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Wisconsin Farmers' Institutes

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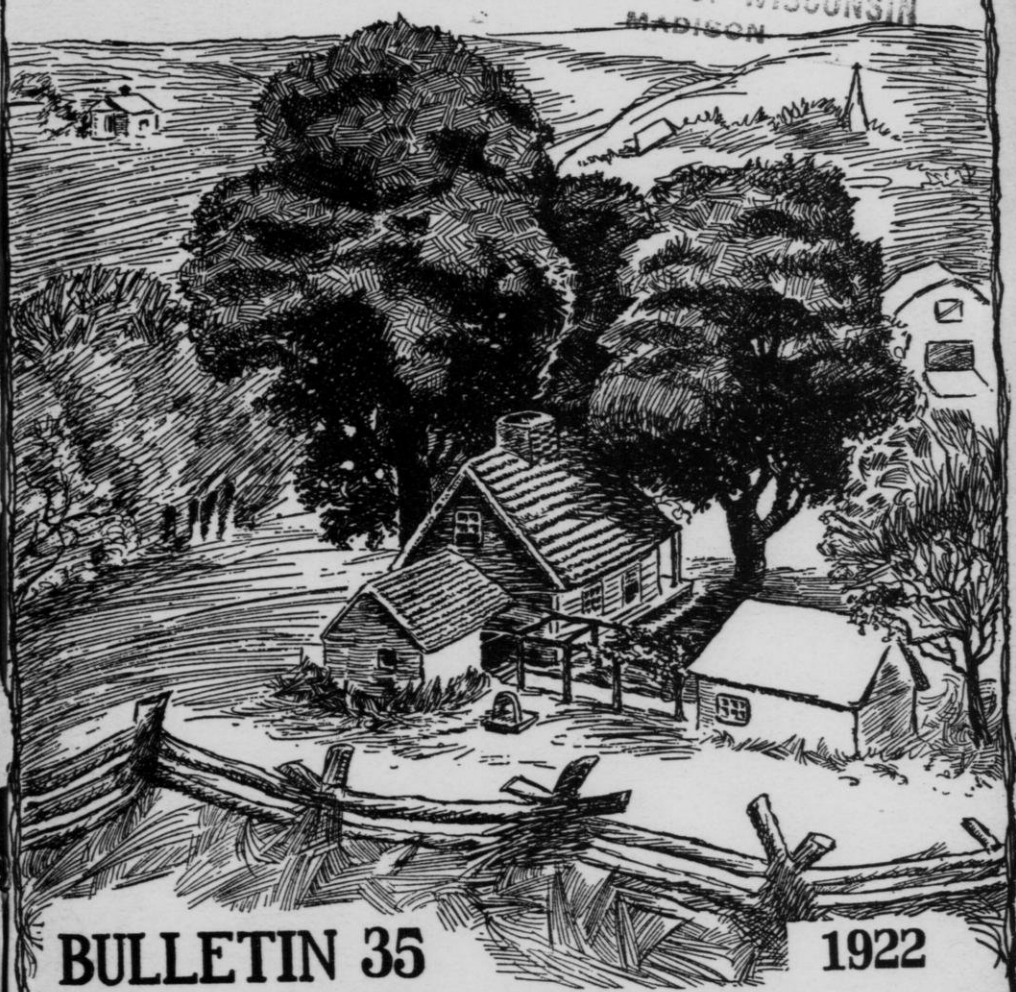
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WISCONSIN FARMERS' INSTITUTES

L. P. KELLY
COLLEGE OF AGRICULTURE
UNIVERSITY OF WISCONSIN
MADISON

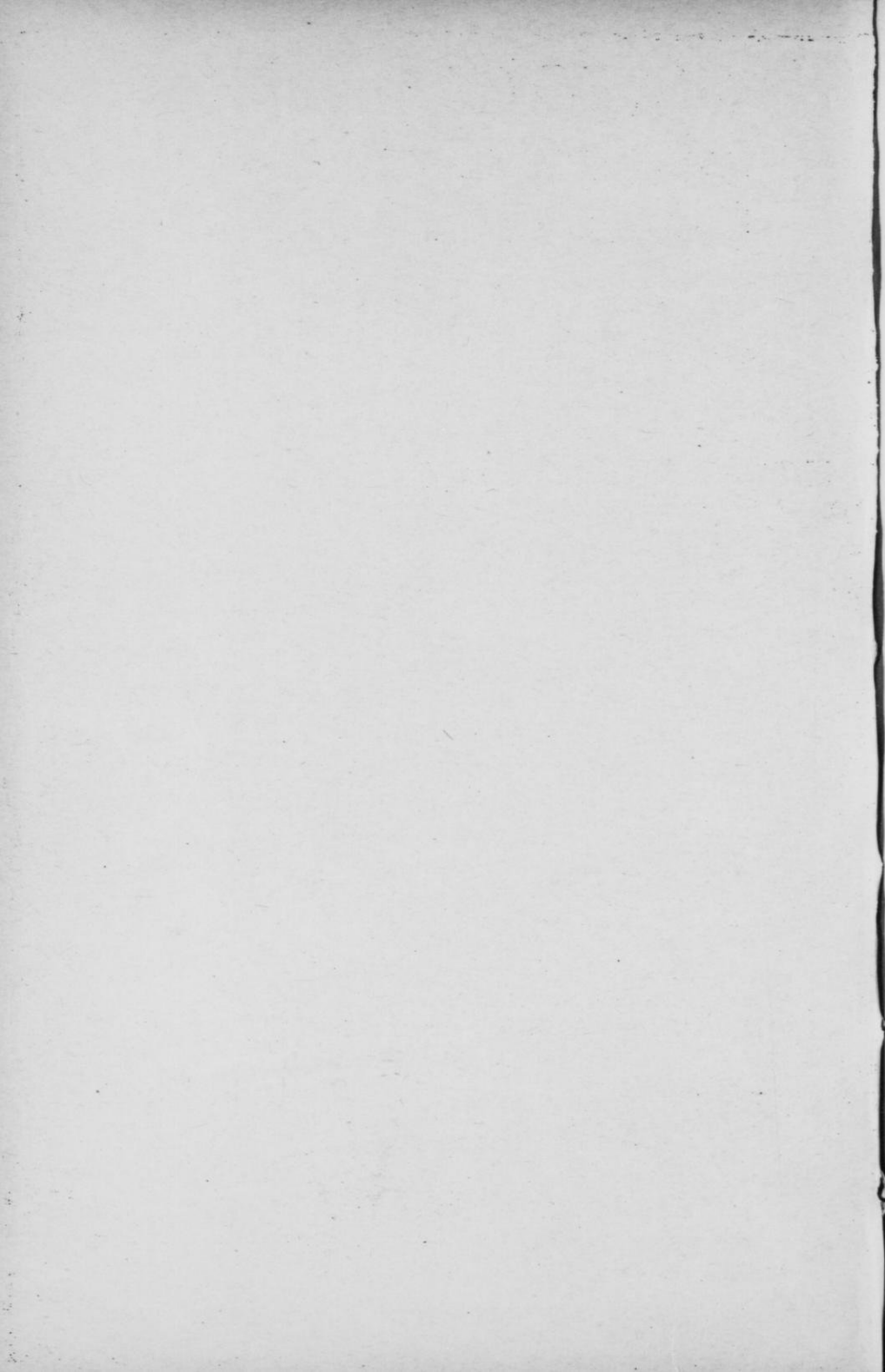


BULLETIN 35

1922

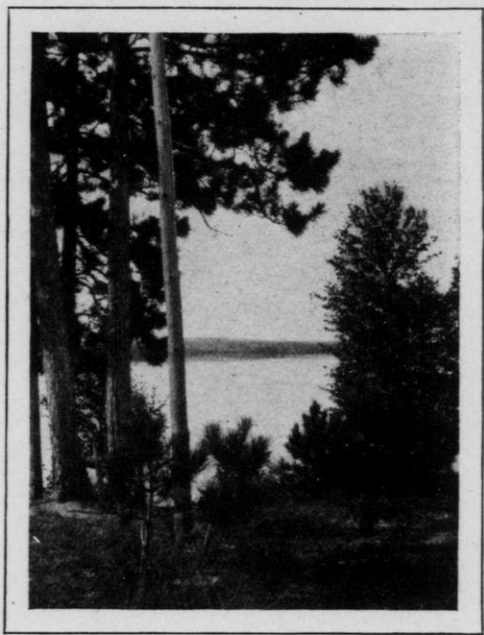
FEEDING DAIRY CATTLE

MCINTYRE



SOME DAY

Some day I'm going to have a farm,
With cozy cottage and little barn,
With pigs and chickens and a cow or two,
With just enough work that one can do.
Somewhere, I am sure, there's a place for me.
Where water's pure and air is free,
Where wild flowers grow, where the wild bird sings,
Where hope eternal in the bosom springs.
Away from the city's toil and strife,
Away from the care of the daily life,
Away from the vice it's sure to breed,
Away from its grasping, growing greed,
Away from the factory's dust and smell,
Away from life that's worse than—well,
Away from the job that lasts a day,
Away from the wage that's under pay;
But a chance to work to protect my own
And, however humble, I want a home.



A BIT OF OLD WISCONSIN
THE LAND WE LIVE IN

WISCONSIN FARMERS' INSTITUTES

A HAND BOOK OF AGRICULTURE



BULLETIN No. 35
1922

"Farming is a business; agriculture is a science. The tiller of the soil who blends these two is the man to whom the future offers success."—
CYRUS H. McCORMICK.

Edited by
E. L. LUTHER
Superintendent

THIRTY THOUSAND COPIES ISSUED

FOREWORD

This year we will all need to get in line and save expenses and help all we can with keeping down public expenses. Not since 1907 has the appropriation for Farmers' Institutes been increased and you know how expenses have gone up since that time. And during the fifteen years the Department of Farmers' Institutes has never asked for or received special or "emergency" appropriations. Consequently, this Department is not to blame for high taxes. To carry out our policy of not increasing the tax burdens this year, we are asking the people of the state to accept a modified form of the Farmers' Institute Bulletin which the law says we must publish. Thank you.

—SUPERINTENDENT

FEEDING DAIRY CATTLE

Wisconsin's greatest agricultural industry is dairying. This means that crops are grown not so much for direct sale as for feed to be used for the production of milk. Feeding, therefore, is a subject for study on the part of the farmer, for it is the thing that not only means success or failure in the production of milk but is at the bottom of successful cropping systems on dairy farms.

FOUR DAIRY RATIONS

Assuming a 1200-pound cow, giving 30 pounds of 3.5 per cent milk, let us arrange four rations:

Ration No. 1

Timothy hay	10	Pounds
Corn silage.....	36	Pounds
Ground corn	4	Pounds
Wheat bran	2.5	Pounds
Oil meal	3.25	Pounds

Ration No. 2

Clover hay	10	Pounds
Corn silage.....	36	Pounds
Ground corn	5.5	Pounds
Oil meal	1.5	Pounds

Ration No. 3

Soybean hay	12	Pounds
Corn silage	36	Pounds
Ground corn	4	Pounds
Ground oats	4.5	Pounds

Ration No. 4

Alfalfa hay	12	Pounds
Corn silage	36	Pounds
Ground corn	4	Pounds
Ground oats	4.5	Pounds

TIMOTHY HAY RATION. NO. 1

The majority of dairy farmers in Wisconsin grow corn, and timothy for hay is surest and most easily grown; but look! The ration which has 10 pounds of timothy hay in it has to have 2.5 pounds of bran and 3.25 pounds of oil meal added to make it a satisfactory ration in respect to protein, and

in Wisconsin these are purchased and cost a lot. Their use at times is almost prohibitive. This ration is low in lime, which is probably its greatest drawback and is rather wide, having a nutritive ratio of 1:7.2. Feeding this ration for seven months, 210 days, will require 525 pounds, a quarter of a ton, of bran, and 682.5 pounds, a third of a ton, of oil meal. Assuming bran at \$20 a ton and oil meal at \$30 a ton, it will mean a money layout of \$5 for bran and \$10 for oil meal for each cow in the herd. You see then that this timothy hay business will cost the dairy farmer who owns a herd of 20 cows around \$300 for bran and oil meal. If he does not have the money or thinks he cannot afford these feeds, you know what happens. His dairy business runs down and becomes unprofitable. Further, as stated above, this ration is low in lime, and its continued use will lead to a falling off in milk flow.

CLOVER HAY RATION. NO. 2

Many farmers are successful growers of clover. Let us see what will happen in Ration No. 2 by using clover hay instead of timothy hay. Ah, wheat bran is not used and only 1.5 pounds of oil meal. This ration is considerably higher in lime, due to the clover hay which carries around 32 pounds to the ton while timothy hay carries only about 8 pounds to the ton. This ration is rather wide, having a nutritive ratio of 1:7.3. The clover hay dairy farmer will only have to buy 315 pounds of oil meal, less than one-seventh of a ton, for each cow, and spend around \$80 on his 20 cows. By growing clover instead of timothy, the timothy hay dairy farmer can save a money expense of \$200 a year if he has 20 cows. There are the taxes saved.

So you see the timothy hay farmer ought pretty nearly to dispense with longer depending on timothy hay and learn how to make sure of a clover crop. Professor Griffith Richards, Soils Specialist in the College of Agriculture for Southern Wisconsin, has made extensive observations of clover successes and failures on farms. Let us see what he has to say about growing clover:

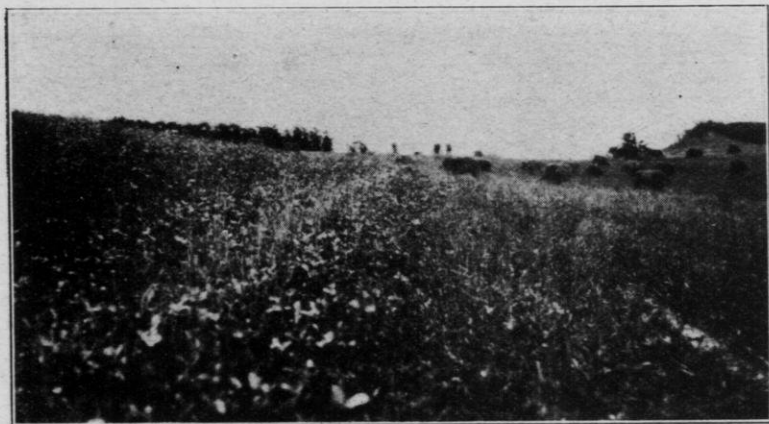
"Some Wisconsin farmers are now beginning to admit they cannot grow the wonderful clover crops that were so commonly grown each year 30 or 40 years ago. To be sure, it is impossible to put one's finger on any one thing and say it alone is responsible for the recent failures of clover; in fact there are a great many factors, some or all of which cause clover failures.

Drainage

"All necessary conditions favorable for the clover crop may be present but if drainage is lacking the clover crop is doomed to failure. Land may have sufficient drainage for a dry season but during a wet season the clover plants have 'wet feet' and in the spring ice sheets form that exclude the air and cause the death of clover plants. Land must have enough natural drainage or artificial tile drainage in order to provide ideal drainage conditions for the clover plant during the wettest seasons. Many clover failures may be traced to poor drainage conditions; therefore excellent drainage should be provided as the first insurance premium against clover failures.

Lime

"The clover plant loves lime. Its plant body contains lime. When two tons of clover hay are hauled off an acre of land 70 pounds of lime are actually taken out of the soil and hauled away. Virgin Wisconsin soils contained large quantities of lime. This lime has been depleted by cropping and by being leached out in drainage waters. About 85 per cent of Wisconsin soils need lime for the clover crop and these soils should receive from 2 to 3 tons of limestone per acre to correct the acidity and to supply the lime needed by the clover plants.



CLOVER AND LIME IN EAU CLAIRE COUNTY

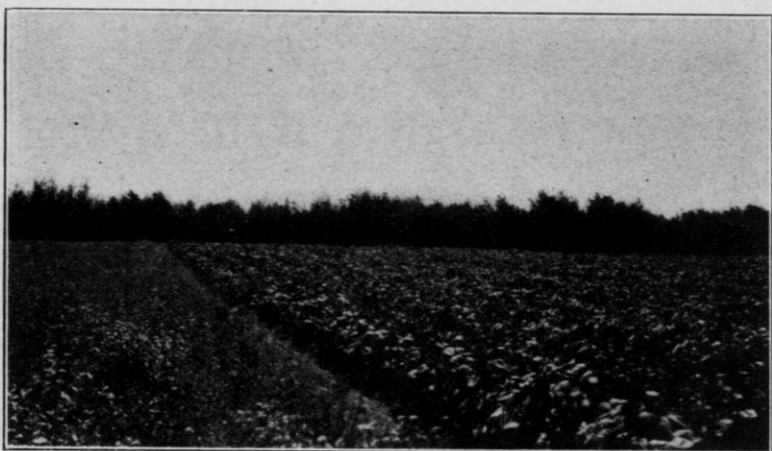
Mr. Boetser near Fall Creek, Eau Claire county, limed a strip of land which he was going to seed to clover last spring, 1922. The rest of the field he didn't lime. He wishes now that he had. You can see the difference. Hardly any clover in the grain stubble of the unlimed field; but see the fine catch in the limed area at the left.

Barnyard Manure

"The farmer who fails to grow clover cannot feed much livestock and the lack of livestock cuts down the available supply of barnyard manure. Clover is a nitrogen gathering plant but it grows best on a soil that is fairly well supplied with manure. Barnyard manure supplies to the soil the three plant food elements of nitrogen, phosphorus and potassium that are needed by the clover plant and it also improves the physical condition of the soil so the clover plants will have a favorable place to develop. Farmers who fail to grow clover year after year should apply manure for the small grain crop in which the clover is seeded. The practice of applying a light top dressing of manure to new clover seedings in the fall is also a very good one.

Phosphate

"The clover plant needs a large amount of phosphorus. Farm manures may be rather low in phosphorus. Phosphorus may be purchased in the form of 16 per cent acid phosphate. On 24 experimental fields on farms in southern Wisconsin the application of 375 pounds of 16 per cent acid phosphate to land which was sown to small grains and seeded to clover increased the clover crop 25 per cent. This paid. There is not much question but that it would be good farm practice to apply acid phosphate at the time that clover is seeded."

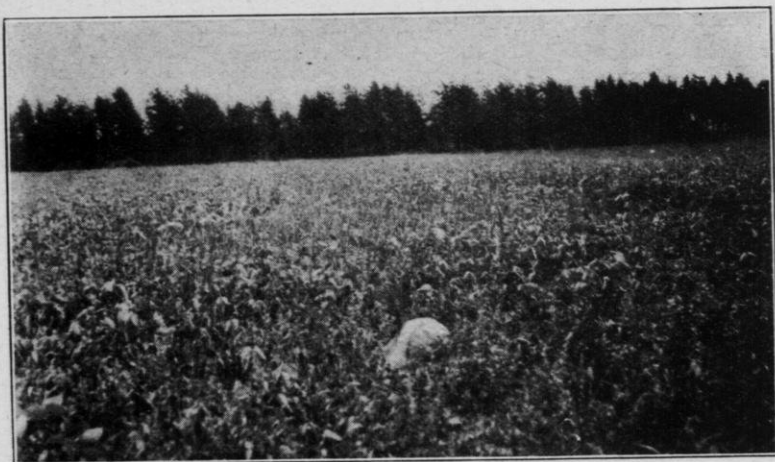


WHEN CLOVER FAILS

A large seeding of clover seeded in 1921 on the University Farm at Spooner failed last spring, 1922. They plowed up all of the field but what you see at the left and drilled soybeans in rows and cultivated them. Note how little hay they would have got if the field had not been put into soybeans. See what a fine crop of soybean hay will be cut.

SOYBEAN HAY RATION. NO. 3

In the last six growing seasons we have had two almost complete clover failures all over Wisconsin and three in southern Wisconsin. Anyway since 1915 the Department of Farmers' Institutes, noting the universality of the timothy crop and the growing tendency of clover to fail, has been pushing SOYBEANS with gratifying success. Look at Soybean Ration, No. 3. Ah, ha, no purchased feeds at all. As soybeans carry 35 pounds of lime to the ton, the lime content of the ration is satisfactory, and it is a narrower ration than either Ration No. 1 or Ration No. 2, having a nutritive ratio of 1:6.6. Those farmers who have SOYBEAN HAY will now see why it is that the milk flow increases when they begin to feed SOYBEAN HAY and the timothy



WHEN CLOVER FAILS

Soybeans broadcasted on the University Farm at Spooner, 1922. A poor, sunburned crop. On light soil moisture must be saved by cultivation. When beans are broadcasted you can't cultivate.



WHEN CLOVER FAILS

Soybeans seeded in drills on the University Farm at Spooner, 1922, and cultivated. A fine crop. Cultivation has held the moisture on this light soil.

hay farmer will understand how the soybean hay farmer has paid his taxes! He has saved the \$300 which the timothy hay farmer spent for bran and oil meal.

It would seem, therefore, that SOYBEANS, if not planted as a regular crop on dairy farms, as many are finding it profitable to do, ought at least to be used as an EMERGENCY HAY crop, a thing for which they are splendidly fitted. Professor George M. Briggs (Soybean Briggs), Soybean Specialist of the College of Agriculture, is making wide investigations of this crop which we choose to call The Dairyman's Wonder Crop. These investigations will be in circular form with suggestions. Write Professor Briggs if you are interested.



SOYBEANS IN COLUMBIA COUNTY

This is not a tobacco field. This is Institute Worker Bell of Columbus and his tremendous crop of soybeans. Listen to him this winter and make up your mind to grow soybeans and less timothy hay.

Farmers are having a variety of experiences with this crop. Some succeed. Some don't. Soybeans are such a wonderful crop for the dairyman that it is hoped that no farmer will fail to grow them on account of one failure. There is little question but that each farmer has got to do a little experimenting for himself to find the variety of seed which will fit his soil and climatic conditions and to learn in what way he can best plant and harvest them. The big things to look out for are to get the variety which will fit the particular condition and need, to inoculate the seed with soybean bacteria and not to plant too deeply nor too early. It you will

look again at Ration No. 1 and Ration No. 3 and see what you save by growing soybeans, you will no doubt be prompted to continue to experiment a little and finally succeed with SOYBEANS.



SOYBEANS IN SUDAN GRASS IN PIERCE COUNTY

Mr. McIntyre sowed a mixture of soybeans and Sudan grass last spring, 1922. You can't see the soybeans but the farmers and County Agents in this summer demonstration meeting could and you should have seen the happiness all over the face of Soybean Briggs, who is seen discussing this crop.

ALFALFA HAY RATION. No. 4.

After all, what are a lot of farmers in Wisconsin doing? Why, buying hay! "You don't mean it?" Yes, buying hay. "How can dairy farmers buy hay and make anything at the business?" Oh, they are buying ALFALFA HAY. If you will now look at ALFALFA HAY RATION, No. 4, and also remember that alfalfa hay carries about 38 pounds of lime to the ton, you will see why they do and why it pays. No purchased mill feeds, plenty of lime and a hay rich in protein. This ration is narrow, having a nutritive ration of 1:6.9.

But why buy alfalfa hay? 12 pounds a day for 210 days means the purchase of 2,520 pounds, a ton and a quarter of alfalfa hay at an average cash expense of at least \$25 per cow, or \$500 for 20 cows. Remember that all farmer grown crops are cheap and that it is only when off-the-farm labor touches things that they begin to get high priced. Why not grow alfalfa on your farm, Mr. Dairy Farmer, and get it cheap? Tried it and it won't grow? Well, the Experiment Station Farm is successful with it and a lot of farmers over southern Wisconsin grow it successfully. It will grow in southern Wisconsin.

AT HANCOCK

Up at Hancock on the Branch Experiment Station on sand land that five years ago would only grow sand burs, and poor ones at that, this summer of 1922, they produced better than two tons of alfalfa hay to the acre, quoted at \$20 a ton. Alfalfa was by all odds the best money crop at Hancock.

AT CODDINGTON

On the drained swamps at Coddington on the branch Experiment Station Farm there the alfalfa crop returned over two tons to the acre, worth \$20 a ton.

AT MARSHFIELD

Over at Marshfield Branch Experiment Station, on the drained Colby clay, alfalfa returned over two tons per acre. The alfalfa crop interested the Colby clay farmers who attended the summer demonstration meeting in July.

AT SPOONER

Go now to Spooner and the Branch Experiment Station there on the jack pine sand. For four years a measured acre has been cutting three tons of alfalfa hay per acre **without a failure**. You can better guess that this got the attention of the 1,000 people who attended the summer demonstration meeting in August.



ALFALFA AT ASHLAND JUNCTION

Sown in 1920. In 1921 over three tons cut to the acre. Over three tons were cut at the first cutting in 1922, and the farmers at the summer demonstration meeting saw this splendid crop ready for second cutting which would go another three tons to the acre. Yes, alfalfa will grow on the Superior Red Clay and no lime is required.



ALFALFA AT ASHLAND JUNCTION

Second cuttings of alfalfa and red clover side by side at the Ashland Junction demonstration meeting August 2, 1922.

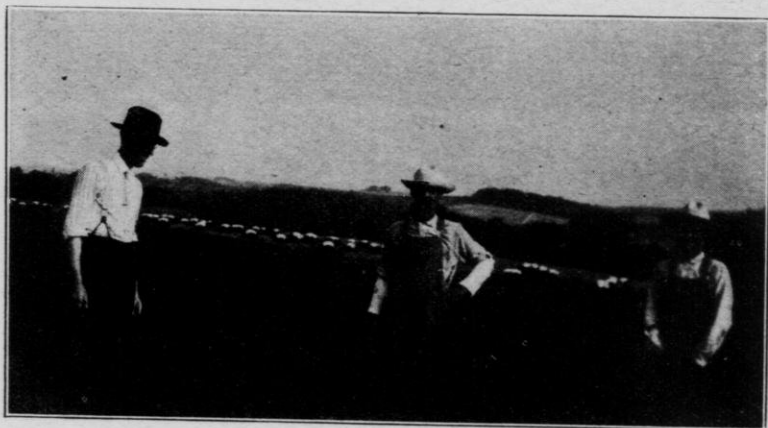


CLOVER AT ASHLAND JUNCTION

A second cutting of clover at the Ashland Junction demonstration meeting August 2, 1922. Alfalfa clearly beat clover out.

AT ASHLAND JUNCTION

There is a University Farm at Ashland Junction investigating the best crops for the Superior red clay. "Will alfalfa grow away up there on the red clay?" Will it grow? At the summer demonstration meeting on August 2 here was a field which had returned over four tons per acre per year for the last four years! Here was another sowing made in 1920 which returned three tons per acre in 1921 and this season had already returned three tons per acre and another equally good stood there to the astonishment and admiration of the farmer visitors. Another sowing made in 1921 had returned a ton and a half to the acre and another sowing equally good was in evidence. Wonderful crops!



ALFALFA IN PIERCE COUNTY

Mr. Gore's farm. First cutting in progress. The yield was better than two tons to the acre. Mr. Gore has grown alfalfa successfully for a number of years. Why farmer neighbors don't is a mystery. Mr. Gore says it pays to use hay caps. Notice them in the picture.

IN PIERCE COUNTY

All of this is going on on University Experiment Farms. Will alfalfa grow on farmers' farms? Come over into Pierce county, away up northwest and see. The County Agent conducted a county summer demonstration field trip in July. The trip took in the farm of Mr. Kline who had sowed a field of nine acres in 1921. Mr. Kline had cut a ton and a half to the acre the first cutting and another cutting equally good greeted the visitors. The crowd came to the farm of Mr. McIntyre where practically the same story was repeated. Another farmer in Pierce county has been growing alfalfa very successfully for several years. Our Farmers' Institute Worker Woodard, up at Bloomer, in Chippewa county, is an enthusiastic alfalfa grower. Institute Worker Ristow of Black River Falls, finds alfalfa a splendid crop out on his light soils farm. Here and there all over Wisconsin farmers are growing alfalfa. Yes, it will grow on farmers' farms all over Wisconsin.

WHY DON'T FARMERS GROW IT THEN?

Because they don't think they can afford to and because they think it is too much bother to get it to grow. Some say it winterkills. Professor L. F. Graber, Alfalfa Specialist of the College of Agriculture, who has made most widespread investigations and who has studied alfalfa for fifteen years, has made large investigations in respect to winterkilling. His experimental plots have a lot of good information for us, the essence of which is about as you will read below:

TIME OF CUTTING AND WINTERKILLING

After the very severe condition of the winter of 1921-1922 plots of alfalfa on the Experiment Station Farm which had been cut early enough to permit three cuttings in 1921 were all dead, having succumbed to winterkilling. Plots which had been cut a little later, when the alfalfa blossoms were pretty well out, withstood winterkilling and produced fine cuttings in 1922. This seems to indicate that it is better to let the crop stand a little longer than we have been doing in Wisconsin. We may not produce quite so good hay but it is still pretty good and we save our alfalfa fields. Try this, two cuttings when the fields are pretty well blossomed out.

LIME ONE GREAT FACTOR

On the Experiment Station Farms at Madison, Hancock, Coddington, Marshfield and Spooner, lime is one great factor in getting a start with alfalfa. After fifteen years of study and investigation, Professor Graber of the Experiment Station says:

"Lime, inoculation and manure
Make alfalfa doubly sure."

LIME IN PIERCE COUNTY

It cost Mr. Kline of Pierce county \$3.80 a ton for lime at the railroad station. He put two tons, \$7.60 worth of lime, to the acre, on a considerable strip of the nine acres and got an immense crop. He put one ton, \$3.80 worth of lime, to the acre on another strip, and the alfalfa was plainly not so good; on another strip he applied no lime and on that strip he threw away his seed for there was no alfalfa there but only a crop of weeds. Mr. McIntyre had about the same experience. Two tons of lime do the business as a rule.

CONSIDER OATS AND ALFALFA

But you say "That's too expensive. I'll grow oats as the rest of the Pierce county farmers do." But consider oats and alfalfa. That day the farmers were looking at the Kline and McIntyre alfalfa, oats were quoted in St. Paul at 32 cents a bushel and alfalfa at \$18 a ton. The average crop of oats in Wisconsin is around 40 bushels to the acre, \$12.80 an acre. Nine acres, \$115.20. Alfalfa, three tons to the acre, \$54. Nine acres, \$486. $\$486 - \$115.20 = \$370.80$. \$370.80 more from nine acres of alfalfa than from nine acres of oats. Farmers Kline and McIntyre were paid pretty well for their \$7.60 expense an acre for lime, don't you think?



ALFALFA IN PIERCE COUNTY

Mr. McIntyre's farm on main pike between Ellsworth and River Falls. Ready for first cutting. Land limed at the rate of two tons to the acre at a cost of \$7.60 an acre for lime. Alfalfa yielded better than two tons to the acre.



ALFALFA IN PIERCE COUNTY

Mr. McIntyre's farm. Ready for first cutting. Soil not limed. Little or no alfalfa. Seed wasted.

LIME CAN BE GOT CHEAPER

Farmers Kline and McIntyre brought their lime on the railroad for long distances and paid high freight rates. Why did they do it? Within three miles of the Kline farm a giant lime ledge crops out and within four stone throws of the McIntyre alfalfa field towers an immense limestone hill. See it in the picture. Enterprising farmers in Rock, Green and Iowa counties are grinding their lime right near their farms and getting it for almost half what it cost farmers Kline and McIntyre, for \$2 a ton. When farmers Kline and McIntyre heard this they began to question their County Agent and by December, 1922, two grinders will be working overtime in Pierce county.



ALFALFA IN PIERCE COUNTY

Mr. McIntyre's farm. Farmers and Northwestern County Agents in the summer demonstration field trip looking at the second cutting of alfalfa which would yield around two tons to the acre. The lime for this land cost \$7.60 an acre. The hill in the background is a limestone cliff where a local lime grinder could produce ground rock for around \$2 a ton.

LIME OUTCROPS

Up in St. Croix county lime outcrops. The County Agent and a committee of farmers from St. Croix county recently made a trip of investigation into Rock and Green counties under the direction of Professor Griffith Richards, Soils Specialist for Southern Wisconsin, to see what the Rock and Green county farmers are doing with lime grinders. There are limestone outcrops close to most any point in Wisconsin. All it needs is demand for ground lime rock to open up these outcrops. The need is great and all lime grinding plants should be kept going.

PORTABLE LIMESTONE GRINDERS

In several parts of the state there are already well equipped limestone grinding companies. These companies are supplying ground lime rock at

around \$2 a ton, f. o. b. cars at the plant; but freight charges are preventing farmers from distant points from getting ground rock from these plants. The northwestern and northern limestone outcrops surely ought to be developed for those parts of the state. Professor Richards has favored us with his observations upon successful portable limestone grinders. As he has had considerable experience with such grinders it would be well for farmers desiring to open lime outcrops to read what he says:

"The small portable limestone grinding machines are proving a success in Wisconsin. In sections of the state where there are good quarries of high grade limestone, located more than two miles from a railroad station, the farmers can get their limestone for less money by grinding it locally.



ALFALFA IN GREEN COUNTY

A group of Iowa county farmers with their County Agent studying alfalfa in Green county. Isn't this a splendid crop? Lime was put on the land.

METHOD OF STARTING A LIME GRINDING MACHINE

"Farmers in a community should sign contracts for 2,000 tons of limestone. This will guarantee work for some time, for an individual who cares to purchase the machinery for the work. A machine with a capacity of 30 tons per day, with both crusher and pulverizing attachments, should be purchased. Such a machine can be purchased for about \$1,200. It is essential to have plenty of power to operate this machine as well as some reserve power. A 15-30 gas tractor will supply plenty of power.

"The owner of the machine employs a crew of three men and makes a business of quarrying rock and grinding it for farmers. The charge for the grinding varies from \$1.90 to \$2.15 per ton. In some cases the farmers donate the stone and in other cases the lime grinding man pays 10 cents per ton for it. The farmer only needs to sign the contract, pay for the grinding and haul it to his farm and apply it to the land when his time permits.

Limestone grinders that have been purchased by several farmers in a community are standing idle because the farmers do not have the time to devote to the lime grinding business. The communities in Rock, Green, Green Lake, Grant and Monroe counties that are actually getting hundreds of tons of limestone ground are having the work done by privately owned and operated outfits. Limestone grinding is a business in itself and a man who spends all of his time at this work can do it economically and efficiently."

ANOTHER REASON

In considering Rations 1, 2, 3 and 4, timothy, clover, soybeans and alfalfa, we have not given sufficient importance to their lime content. We must not fail to look at this. Milk has lime in it. That's another reason why milk is "Nature's Perfect Food". It has lime in it. Why does nature put lime in milk? To feed the cow's calf and make bone. Where does the cow get the lime to put into the milk? From feeds that have lime in them. Unless she gets lime she will produce a small flow of milk.

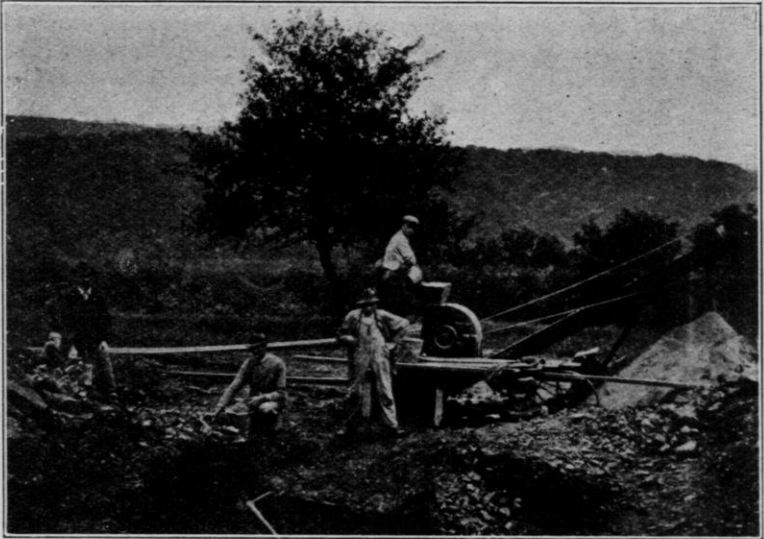


ALFALFA IN GREEN COUNTY

Here is the machine which the County Agent of Green county got going that furnished the lime that limed the land that grew the alfalfa that the Iowa county farmers saw.

FEEDS THAT HAVE LIME AND THOSE THAT DON'T

Seeds of farm crops carry very little lime. Therefore, Mr. Farmer, when you buy high priced bran, gluten feed or oil meal, you are getting protein but not much lime. Your corn silage and timothy hay are not rich in



ALFALFA IN IOWA COUNTY

And here is the machine in Iowa county that now grinds the lime that grows the alfalfa that the Iowa county farmers now mow; and when those St. Croix folks go back from Rock county they will do it too; and so will the Pierce county folks.

lime; silage probably a couple of pounds to the ton, and timothy hay maybe eight pounds to the ton. So you see Ration No. 1 is very faulty from lack of lime.

Clover carries perhaps 32 pounds of lime to the ton and you know that when you feed Ration No. 2 instead of timothy hay you get more milk and you get it more cheaply than when you feed Ration No. 1.

Soybeans in Ration No. 3 supply 35 pounds of lime to the ton of soybean hay. Now you know why your soybean hay helps to increase the milk flow. Soybean hay has a lot of protein and a lot of lime.

But look at alfalfa. A ton of good alfalfa will carry around 38 pounds of lime. It is not only rich in protein but is our most-rich-in-lime crop. You see now why farmers who buy alfalfa hay find it pays. But why buy alfalfa hay when you can grow it more cheaply? Why sow so many acres of \$12.80 oats which do not have lime and not grow some acres of \$54 alfalfa rich in lime? You can do it if you will buy and scatter lime.

SUPERIOR RED CLAY NEEDS NO LIME

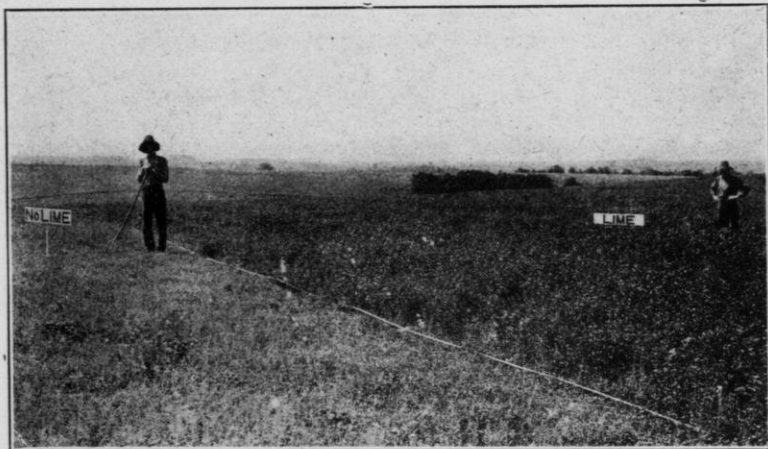
You farmers away up on the Superior red clay need no lime. At Ashland Junction the alfalfa on limed land showed no better than the alfalfa on the unlimed land. Four tons of alfalfa hay, \$72 worth, to the acre! Let's grow alfalfa on the red clay.

LIME AND CLOVER

As most farmers need to lime to grow alfalfa, so many farmers would find that liming their soils would insure them successful crops of clover. Mr. Boetser of Eau Claire county found that where he limed he got a good catch of clover this year and where he did not lime, he got no clover catch at all. See the picture.

LIME AND SOYBEANS

While soybeans do pretty well on land so sour that alfalfa won't grow at all and clover will grow only indifferently, yet soybeans will do much better as a rule on limed soil. This was plainly demonstrated on trial plots on the fair grounds at Rhinelander in 1912-1913.



MOST ANYWHERE IN WISCONSIN

If we could only date back to the days of the Israelites in Egypt and the Lord would only sow lime as he then sowed manna; but then probably we would kick on gathering the alfalfa as the Israelites did on gathering manna. Anyway it is as clear what we should do as what the Israelites should have done. Let's sow lime and alfalfa and not kick.

LIME AND OTHER CROPS

Crops carry lime in their stalks. Corn and timothy will carry as little as 6 to 8 pounds per ton of stover or hay when grown on sour soil. Professor Hart, the eminent chemist and investigator in feeding animals at the Experiment Station, tells us that corn and timothy grown on soil containing plenty of available lime may carry as much as 20 pounds of lime to the ton of corn stover or timothy hay, but on land which has been cropped for a long time or on sour soil, the lime content of these crops is far below this. As cattle find that lime rich crops satisfy a real need and so eat such crops better, it would seem that it might pay to lime land which is to grow corn or timothy hay.

ALFALFA AND CLOVER SEED

Professor E. J. Delwiche, who is Superintendent of the Branch Station Farms at Ashland Junction and Spooner, and who has in his care the crop work at these stations, and also at Marshfield Branch Station Farm, will warn you to secure American grown clover seed and better yet, Wisconsin grown clover seed. Write him in care of the College of Agriculture for advice. Don't fail in this.

Last winter in southern Wisconsin there was very little snow and alfalfa suffered considerably. On the Experiment Station Farm several things were learned. One group of plots was sown in 1921 with seed from various growers. Some of the plots winterkilled and some came through splendidly, showing that some strains of seed are more resistant to winterkilling than other strains are. Before buying seed it might be a good plan to write the College of Agriculture about getting the most cold resistant strains of alfalfa.

County Agent H. G. Seyforth of Ellsworth, Pierce county, assisted a lot of farmers of his county to get some 8,000 pounds of reliable alfalfa seed to sow last spring. He spent his vacation this summer in South Dakota looking up reliable alfalfa seed growers. The farmers and County Agents and seed dealers of northwestern Wisconsin will probably be benefited by securing information from Mr. Seyforth as to the source of good alfalfa seed.

Reliable seed is a part of success with alfalfa and clover.

CATTLE TROUBLES

In the discussion which follows please do not conclude that any large part of abortion may be due to feeding. No doubt most abortion is due to the contagious abortion germ; but a ration deficient in lime and fed to pregnant cows has produced disastrous results in experiments carried on by Professor Hart at the Experiment Station. Cows fed straw as the only roughage have usually aborted or have produced dead or weak calves. It requires lime to make milk and to build the bones of the unborn calf. Timothy Hay Ration, No. 1, is low in lime and as good results should not be expected as from a ration higher in lime. A great many Wisconsin cows do not get as good a ration as Timothy Hay Ration, No. 1. Timothy hay, corn stalks and straw are trouble producers when they make up most of a dairy ration.

THE CALF

Farmers as a rule see that the calf has a fair roughage. Timothy hay is a poor roughage for a calf. The calf should grow fast and large. It takes lime to do that. Good clover or alfalfa hay will prove the proper roughage for calves.

THE YEARLING HEIFER

Calves are usually fairly well taken care of; but, oh, the yearling heifer. She shifts for herself. She fights the flies in short pastures. In the barn she gets timothy hay, corn stalks and straw. She should be growing and laying up in her bones and system great vitality and strength for the coming years as a milk producer. She is bred. As the gestation period advances the growing fetus calls for more lime. A ration largely of timothy hay,

corn stalks and straw will hardly have supplied sufficient lime for the needs of the growing heifer herself, let alone meeting the needs of the unborn calf. Farmers report abortion among their yearling heifers. While it is probable that contagious abortion is the cause, yet it may not always be so. Let us see that yearling heifers have plenty of good clover or alfalfa hay, forages high in lime. Heifers will hardly be fed these forages if they have to be purchased. Farmers are usually liberal feeders in what they have an abundance of. It will pay to grow clover, soybeans or alfalfa for the heifers.

FAILURE TO BREED

Professor Hart from his great experiments is beginning to think that cows whose lime balance is not maintained and becomes low, due to feeding rations low in lime, may become sterile. Here is a grand hint to all dairy farmers.

LIME ASSIMILATION

Recent experiments by Professor Hart are indicating that the green leaves of plants are the things which help a cow to store up in her bones a good supply of lime and to maintain her lime balance. While perhaps a little more time and a few more experiments are needed to make conclusions sure, the guess now is that green leaves of well cured hay and properly prepared corn silage help in the assimilation of lime and that brown, poorly cured hay or corn stalks or corn silage made from weather-beaten stalks do not greatly assist in lime assimilation. Milk and the unborn calf require a lot of lime. A cow producing 40, 50 or 60 pounds of milk a day may so reduce her lime balance that by the time the breeding season arrives she is sterile and will not breed. This is worth thinking about. Let us not lose the best cows by feeding forages poorly prepared and low in lime.

HOW TO MAKE HAY AND SILAGE

Now what ought the dairy farmer to learn from these valuable experiments? Why, simply this. The hay crop ought to be cut before it becomes old and brown and it should be cured in a way to save the leaves in a green condition. Hay may be cut at the right time but may become bleached and brown in the curing process. **Save the leaves and save them green.**

ABOUT ALFALFA AND CLOVER HAYS

The western farmer may be able to make alfalfa hay by wholesale. He probably most of the time enjoys hay weather superior to our Wisconsin hay weather. So he can make hay by wholesale. But in Wisconsin where showers are liable during the haying period it is different. Alfalfa or clover hay that is bleached or brown and which is burned up by the sun from lying too long in the swath is not really good. It has lost a good many leaves and what are left do not help the cow greatly in getting the lime out of her feed.

After a lot of farmers have gone to the trouble to get good alfalfa and clover crops they may spoil the whole thing by poor curing of the hay. Most farmers will not want to go to the pains that Mr. Gore of Pierce

county has gone to as you will see in the picture in this bulletin where you can see the hay caps. As yet we do not know of experiments which tell us how much more valuable well cured green hay is than poorly cured, brown, sunburned hay. But it will probably pay most any farmer to cure alfalfa hay under hay caps. This might prove expensive and inexpedient to do for the whole herd but would certainly prove worth while for the calves and yearling heifers.

WHEN BUYING HAY

Anyway when buying clover or alfalfa hay and paying the price, remember that good green hay is worth the price and that old, brown, bleached or sunburned hay, or hay which has lost its leaves, is poor stuff.

In Rations 1, 2, 3 and 4, we mean good, well cured, green, leafy hay; not the old, brown, bleached, sunburned, leafless stuff.

ALFALFA AND PORK

Pig feeders, attention! For five years now the alfalfa pastures at the College of Agriculture have averaged a return of \$90 an acre each year for the alfalfa. One year the alfalfa brought \$150 an acre and the pigs harvested it themselves. Pork production should be a regular adjunct to most dairy farms in the utilization of dairy by-products. Say, you pig growers, it pays to buy lime and grow good alfalfa pig pastures.

GET THIS

Dairyman Friends: Right on your own farms in the green leaves of plants, especially in the green leaves of clover, soybeans or alfalfa, with their high lime content, you have the real destiny of your dairy herds. The real success of your business economically considered lies in the home-grown green leaves of plants having a high lime content. In the green leaves of plants having a high lime content you have the source of and a veritable monopoly of one of the most important elements of the rations of live stock and humans, **Fat Soluble Vitamine A**. Every consideration of a large milk production and of growing and maintaining a profitable herd calls for the growing of clover, soybeans and alfalfa on the dairy farms of Wisconsin. A good many farmers are doing it. Look once more at Rations Nos. 1, 2, 3 and 4 and see what you will save by doing it, before you give it up. Let's all do it.

You have read this little bulletin through to the end. The fervent hope is expressed that it has been with interest and profit to you. If it assists you to see your great task a little more plainly, if it assists you to bring to the hungry millions of this world the best food that they enjoy, its message will have accomplished the mission intended by the Department of Farmers' Institutes of Wisconsin.