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Michigan State University Extension Service
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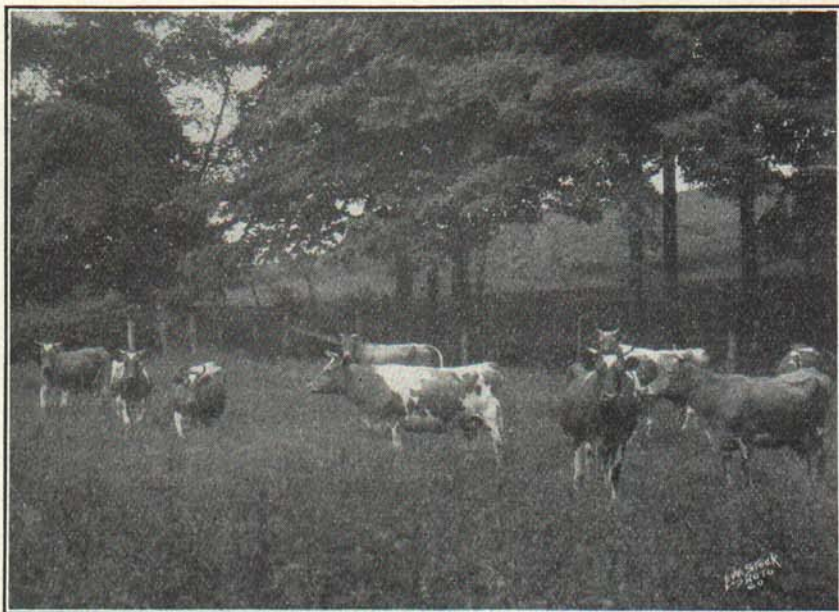
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HOME GROWN FEEDS FOR UPPER PENINSULA DAIRY COWS

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One of the most promising developments in the agriculture of the upper peninsula is the rapid growth of the dairy industry. This growth can be aided materially if the upper peninsula farmers grow all, or at



least, a major portion of the feed for their cows. The following discussion deals with crops that can be grown successfully in the upper peninsula, and points out their places in connection with the dairy industry.

Three types of feed are necessary for the most economic production of milk, namely; hay, succulent feeds, and grain. The dairyman should grow the crops which yield the most feed per acre and grow them in the proportion in which they best fit into the dairy ration.

Michigan State College

Extension Division

R. J. Baldwin, Director, East Lansing

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The following chart will show the relative value of the different hays under upper peninsula conditions:

Common hays	Yield in tons	Yield in protein, Lbs.	Total digestible feed, lbs.
Alfalfa.....	2.76	585	2,848
Alsike clover.....	2.3	364	2,176
Red clover.....	2.7	400	2,748
Sweet clover.....	2.0	436	2,028
Timothy.....	1.56	93	1,513

Of all our common hay crops alfalfa and the clovers furnish the most desirable feed, and the largest yields per acre, as indicated in the above table.

Alfalfa, red clover, and sweet clover require lime in the soil, and good drainage for successful crop production.

Alsike clover will grow on poorly drained soils and soils relatively low in lime content.

Sweet clover furnishes excellent pasture but is not as well adapted for hay as alfalfa.

Timothy and quack grass are equally poor in yield and feeding value.

Grow alfalfa if your land is ready for it; if not, grow alsike clover.

Grain costs six to ten dollars less per ton of hay fed when clover or alfalfa is used.

Emergency Hays

	Yield in tons	Yield in protein, Lbs.	Total digestible feed, Lbs.
Peas and oats.....	3.0	498	2,004
Oats and vetch.....	4.0	552	3,768

Peas and oats are adapted to medium to heavy soils. Vetch and oats are adapted to sandy soils.

The emergency hays furnish large amounts of good feed per acre, however, their cost is greater, and they add practically no nitrogen to the soil.

Quality of Hay

Good quality in hay is measured by its green color, its fineness, its purity, and the retention of its leaves. Quality can be secured by cutting hay at the right stage and by proper curing methods.

TIME TO CUT:

Alfalfa.....	One-tenth to three-fourths bloom
Clover.....	Full bloom until heads start turning brown
Sweet Clover.....	Just before blooming
Timothy.....	Medium to full bloom
Peas and oats.....	When peas start forming
Vetch and oats.....	When vetch is in full bloom

Grain Crops

Barley and oats are two dairy feeds well adapted for home growing under upper peninsula conditions. A comparison of their value is given below:

	Ave. yield of U. P. variety tests, Bu.	Pounds grain per acre	Total digestible feed per acre
Barley.....	51.5	2,472	1,977
Oats.....	63.2	2,022	1,415

The following figures show the average yield for these crops on U. P. farms.

	Ave. U. P. farm yields, Bu.	Pounds grain per acre	Total digestible feed per acre
Barley.....	25	1,200	960
Oats.....	33.8	1,081	756

Barley furnishes more pounds of feed per acre and more digestible feed per pound than oats.

Barley is a more dependable crop, due to rust attacks which frequently occur on oats in northern Michigan.

Barley keeps the cow in good condition, thus stimulating milk production.

Sow barley and oats in acreage so you may feed them in the proportion of three of barley to one of oats.

Protein Feeds

It is necessary to furnish additional protein, the amount depending upon the hay used.

Peas can be grown to good advantage and furnish an excellent feed of high protein content for the dairy cow. The sale price of the peas determines the advisability of using them for feed.

Succulent Feed

The following table shows the relative value of different crops for succulence:

	Tons per acre	Total pounds digestible feed per acre
Mature corn.....	7-10	2478-3540
Immature corn.....	6-9	1596-2860
Sunflowers.....	15-20	4410-5880
Rutabagas.....	15-20	2820-3760

Grow the crop that furnishes the most succulent feed per acre.

Succulence aids the cow in using her grain and hay more efficiently.

The advisability of feeding silage or roots depends upon the size of the herd. For a large herd use silage, for a small herd use roots.

Requirements and Suggested Rations for Dairy Cows

Winter feeding—Give the dairy cow each day all the hay she will consume, and three pounds of silage or four pounds of roots for each hundred pounds of live weight. Give one pound of grain for each three to four pounds of milk produced. Feed the high testing cows one pound of grain for each three pounds of milk produced. Feed low testing cows one pound of grain for each four pounds of milk produced. The amount of digestible protein in the grain ration will depend upon the kind of hay fed. For alfalfa hay feed a 12% protein ration, for clover hay a 14% protein ration, for mixed hay a 16% protein ration, and for timothy hay an 18% protein ration.

Summer Feeding—Some grain is required to maintain production and body flesh during the pasture season. A 10% digestible protein ration will be sufficient when the pasture is good. More protein can

be added as the season progresses. It will require about one pound of grain daily to every four to seven pounds of milk produced for the average cow, the amount depending upon the test of the cow and the condition of the pasture. The high testing cow producing over 30 pounds of milk and the low testing cow producing over 40 pounds of milk daily will require a larger amount of grain. Some dry roughage can also be fed with profit as the season of the year progresses.

Feeding the Dry Cow—Every dairy cow should have a six to eight weeks rest period. This time should be used to get the cow in good condition of flesh. A cow freshening in good condition will produce more milk with a higher butterfat test than when freshening in poor condition. To accomplish this, from four to ten pounds of a fattening grain should be fed daily. The amount necessary will depend upon the condition of flesh of the animal when going dry.

Grain Rations to be Fed With Different Kinds of Hay

CLOVER HAY:	ALFALFA HAY:	MIXED HAY:	TIMOTHY:
300 pounds ground barley	300 pounds ground barley	300 pounds ground barley	300 pounds ground barley]
100 pounds ground oats	100 pounds ground oats	100 pounds ground oats	100 pounds ground oats
100 pounds cottonseed meal	50 pounds cottonseed meal	150 pounds cottonseed meal	200 pounds cottonseed meal
or	or	or	or
125 pounds linseed oil meal	50 pounds linseed oil meal	185 pounds linseed oil meal	250 pounds linseed oil meal

Number of Acres to Seed

In order to supply sufficient amounts of these home grown feeds it is essential that the crops acreage is planned so as to furnish the feeds in the right proportion, as previously shown.

Below is a plan which will aid in determining the number of acres necessary to supply the feeds for any number of dairy cows including the normal amount of young stock.

1 acre roots will support 3.0 cows.....	} When fed in the proper proportion of other feeds for a complete balanced ration.	
1 acre sunflowers will support 3.5 cows.....		
1 acre corn silage will support 2.0 cows.....		
1 acre barley will support 1.0 cows.....		
1 acre oats will support 2.0 cows.....		
1 acre mixed hay will support .75 cows.....		
1 acre clover will support 1.0 cows.....		
1 acre alfalfa will support 1.25 cows.....		
1 cow requires..... .33 acres of roots	1 cow requires..... .50 acre of oats	
1 cow requires..... .30 acres of sunflowers	1 cow requires..... 1.33 acres of mixed hay	
1 cow requires..... .50 acres of corn silage	1 cow requires..... 1.00 acres of clover hay	
1 cow requires..... 1.00 acres of barley	1 cow requires..... .80 acre of alfalfa hay	

Example: How to determine number of acres for a complete feed supply for a ten cow herd.

10 x .3 acres of sunflowers.....	= 3 acres of sunflowers
10 x 1.0 acres of barley.....	= 10 acres of barley
10 x .5 acres of oats.....	= 5 acres of oats
10 x 1.33 acres of mixed hay.....	= 13 acres of mixed hay
or	
10 x 1.0 acres of clover hay.....	= 10 acres of clover hay
or	
10 x .8 acres of alfalfa hay.....	= 8 acres of alfalfa hay

Yields upon which figures were based:

1½ tons mixed hay per acre	2½ tons alfalfa hay per acre	15 tons sunflowers per acre	35 bushels barley per acre
2 tons clover hay per acre	15 tons roots per acre	9 tons corn per acre	40 bushels oats per acre

These yields can be obtained by returning the barnyard manure to the soil and adding some additional commercial fertilizer.

A farmer can support one cow to every 2.6 to 3.1 acres of crop land, (excluding pasture) depending on kind of hay used. Thus:

	Mixed hay, cows	Alfalfa hay, cows		Mixed hay, cows	Alfalfa hay, cows
20 acres of crop land.....	6	8	50 acres of crop land.....	16	19
30 acres of crop land.....	9	11	60 acres of crop land.....	19	23
40 acres of crop land.....	13	15	80 acres of crop land.....	25	30