lumber	75.00	360.00	360.00
680	Bd. ft. splashboards	75.00	50.00	50.00
2,500	Bd. ft. wood siding	240.00	600.00	
2,500	Bd. ft. wood siding	75.00		190.00
3,800	Sq. ft. metal roofing	270.00	1,030.00	1,030.00
365	Lb. nails and spikes	.20	75.00	75.00
	Wind proofing material		125.00	125.00
	Total		$3,140.00	$2,190.00

BULLETINS OF INTEREST TO DAIRYMEN

RAISING DAIRY CALVES IN OPEN SHEDS Extension Circular 211, State College of Washington, Pullman, Washington.

LOOSE HOUSING FOR DAIRY CATTLE USDA Agricultural Information Bulletin No. 93, Superintendent of Documents, Washington 25, D.C. 20 cents

STALL BARNS FOR DAIRY CATTLE USDA Agricultural Information Bulletin No. 123, Superintendent of Documents, Washington 25, D.C. — 10c

REMODELING BARNS FOR BETTER DAIRY STABLES By A. M. Goodman, Cornell Extension Bulletin No. 742, New York State College of Agriculture, Cornell University, Ithaca, New York.

PEN-TYPE DAIRY BARNS Special bulletin 363, Michigan State College, Agricultural Experiment Station, East Lansing, Michigan.

VENTILATION FOR THE MODERN DAIRY BARN Extension Bulletin No. 310, Michigan State College, East Lansing, Michigan.

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AGRICULTURAL RESEARCH ADMINISTRATION