

## Wisconsin Farmers' Institutes : a hand-book of agriculture. Bulletin No. 36 1923

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# Wisconsin Farmers' Institutes

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## LIME

The Miracle Working Stuff

**BULLETIN 36** 

NM

1923



## A HAND BOOK OF AGRICULTURE

## **BULLETIN NO. 36**

## 1923

"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

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## THE SHUTDOWN

There's a lesson in a sawmill, if we only look about,

When a fellow feels discouraged that will help a fellow out.

You can hear it in the engine, you can hear it in the hum Of the belt upon the pulley when you're feeling rather

glum.

And it's this: We all are needed, big and little, great or small;

If we didn't work together then we couldn't work at all. In the sawing of the lumber, in the labor of the day,

Ev'ry belt and shaft and pulley has a certain part to play. For the energy of engines wouldn't get us very far

If the belts and shafts and pulleys weren't ready where they are.

It isn't just the engine that will operate the mill-

It isn't operation, it's cooperation still!

If there's trouble with a bearing, if there's trouble with a belt,

Thru the entire institution is the difficulty felt.

Be it office, home or country, be it sawmill, be it town,

We must learn to work together or we'll have to shut 'er down!

## A BIT OF OLD WISCONSIN THE LAND WE LIVE IN

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## WHERE LAKE PEPIN'S WATERS RIPPLE

## FOREWORD

While all agriculture is suffering hardships these days dairy farming seems to be suffering the least. More or less careful observations made over the entire state would indicate that a slight change in the dairy farm cropping system, replacing a large part of the timothy hay and very much of the oats acreage with alfalfa and soybeans, and substituting sweet clover pastures for the old, short-season, drought-injured, June grass pastures, would materially reduce Wisconsin's annual feed bill of \$35,000,000 for oil meal and bran and considerably increase the money return per acre, and money return is what the farmer sorely needs right now.

Soybeans will grow on any drained land in Wisconsin and alfalfa and sweet clover will grow anywhere in Wisconsin where the soil has sufficient lime and is drained.

Let's grow alfalfa and sweet clover all over Wisconsin by applying lime where necessary.

Lime Is the Miracle Working Stuff

#### COVER CUT

Forward looking men studying how other men are mining the quarries of "white gold" with rock grinding machines.

## 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

## How Proper Home Grown Forage Crops Pay (From Stencil Bulletin No. 61, October, 1922)

Things assumed: A herd of 20 dairy cows, average weight 1,200 pounds, each producing 30 pounds of 3.5 per cent milk; a feeding period of 200 days; wheat bran \$25 a ton, oil meal \$45 a ton, and alfalfa hay \$25 a ton.

#### Dairy Ration No. 1

Timothy hay10	pounds	
Corn silage	"	
Ground corn 2	"	
Ground oats 2	. "	,
Wheat bran	")	Purchased
Oil meal 3.5	" ]	\$465

#### Dairy Ration No. 2

Clover hay1	12	pounds	
Corn silage	36	"	
Ground corn	2	"	
Ground oats	2	**	
Wheat bran	2	" ) Purchase	d
Oil meal	1.5	\$ " \$ \$235	

#### Dairy Ration No. 3

Soybean ha	y1	2	pounds
Corn silage		6	"
Ground cor	n	4	"
Ground oat	S	4.5	"

## Dairy Ration No. 4

Alfalfa	hay	 12	pounds
Corn sil	lage	 36	**
Ground	corn	 4	**
Ground	oats	 4.5	» ·



FORWARD LOOKING FARMERS

The way men study who are anxious to get \$50 acre alfalfa instead of \$15 acre timothy. Such men are the coming Wisconsin farmers.



## THERE'S A DIFFERENCE

Here are two farms side by side with no line fence. On one side an indifferent field of timothy full of weeds; on the other a field of clean alfalfa getting ready for the second cutting. One farm will have a half-ton of weedy timothy hay to the acre, the other will have three tons of clean alfalfa.

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## WISCONSIN'S DAIRY FEED BILL

Wisconsin grows annually 2,000,000 acres of mixed hay, three-fourths of which is timothy 500,000 acres of timothy hay 200,000 acres of clover 100,000 acres of alfalfa

Reduced to timothy and clover, the mixed hay becomes 1,500,000 acres of timothy and 500,000 acres of clover

The final result then is 2,000,000 acres of timothy 700,000 acres of clover and 100,000 acres of alfalfa

We have in Wisconsin about 2,000,000 dairy cows. On the above acre hay basis

1,428,560 will be fed timothy 499,996 will be fed clover 71,428 will be fed alfalfa



CAN WE GROW TIMOTHY IN WISCONSIN?

Here is a field of timothy which was just being raked up. It probably had 5 acres in it. See the ground between the swaths and notice the distance between the windrows. The man raking thought that the yield would not be over three-fourths of a ton to the acre. Plenty of fields in Wisconsin were seen this last summer which would not yield over a ton to the acre, a ton to the acre of a very poor dairy feed. In our Timothy Ration, No. 1, Four Dairy Rations, How Proper Home Grown Forage Crops Pay, we found that a herd of 20 cows, weighing 1,200 pounds each, producing 30 pounds of 3.5 per cent milk, fed a properly balanced timothy hay ration for 200 days, would require a money outgo for oil meal and bran of \$465 each feeding season. In 1,428,560 cows fed timothy there will be 71,428 20-cow herds each calling for an expense of \$465 for oil meal and bran. Thus timothy hay will make a feed bill of \$33,214,020.

At least \$30,000,000 of this feed bill could safely be avoided if dairy farmers of Wisconsin grew 2,000,000 acres of alfalfa in place of 2,000,000 acres of timothy.



WHICH SHALL WE GROW IN WISCONSIN?

See these two crops of hay ready for the mower, one the poorest and the other the best dairy hay crop, the first cutting of timothy and the second cutting of alfalfa, side by side. If the timothy returns a ton to the acre it will be going good and strong. The alfalfa certainly will return a ton and a half. The alfalfa had already returned a good crop at the first cutting. Which shall we grow?

Clover Ration, No. 2, in Stencil Bulletin No. 61, called for an expense of \$235 for every 20-cow herd for oil meal and bran. In the 499,996 fed clover there are 25,000 20-cow herds, each calling for an expense of \$235 for oil meal and bran. This means a money outgo of \$5,875,000, \$5,000,000 at least of which would not be necessary were alfalfa grown in place of clover.

We know that farmers who feed clover hay buy quite liberally of oil meal and bran and we know that farmers who feed timothy hay have to go the limit for the same feeds if their cows do much.

Therefore if cows in Wisconsin are fed properly this coming winter to make the most out of our timothy and clover, there will be an outgo from the farm pocketbook of \$35,000,000 for mill feeds.

One day in July a farmer in Wisconsin was seen drawing in timothy hay. The field was very hilly and he had a team of horses on each side of the wagon tongue in order to draw the load around over those hills from which it looked as if he might possibly get a ton of timothy hay to the acre. Not more, and probably less. You see he was putting forth a double effort to get that timothy hay which will not return him more than \$15 per acre. DID HE KNOW AND DO YOU REALIZE THAT EVERY TIME HE PUT FORTH THAT DOUBLE EFFORT TO PUT TEN POUNDS OF THAT HAY ON THE WAGON HE HAD TO SPEND TEN CENTS FOR OIL MEAL AND BRAN TO MAKE THE HAY WORTH ANYTHING AS A COW FEED?



## THE TWO CROPS TO GROW

Here they are side by side: Corn for the silo and alfalfa for the hay mow. Dairy farmers in Wisconsin have made advance registry dairy records with these two feeds alone, corn silage and alfalfa hay, produced right on their own farms.

Down the road a way was a farmer who was drawing in alfalfa and every time he put ten pounds of that hay on the wagon he was practically putting ten pounds of bran on the rack plus the lime that was in the alfalfa. That's the difference. Those great hills are almost nature's home for alfalfa and will return \$50 and \$60 to the acre from alfalfa rather than \$15 from timothy.

The great majority of farmers are liberal feeders with the feeding stuffs of which they have abundance; but there is a natural tendency to scrimp dairy cows when feed is scarce and much of it has to be purchased. Therefore cows fed timothy get a poor feed to begin with and are more likely to be underfed with high priced feeds to balance the timothy. Underfeeding means lack of profit. Lots of good cows are unprofitable through lack of feeding. But the farmer who grows alfalfa has abundance and will feed liberally of nature's best food for the cow.



## **EFFECT OF A RATION HIGH IN LIME**

This cow received a ration of 7 parts of whole oats, 4 parts of oat straw and 3 parts of alfalfa. She produced a strong, healthy 84-pound calf. The alfalfa carrying lime did the work. LIME IS MIRACLE WORKING STUFF in stock raising as well as in growing crops.



## EFFECTS OF A RATION LOW IN LIME

This cow was fed a ration of timothy hay grown on very acid soil and sufficient grain to balance the timothy hay. This made a ration very low in lime. The calf was two weeks old when the picture was taken and had never stood up. It died a few days after the picture was taken. Lack of lime is disappointing in stock raising as well as in growing crops.

This year the timothy and clover hay crop is light and it is going to take an acre or an acre and a quarter of hay to feed a cow 200 days; but one acre of alfalfa will feed two and one-half cows and feed them liberally. That's the difference.

Oil meal and bran pay the freight rate so hated by farmers and carry the high cost of labor wherever off-the-farm labor touches them. Look at Dairy Rations 3 and 4. Homegrown alfalfa and soybeans will cut out this farm outgo of \$35,000,000 annually.



## HOW IT HAPPENED

The old cliff in the background is made of lime rock. In the decay of the lime rock through thousands of years of time the soil on the Skidmore farm near Diamond Bluff, Pierce County, was richly stored with lime. Hence this miracle.

## DON'T BLAME THE FEED DEALERS

Do you know how many persons and firms sell feeds in Wisconsin and come under the state inspection service? Well, there are 3,550 of them. Did you ever think it? That's quite a lot of people for farmers to support in whole or in part. It is not the feed dealers' fault and they are not bad people either to have around. Timothy hay makes them possible and if they were not around to make up for the deficiencies of timothy hay with the feeds they have on hand for farmers, the timothy hay would be largely useless and the dairy farmers' profits would be less than they are now. Feed dealers under our circumstances are a blessing. There surely is no overproduction on dairy farms in Wisconsin when dairy farmers patronize 3,550 feed dealers unless there is an overproduction of the wrong kind of feed stuff. There is no overproduction of alfalfa. There is overproduction of timothy. If farmers want to relieve themselves of their huge bill and get out of supporting some of the 3,550 feed dealers the only safe way is to grow alfalfa, soybeans for hay and sweet clover for pasture.



## THE MIRACLE FIELD

The farm of John Skidmore, Diamond Bluff, Pierce County, from the lime cliff. Alfalfa to go with the corn in the great field in the background. The old cliff surely smiles on the Skidmore farm. Did you ever see anything like it!



THE MAN AND THE MIRACLE

Of course John Skidmore had to sow the alfalfa seed. But then he enjoyed the harvest.

## TIMOTHY VS. ALFALFA

In 1921, Wisconsin had 2,000,000 acres of timothy hay. Timothy is a universal dairy farm disease in Wisconsin. The average yield was 1.3 tons per acre. The farm price was around \$15 a ton, or a gross return of about \$20 per acre. \$20 an acre! When that is all a farmer can get back in money from an acre of land for all of his toil and investment in land and machinery, how is he going to stay on his land?

In 1921, Wisconsin had something over 100,000 acres of alfalfa. The average yield was 2.6 tons per acre and the average price at the farm was \$20 per ton or a gross return of about \$50 an acre.

\$20 an acre for timothy; \$50 an acre for alfalfa. Granting that half the land occupied by timothy would not grow alfalfa at all but the other half would, had alfalfa been on half of the timothy acres in 1921 Wisconsin farmers would have been \$30,000,000 better off or about \$150 apiece and they would have averaged another \$150 apiece in saving on feed bills.



## **OTHER WONDER CROPS FOLLOW**

The Swartz farm near Waukesha, worn by 75 years of grain farming, renewed its youth after alfalfa was grown, and became Cornfalfa Farm of nation wide fame. Then followed wonder crops of grain.

## CAN WISCONSIN FARMERS GROW TIMOTHY?

One would think so from the universality with which they try to do so; but plenty of fields were seen this last summer, however, which would not go over a ton to the acre, and many would not go a ton to the acre. Unless we can do better than that we ought to conclude that we can not grow timothy and give it up. When alfalfa fields get to the point where they do no better than timothy does they are plowed up as no good.



## DON'T BE DOWNHEARTED

A clover failure in 1923. "What shall I do?" "I'll try some soybeans." Here is the result. ..Two tons to the acre of soybean hay, every pound of which is nearly equal to a pound of bran in feeding value. Don't be downhearted when clover fails. Plant soybeans.



## WILL SOYBEANS GROW ON HEAVY SOIL?

No, this is not a field of tobacco. It's a field of soybeans on the Colby silt loam out north of Neillsville, Clark County. Soybeans are a wonder crop on heavy soil if planted and cared for rightly. (See Ration No. 3)

## CAN WISCONSIN FARMERS GROW ALFALFA?

In 1921, nearly every county in the state reported alfalfa and the average acre return was 2.6 tons. This last summer most favorable reports came from all parts of the state and personal investigations have shown that it is a grand crop where it has been given a chance.

## WHAT IS THIS ABOUT PORTAGE COUNTY?

Yes, and about Waushara county too? Splendid fields were seen in Portage and Waushara counties. Some farmers are going from potato growing to alfalfa growing. The crop on the Manzer farm, on Highway 10, was a sight to behold and the Winkler farm, also on Highway 10, was another wonder alfalfa farm. Dry season too.

## HOW ABOUT CLARK COUNTY?

Can they grow it on the Colby silt loam? Many have discouraged the growing of alfalfa on the Colby loam. The Department of Farmers' Institutes has been called to account for putting on alfalfa discussions there. We have as valiantly contended that it would grow there but have never been in position to carry the guess through; but this last summer we saw it growing in regular fields and by the roadside as a sort of weed. And now we'll leave it to the County Agent. At no remote day the Colby silt loam will grow alfalfa to no end far surpassing timothy and succeeding it.



## WILL IT GROW ON THE COLBY SILT?

Will it? The above splendid crop of alfalfa was getting ready for its second cutting out on the Kroll farm north of Neillsville, Clark County, on July 20, 1923. Mr. Kroll surely cut five tons per acre from this field this last summer. The seed was sown in 1922.

#### HOW ABOUT BURNETT COUNTY?

"Oh, my! They won't try to grow alfalfa in Burnett County, will they?" Listen! Emil Johnson, Route No. 1, Grantsburg, has 27 acres which cut 81 tons at the first cutting. He will save ten acres of the second cutting for seed. Last year, 1922, his second cutting saved for seed returned him three bushels per acre, which he sold at 40 cents a pound, \$72 per acre! And he already had the hay from the first cutting.

In the 1921-1922 feeding season his cream checks amounted to \$2,600 and he had to build a new barn to hold the alfalfa. This sounds like profiteering,

doesn't it? But Emil Johnson is not a profiteer, he's a philanthropist. He sold over \$400 worth of alfalfa hay to his neighbors at \$15 a ton when they were paying from \$20 to \$25 a ton for very ordinary timothy. Yes, alfalfa will grow in Burnett County.



WON'T IT KILL OUT ON THE COLBY SILT?

Probably some time. But here's a field of alfalfa on the Kroll farm north of Neillsville, Clark County, which is seven years old. This is the second crop. This field has been cut three times each year, a practice not generally recommended.



## WILL IT GROW ON THE COLBY SILT?

The one enduring stronghold of the men who have said "Don't talk alfalfa here" has been on the Colby silt loam, the great central dairy section of Wisconsin. Discouragement has been met on every hand. But here is a dandy field of alfalfa on the farm of Charles Forest about halfway between Unity and Colby, right in the very stronghold of opposition, where the land is level as a floor. Can you grow alfalfa on Colby silt loam?

## HOW ABOUT ONEIDA COUNTY?

"What, grow alfalfa on those gravel hills?" Sure, some of the finest alfalfa out has been grown in Oneida County; and some day when men give those old gravel hills a chance they will return ten per cent net on \$200-acre land. There is no place too good nor too poor in Wisconsin to grow alfalfa, soybeans,—and sweet clover for dairy pastures.



## ALFALFA IN ONEIDA COUNTY

An old gravel hill in Oneida County with the characteristic slough dark behind it. This picture was taken on the Coon farm near Rhinelander, about the middle of May, 1914. You see alfalfa is the earliest crop in the northland. On this farm in 1913 alfalfa grew 21 inches in 16 days.

## OTHER SECTIONS

In the discussion thus far we have shown that alfalfa is grown in some representative counties here and there where most farmers have experienced trouble in growing the crop. In Pierce County, for instance, some farmers have good success without going to any extra trouble to grow the crop, while others have no success at all unless the soil receives special treatment. Pierce County lies in what was once the great sweet soil area of Wisconsin; but cropping and leaching have got in their work and now the surface soil on many farms in this area, which you will see in an accompanying map, is acid and alfalfa does not like acid soil and will not grow well in it, if at all. Some of the southern counties in this area grow several thousand acres and the acreage is increasing. The northern counties while experiencing poor results in getting catches of alfalfa really have better winter conditions for the crop than the southern counties, as a good blanket of snow usually covers the northern part of the state.

## ALL DEAD BUT ALFALFA

Conrad Kruse, member of the Farmers' Institute force, from Loganville, Sauk county, said in August that there was practically no timothy and clover over that way on account of the severe drought and heat. They were all burned up. But alfalfa was better than ever. You know Mr. Kruse is the one farmer in this world who grows a legume on every acre of his farm every year. He says new seedings of timothy and clover over that way are all gone but that new seedings of alfalfa are coming fine in spite of the hot dry weather. Mr. Kruse's father had five acres of alfalfa one year old from which he cut three tons per acre at the first cutting, two tons from the second cutting and a third crop stood (August 15) better than knee high. You see this will mean at least six and possibly seven tons per acre, or between 30 and 35 tons of hay from five acres, every pound of which is equal to a pound of bran, and every acre of which will return to Mr. Kruse \$120 to \$140 or ten times as much per acre as if those five acres grew timothy or oats. What did you say about unprofitable agriculture?

## SECOND CUTTINGS: ALFALFA VS. CLOVER

Our observations of second cuttings of alfalfa and clover this last summer leave no question of doubt as to the superiority of the second cutting of alfalfa over the second crops of clover. Alfalfa was a more rapidly maturing crop which would bring on the second crop at a time when weather conditions would be better for curing it than when the second cutting of clover would be ready for cutting.

## TIME OF CUTTING ALFALFA

R. J. Fuller, Maiden Rock, Pierce County, had a splendid field of alfalfa this last summer. He started in to cut it on June 13 and had four or five swaths cut when County Agent Seyforth came along and advised him that he was cutting too early, that he ought to wait until the field was almost blossomed out. So Mr. Fuller stopped cutting. It took him nearly a week to cure out what he had cut. On June 20, just one week later, he cut the rest of the field and it only took two or three days to cure that out and get it into the barn. On July 26, when a delegation of farmers visited Mr. Fuller's farm they were surprised to see that the part which was cut on June 20 was from four to six inches taller than the part which had been cut on June 13, and looked much more thrifty. This only bears out the findings at the farm of the College of Agriculture that alfalfa is more thrifty and hardy if cut in the full bloom stage. Let's not cut too early. Watch the blossoms. Let alfalfa blossom out well.

## SWEET CLOVER FOR DAIRY PASTURES

Sweet clover seed is cheap. Why would it not be a good plan to try out a part of some of the old pastures with sweet clover and see what will happen? Most of our old pastures prove a loss to the farmers now so it would not spoil much to try an acre or two over in a back corner. Plow up some where it is capable of being plowed and is not likely to wash too much, apply ground

lime rock at the rate of a couple of tons to the acre, sow about 15 pounds of sweet clover seed to the acre, first inoculating the seed with sweet clover germs. Wisconsin has a lot of nearly barren old hills where the pasture is very thin. Why not scatter two tons of ground lime rock to the acre and about 15 pounds of inoculated sweet clover seed to the acre and put on the drag and drag as much as possible and see what will happen? Do this early in the spring when the soil is moist and await results. If sweet clover could be got to grow on our barren hill pastures it would be fine. It's worth the trial.

## OATS VS. ALFALFA

We grow lots of timothy and we have seen that it's a bad one. We grow lots of oats too. They are another dairy farm epidemic. Miles and miles of oats. In 1921, we grew 2,600,000 acres of them with an average yield of 24 bushels per acre and a farm price of 33 cents a bushel. A gross return of about \$8 per acre. Alfalfa that year returned \$50 per acre. This last summer the oat crop in Wisconsin was not a great success. If the average acre of oats brings the farmer \$12 it will be going strong for this year. Are we going to make the grade with oats? Wouldn't it be better to let alfalfa succeed some of the acres of oats?



## WHICH SHALL WE GROW IN WISCONSIN?

Here is a field of alfalfa, a scant two acres, on the farm of Jacob Jacobson near Spring Valley, Pierce County, from which he cut at the first cutting six good big loads of hay or three tons to the acre. In the picture you see the County Agent and a group of visiting farmers. All agreed that the second cutting would return at least two tons to the acre. Five tons of the best dairy feed in the world to the acre for the season and worth \$20 a ton to any dairy farmer, \$100 per acre. Back of the farmer visitors was a field of oats which would return possibly \$12 to the acre, not more. Mr. Jacobson will just naturally let the alfalfa field spread over that oat field.

## NOW YOU'RE INTERESTED

"Say, how do they do it?" "Do what?" "Why, grow alfalfa in Portage, Waushara, Oneida, Burnett, Pierce, Clark, Eau Claire, Monroe, Shawano, Green Lake and Juneau counties?" The answer is that there are farmers who are not afraid of change, who are not stopped by one failure, who read farm papers, who attend Farmers' Institutes, who consult County Agents, who write to crop and soils specialists. And in the trials of the advice which they have received they have proved to themselves that

## LIME IS THE MIRACLE-WORKING STUFF



## THIS TOWERING CLIFF OF LIME AND THIS SPLENDID FIELD OF ALFALFA: WONDER SCENERY AND BOUNTIFUL CROP ALL IN ONE INDEED, LIME IS MIRACLE WORKING STUFF IN WISCONSIN

Yes, everywhere in Wisconsin where drainage is fair, alfalfa, the queen of all dairy feeds, will grow, some places without any addition of lime, but in most places lime has to be added. Times without end, all over Wisconsin, in trial after trial, limed fields have produced excellent alfalfa worth from \$50 to \$75 and \$100 an acre when fields where no lime has been applied have failed outright. Two tons of ground rock to the acre will not cost over \$7.50 almost anywhere in Wisconsin. The alfalfa from these limed acres will furnish nine times as much protein per acre as will timothy hay and three times as much as will clover. In money value these alfalfa acres will return from three to five times as much as will timothy hay, oats or barley. Since lime will work this miracle no one is too poor or ought to be too backward to perform miracles. Let's sow lime and grow alfalfa.



## **ALFALFA IN BUFFALO COUNTY**

Here it is near Mondovi on the home farm of County Agent Seyforth of Pierce County, where he got his start as an alfalfa specialist. Here he learned that LIME IS MIRACLE WORKING STUFF.



## LIME IN ONEIDA COUNTY

Where the old gravel hills are treated right the miracle always works. These hills on the Packard farm out north of Roosevelt were treated with lime. Lime makes \$75 acre land \$200 acre land and lime on those old gravel hills sowed to alfalfa will return 10 per cent on \$200 acre land. Lime is the greatest worker man can employ.



## LIME IN BUFFALO COUNTY

All they got from this hay field on the Seyforth farm near Mondovi that year was from a strip across the field where lime had been spread two or three years before. Lime surely worked the miracle here.



## "WHERE CAN YOU GET LIME?"

#### That is easy to answer:

1. There are commercial lime rock grinding companies from whom it is possible to get ground lime rock laid down in car lots at your station at prices ranging probably from \$3 to \$3.75 a ton at the most.

The following companies are licensed to sell agricultural lime in Wisconsin:

Biesanz Stone Co., Winona, Minnesota Breen Stone and Marble Co., Kasota, Minnesota Cutler-Magner Co., Duluth, Minnesota Fowler & Pay, Mankato, Minnesota Mike Gunter, Escanaba, Michigan Lake Shore Stone Co., Milwaukee, Wisconsin Mayville White Lime Works, Mayville, Wisconsin Outagamie Limestone Co., Black Creek, Wisconsin Racine Crushed Stone Co., Racine, Wisconsin Rockfield Products Co., Rockfield, Wisconsin J. L. Shieley Co., St. Paul, Minnesota Summit Marl Co., Watertown, Wisconsin Waukesha Lime & Stone Co., Waukesha, Wisconsin Western Lime & Cement Co., Milwaukee, Wisconsin Wisconsin Limestone Co., Milwaukee, Wisconsin

2. Local lime rock grinders: In a large number of counties there are lime rock outcrops where farmers grind their own lime with a gas engine for power and a portable machine to do the grinding. In Green Lake, Rock, Green and lowa counties farmers are using such outfits very successfully and the advantage comes in reducing length of the haul from the grinder to the field.



## MEANS TO THE MIRACLE

This is only one of many lime rock grinders in the wonder work over in Green Lake County where County Agent Lacey is the inspiration. This can be repeated wherever there is lime rock. All that is needed is determined, hopeful, forward-looking men.

The County Agent of Grant county is getting a number of lime rock grinders started in that county. Mr. Kruse of Loganville, Sauk County, said that a farmer from that section attended Station Day at the College of Agriculture last June to see the lime rock grinders at work. The result was that he bought one of those which were on demonstration and drew it over into that county. In no time the owner had orders for a thousand tons of ground lime rock. Yes, farmers are grinding their own lime.



## HOW STATION DAY HELPED

Station Day at the College of Agriculture in 1923 was a grand affair. Over 2,000 people viewed the demonstrations. One of these interested farmers came to see the lime rock grinders at work. He was convinced and took back home in Sauk County one of these grinders seen here. On August 15 he had orders for over 1,000 tons of ground lime rock. That's helping some.

In Pierce, Dunn, Columbia and some other counties the farmers are beginning to adopt this method and the price at the grinder is around \$2.10 a ton. Without any question farmers ought to cooperate to develop every lime outcrop in Wisconsin. Why, these lime outcrops are veritable mines of wealth for the dairy farmer. The local lime rock grinder is the key to unlock the treasure stored in these local lime stone deposits.

3. Marl deposits: Years and years ago in the evolution of the earth in various parts of Wisconsin lime was deposited in the bottoms of some lakes. Strangely enough most of these lime deposits are right where they will do the most good. They are in the light soils areas of Wisconsin. Up in Portage county, for instance, under the leadership of County Agent Noble, progressive farmers are inventing and using ways of getting this marl out of these lakes and where they put this marl on that light soil, lo, the wonderful fields of alfalfa you will see. It's great.



## A MINE OF "WHITE GOLD"

This is the old dried up lake bed that furnished the mine that had the marl that performed the miracle on the farm of Emil Johnson in Burnett County. Have you looked for such a mine on your farm?



## CAN THEY GROW ALFALFA IN BURNETT COUNTY?

Isn't this a wonder field? The Schultz farm on light soil near Grantsburg. Hay cocks too thick to count. Yes, they can grow it in Burnett County if they will treat the soil right. Marl worked the miracle here.

Now to return to Emil Johnson and Burnett county: These folks are more fortunate than ever. The evolution has gone on a little farther up there and the old marl lakes are dried up and only the beds remain and down under about a foot of top soil there is the marl, mines of wealth six and eight feet deep. And Emil Johnson and a lot of the farmers have old marl lake beds handy .and are using every known sort of conveyance to carry this lime onto their fields. This marl is lime and LIME IS THE MIRACLE-WORKING STUFF.

The report comes that the people up that way are becoming as wild over finding new marl beds as people do in trying to find new gold mines or oil

wells. Sundays and holidays and moments of leisure are employed by the people in prospecting in every old lake bed for those old marl beds full of LIME, THE MIRACLE-WORKING STUFF. They are calling marl "white gold" and their activity in searching for these deposits of it rivals the zeal of the old 49'ers who years ago pushed west for the yellow treasure.

Every farmer and every business man dependent upon agriculture should join in getting this marl onto the land and alfalfa sowed on the limed soil.



WHERE "WHITE GOLD" MAY BE FOUND

Investigations are yet incomplete, but farmers who live in counties marked in black will do well to examine the beds of lakes and any level fields which look as if they may have been dried up lake beds. Up in Burnett County the farmers were surprised to find rich deposits of marl down under about a foot or two of their soil. If you have a marl lake or a bed of old dried up marl lake on your land, you are lucky. You have the MIRACLE WORKING STUFF.

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## A "WHITE GOLD" LAKE

In the numerous lakes of the marl counties the people are prospecting for "white gold". In this splendid activity County Agent Noble of Portage County and Professor H. W. Ullsperger of the Soils Department of the College of Agriculture are pioneers. These deposits of marl have been waiting for years for some one to discover and make use of them. All honor to these prospectors. Not now, but some day, they will ride in the celebrating procession.



## THE MARL SCRAPER

Several good citizens up in Portage County are working to perfect a marl scraper and machinery to operate it. This scraper brought out the big pile of marl you see in the picture on the following page. If interested, write County Agent H. R. Noble, Stevens Point, Wisconsin.



## A "WHITE GOLD" DUMP

This is the arrangement which these "white gold" miners make for the big scoop to run up and dump the marl.



MARL, THE "WHITE GOLD"

See this big pile of several hundred tons of white stuff. It's almost pure lime from the bottom of the marl lake in the background. The central Wisconsin light soil area is favored with a lot of these lakes. It's a mine of wealth if you have one near you. Better look it up.

4. Lime waste: Paper mills and sugar factories use lime and usually run it off back of the mills into a refuse heap. Some farmers say that this stuff will burn up their land but it didn't burn up the land of the farmers who applied it to their soils near Stevens Point, Portage County. Rather it made the sandy soil green with alfalfa over two feet tall at the second cutting. In Pierce county farmers have secured lime waste laid down in car lots at their freight station for around \$1.50 a ton.

Around some of the mines in Grant, Lafayette and Iowa counties, the mine refuse is rich in lime. These old piles ought to be examined. If there is a good percentage of lime in the refuse, it will work the miracle all right in growing alfalfa.



"WHITE GOLD" MINING MACHINERY

The simple "contraption" mounted on sleigh runners which the "white gold" mining operators use to run the big scoops. But this simple machinery brings up the MIRACLE WORKING STUFF and the light soils will blossom as the rose with the flowers of alfalfa.

Conrad Kruse, Institute Worker of Loganville, loaded on his wagon a lot of fine stuff left by a road rock crushing machine. By most people this was considered worthless stuff; but it wasn't. It did the business all right in the growing of alfalfa and sweet clover and made profitable hay fields and pastures.

5. Lumber and coal yards lime waste: At times plaster lime held by merchants air-slakes and becomes useless for plaster and mortar making. This should not be dumped out and allowed to go to waste. When such lime airslakes it is the regular stuff such as farmers apply to land in the form of paper mill and sugar factory waste. It's all right. Use it.

6. Hardwood ashes: The accumulations of ashes at the big burners of saw mills where hard wood is sawed is half lime and a ton of hardwood ashes will equal a half-ton of ground lime rock. Fortunate is the farmer who scatters about five or six tons of wood ashes to the acre and sows alfalfa.

Now, let's look around for lime rock outcrops, marl lakes, old marl lake beds, factories with lime waste near them, and wherever there is a suspicion of lime waste. Carry along a bottle of good strong vinegar and pour a little on anything you think may be lime. If it froths up it is lime Then send a sample in to the Soils Department of the College of Agriculture, Madison, to determine the percentage of lime. Then see how much there is in the deposit of lime rock, marl or refuse and get it out.



## LIME WASTE

10,000 tons of it back of a paper mill at McDill, near Stevens Point. The good people of the paper mill have stood ready to give it away but farmers have said it would "burn up" their land. But finally the County Agent and some farmers will make use of this treasury. Are you near to a paper mill? Better see if it has any lime waste.



HOW LIME WASTE HELPED IN ONEIDA COUNTY

This alfalfa field was on the Burkhart farm near Rhinelander on June 23, 1914. Five tons per acre were cut here in 1913. Lime from a sugar factory and wood ashes from one of the big burners in Rhinelander were the miracle workers.

## ALFALFA CLUBS AND THE COUNTY ALFALFA FEDERATION

But by far the larger part of Wisconsin is without lime rock outcrops, marl lakes and marl lake beds or factories with refuse lime. Farmers in this great area ought to grow alfalfa and to do so they must put lime on their land.

Probably the vast majority of farmers in this part of Wisconsin are skeptical about their ability to grow alfalfa. They have sowed alfalfa seed but have not used lime and alfalfa won't grow. A great many farmers are progressive enough to want to try out lime but they don't want to buy a whole carload for a trial and it is hard to get lime in less than carlots.

Now here is the new plan as proposed by the Department of Farmers' Institutes. It is to organize ALFALFA CLUBS on the basis of carlots of lime. A minimum car of lime weighs **thirty tons**. The Institute plan is for half-acre trials; each farmer would plan upon a half-acre of alfalfa. He would sign a check for a ton and a half of lime, ten pounds of Grimm alfalfa seed and two bottles of inoculation, the total check being for **ten dollars**, with the provision that if there is any rebate it will be made. The ton and a half of lime can be hauled at one trip from the place where the car is "spotted". Getting the lime is the big job but if one has to make only one trip to get lime which will tell him whether or not he can grow alfalfa he can afford to make one rather long trip.



#### LIME ALSO HELPS RED CLOVER

Herman Steinke is a faithful attendant at the Institutes in Fall Creek, Eau Claire County. He thought well of the discussions on lime and went home, convinced, to give lime a trial. Here is his field of clover on June 2, 1923. You can see right where lime was applied and where it was not. You can see the old stubble on the land that was unlimed and where clover failed. But see the grand field of clover where lime was applied.

With this arrangement it would only take 20 farmers to form a club and get a car of lime. Twenty farmers could unload a 30-ton car of lime so that demurrage would not have to be paid. These 20 farmers would elect a president and a secretary-treasurer. The secretary-treasurer would hold the twenty checks of \$10 each. The Department of Farmers' Institutes or the County Agent will help in getting the car of lime, will assist those who desire to handle the seed for these trials to secure reliable Grimm seed, and the alfalfa inoculation and furnish all information necessary.



## SOYBEANS, THE DAIRYMAN'S WONDER CROP

If you can not get lime, don't be downhearted. Grow soybeans. (See Ration No. 3.) The field shown in this picture was on the Substation Farm at Spooner this last summer. Soybeans will grow without spreading lime.

If any farmer wanted to put in an acre or more he would increase his check \$10 for each half-acre added. In that way the size of the club could be reduced in membership, as the 30-ton car lot would be the basis for club organization.

## THE ALFALFA FEDERATION

Just as our Neighborhood Breed Clubs have two officers, a president and a secretary-treasurer, and just as these two officers meet with the two officers of other breed clubs in a county to make the COUNTY BOARD OF DIRECTORS, so ought the two officers of each alfalfa club to join with the

officers of the other alfalfa clubs in a county to organize the Board of Directors to look after the business end of alfalfa growing and MARKETING. When we are setting up a new farm enterprise these days we ought to plan right then on not only the producing **but the marketing end also**. What Wisconsin sets out to do it does. Wisconsin can grow alfalfa and is going to be a great alfalfa state. As Emil Johnson up in Burnett county has found now that he can grow alfalfa, he has surplus hay to sell, so our alfalfa farmers' clubs are going to find that they will soon have surplus hay to sell. AND LET'S KEEP CONTROL OF IT ALL THE WAY RIGHT FROM THE START. Our various county boards of directors will look out for the business end and reach out for the best markets and our alfalfa in excess of our farm needs can be sold in carload lots direct.

This plan of Alfalfa Clubs and County Alfalfa Federations meets all the requirements of marketing farm crops as outlined by the most uptodate marketing specialists. We have the small local producing groups and the federation of these groups into larger marketing units to control a vast supply.



#### WHERE CLOVER ALWAYS FAILS

The Gould farm on light soil near Grantsburg. "Why sow clover where clover always fails?" So thought Mr. Gould and planned a carefully arranged farm system to include soybeans for his hay crop. (See Ration No. 3.) Isn't Mr. Gould better off than the farmers who try to get along with sour bunch grass where clover always fails?

## CLARK COUNTY ALFALFA CLUBS AND CLARK COUNTY ALFALFA FEDERATION

County Agent H. M. Knipfel of Clark county has had such splendid success with the Neighborhood Breed Club Plan of dairy cattle breed organization as proposed by the Department of Farmers' Institutes that he is the first to adopt the Farmers' Institute plan for organizing Alfalfa Clubs on the basis of the 30-ton carlot of lime. His statement to the farmers of Clark county is so good that it is presented herewith:

## CLARK COUNTY ALFALFA CLUBS

WILL ALFALFA GROW IN CLARK COUNTY? SURE IT WILL GROW

When I came to Clark county everyone told me not to talk alfalfa, that it wouldn't grow, it had been tried by hundreds of farmers and absolutely failed.

They discouraged me so much that I began to believe it but after being in the county three years and having seen the results of demonstration plots that were properly limed and the ground properly prepared and the right kind of alfalfa sown, I am ready to tell the world that Clark county will grow alfalfa. It is the greatest legume on earth. It will yield three times as much as oats will per acre. It will save the farmer from buying a large amount of mill feeds. Because I am absolutely convinced that it will grow on every square rod of well drained land in Clark county, if it is properly limed, I have worked out a system of alfalfa clubs where members can grow either one-half acre or one acre without putting in too much money and show the rest of the county as well as themselves that alfalfa is the greatest crop we can grow.

Signed-

H. M. Knipfel County Agent

## ....., Wisconsin

I wish to become a member of an alfalfa club. In signing up here I understand that I am to guarantee a payment of \$9.50 for each one-half acre. This will entitle me to one and one-half tons of limestone, at \$3.50 per ton, eight pounds of Grimm alfalfa seed, at 50 cents a pound, and one bottle of inoculation at 25 cents a bottle.

I also agree to pick out a good piece of ground that is well drained, prepare the ground as per instructions, including the application of limestone and leaving a small strip of ground without limestone to be used as a check plot. It is further understood that this contract is void unless we can get enough signed to make use of a carload of limestone. When a sufficient number of farmers are signed up the club will be organized and the secretary will have charge of the distribution of the limestone, the alfalfa seed and the inoculation and will also keep an accurate record of all money spent and rebate any money left over after actual expenses of all limestone, alfalfa seed and inoculation are taken out.

	Name
Township	Address
Following is my gua and seed may be ma \$	arantee so that arrangements for getting the limestone de early.
On or before Dece	ember 1, 1923, I promise to pay to the secretary of the alfalfa club,
dollars, with interest Signed—	at 7% after December 1, 1923.

## METHODS OF APPLYING LIME TO ACID SOILS

## James Lacey, County Agent, Green Lake, Wis.

One of the ever recurring objections to the use of limestone, lime, marl and other agents that are used for correcting soil acidity, is the difficulty of application of these acidity neutralizers. The question of locating sources of supply of agricultural limestone and the transportation of the lime to the farm have been pretty generally solved in this portion of the state, but we are still compelled to meet the stories going the rounds to the effect that "spreading lime is just one awful job. When it's dry the wind blows it all away, and when it's wet the stuff won't spread at all. So what are we going to do?"



## SPREADING LIME BY HAND

For small and trial sowings lime may be spread this way. Care must be used that the shovelfuls do not go on in little heaps. Uneven spreading tends to make the alfalfa field "spotted". Dragging thoroughly or discing will be helpful where lime is spread by hand.

The purpose of this article is not to present some new and magic method of application that will necessitate no labor. To the best of our knowledge there has as yet been no such method devised, but methods are in use that are proving to be satisfactory because they do not entail any great amount of labor, and because they do allow the work to be done very uniformly and reasonably fast. Some Green Lake county farmers are spreading from fifty to one hundred tons of lime annually, and the practices which they are finding to be most convenient and least laborious will undoubtedly be of interest to users of smaller amounts.

Up to the last two or three years practically all the lime used on Green Lake county farms was spread with shovels, direct from the wagon. A load of lime was hauled through the field, and one or more men with shovels stood upon the load and covered an area as wide as they could throw the lime. Under this plan it made no difference whether the lime was wet or dry. But it required hard work, and was rather slow. Then, too, it was next to im-

possible to spread the lime uniformly, and when light applications were desired the task of putting it on evenly was an exceedingly difficult one.

Only on farms where a very few acres are limed each year is this plan still in use. Applications of greater tonnage necessitated easier and more expedient methods.

The use of manure spreaders was probably the next step in solving the lime spreading problem. By putting in a layer of chaff or some sort of fine manure, to prevent the lime from sifting through the spreader, and by running the spreader at a very low speed, it was found that the work could be done much more easily and more rapidly than it could have been done with shovels. The lime could be distributed more evenly also, and because of the general satisfaction of this plan it is used quite extensively by some farmers today.



SPREADING LIME ON CORNFALFA FARMS

A manure spreader will do the work very successfully. Before loading with lime cover the bottom of the spreader with a coating of fine manure.

Dr. J. A. Freudenberg, Markesan, an alfalfa grower who spreads from seventy-five to one hundred tons every season, states that he has been well pleased with this method of application.

"I apply about three tons of lime per acre", Dr. Freudenberg relates, "and by loading about fifteen hundred pounds per load, and shutting my spreader down to four loads per acre, I am enabled to do the work in an excellent manner. If the man who handles the team is careful he can spread the lime so that practically every square inch of soil is covered. Two men with one spreader can cover eight acres per day, and it makes no material difference whether the lime is wet or dry. I use manure in the bottom of the spreader instead of chaff, since I believe the alfalfa is benefited to no small extent by the manure with the lime. So far we can see no great amount of wear and tear on our spreader because of its use for this purpose."

August Mildebrandt, Markesan, is another farmer who has been quite well pleased with this manner of applying lime. Mr. Mildebrandt uses four tons per acre, and by putting in fifteen hundred pounds per load with the spreader set at slightly more than five loads per acre, he finds it rather an easy task to apply the required amount. He also uses about four inches of fine manure in the bottom of the spreader.

Lime sowers, or lime seeders, are being used by some farmers who are applying lime in large amounts. The greatest objection that one hears to the seeders is that they will not do a satisfactory kind of work when the lime is damp or wet. A few farmers have tried them without any success, due principally to the presence of moisture in the lime, which prevented it from feeding down through the openings in the bottom of the seeder box. Even the type of seeder with agitators in the box has not been satisfactory to all users. However, the seeder has its advocates even among farmers who are using large quantities of lime each season.



AN ENDGATE SPREADER IN GREEN LAKE COUNTY

This is a very successful way to spread lime. Ahead of the horses you can see where the field has been covered with lime.

G. B. Horner, owner of a large farm just south of Green Lake, upon which he has already used nearly three hundred tons of lime, has used a lime seeder for spreading all the lime that he has put on the farm in the last three years. Mr. Horner does not think the seeder is the best possible implement for this work, but he does believe that it has some advantages that are not found in other appliances for spreading.

"For one thing, I always make it a point to apply my lime when it is thoroughly dry", Mr. Horner told me, "because I do not see the necessity of handling a lot of water with the lime, and because the work can be done more efficiently with the lime in that condition. I have always had my lime delivered from the bin at the grinding plant direct to the field, and we can spread it just about as fast as it is delivered. I use about eighty tons per year, on twenty acres. The hauler puts the lime in the field in piles just far enough apart so that a spreader load of the lime will cover the distance between piles. This causes no lost motion, since it takes time to drive back with an empty seeder when the lime is put at only one place in the field.

"My seeder covers a strip twelve feet wide. It is low down, so that the task of filling it with lime is not a back-breaking one. One of my men with this seeder has covered eight acres in one day, and has done an excellent job. The low hung seeder prevents the wind from catching the fine lime dust and blowing it away. The machine is light, so that two horses can move along with it at a rapid pace, even when it is full.

"Next year I intend to have some of my lime ground here at home but I am going to take very good care that it is kept dry after it has been ground. My intentions are to build a bin for storing it, and to deliver it to the field as needed. My seeder will not handle wet lime, and as I stated before, I see no reason why it should be necessary. However, if in spite of all I can do the lime does become damp and wet, I presume I shall have to use some other method of spreading. To date I have been well pleased with the plan that I have followed."



## THE SPECIAL LIME SPREADER

This is a "regular" lime spreader. In the foreground you can see how evenly the lime is spread.

V. S. Kutchin, Green Lake, another alfalfa grower who has used more than three hundred tons of lime in the last half dozen years, related practically the same experience as did Mr. Horner. Mr. Kutchin had, however, used both a seeder and a manure spreader, using the latter in one instance when the lime became too wet to feed through the seeder. He statd that as he could see it one disadvantage of the manure spreader when used for sowing dry lime would be that on windy days there would be some loss of fine lime, and that the task of spreading would be a disagreeable one. He advised the use of manure in preference to chaff when a spreader was found to be necessary.

The one outfit for applying lime that has been found to be most generally satisfactory is the endgate sower. For applying large amounts of lime, this attachment is used more than all other outfits combined. It is light, handy, efficient, rapid and inexpensive. It will spread either wet or dry lime and will do it satisfactorily. Two or more farmers in each of several communities have found it convenient to own one on a partnership basis, so that today half a dozen endgate spreaders are doing the work on eighteen or twenty farms.

H. L. Schrader, Green Lake, had the first endgate spreader in the county. He has spread all of his own lime with it for the past three years and has loaned and rented it to numerous neighbors. To use his own expression, "It has delivered the goods".

This type of sower may be attached to the rear of any ordinary wagon box. The mechanism is driven by a chain from a sprocket wheel attached to one rear wheel of the wagon. The hopper on the spreader fits flush with the bottom of the wagon box and is kept full by shoveling the lime toward the rear of the box. Two men, or a man and a boy, are required to operate it,



## ANOTHER GREAT HELP

The State Soils Laboratory at the College of Agriculture, Madison, is answering no end of calls from farmers who want their soils analyzed and tested. C. J. Chapman is in charge of this great work. Here you see him as he was at the Hancock Substation Day on July 24 last. Ask him your questions by letter if you can not call on him personally.

a driver and a shoveler. The whole outfit weighs less that two hundred pounds, and can be regulated to apply any amount of lime desired. If the hauling distance is very great three horses may be used on a load, and one to one and one-half tons hauled and spread from each load. George and Walter Smith, Green Lake, have used an endgate spreader to handle forty tons of lime and report very satisfactory results. They state that they can handle twenty tons per day and do it easily. Clarence Morris, Green Lake, covered seven acres in half a day, at the rate of one and onehalf tons per acre. John Kasierski, Princeton, covered fifteen acres in one day, handling twenty-five tons of lime. Oscar Berg, Markesan, limed eight acres at the rate of three tons per acre, and did the work in one day.

H. A. Klatt, Markesan, who owns a profitable lime grinding outfit, also owns an endgate spreader and takes it around with his grinding equipment. Mr. Klatt has probably seen this spreader in use more than has any other one man in the county. He rents his spreader to men for whom he does grinding work, and states that in every case the men have been well pleased with the work that it has done.

"It is the most rapid spreader on the market", he states, "when we desire it for use on all kinds of lime. If a man uses judgment in driving there is no reason for waste of lime, even in windy weather. It handles wet lime very nicely and will spread it a rod wide. From the standpoint of time and labor saving I believe there is nothing on the market that will beat it, and there's practically nothing to it to break or wear out."

Such are the methods. They all require time and labor, some more than others. The farmer who uses large amounts of lime can choose any of the last three methods described, and feel certain that he will be pretty well satisfied with the results. The determination to use lime is a solution to more than half the problem. After this has been firmly resolved upon the manner of application is no longer a bugaboo.

#### ADDENDA

Just as this bulletin goes to press the report comes that an old alfalfa field up on the Colby silt loam where there is an almost impenetrable hard pan has been dug down into. It took picks and crowbars to get down through the hard pan but when a depth of seven or eight feet had been reached the alfalfa roots were still going down and the subsoil was full of alfalfa roots. Alfalfa will probably help solve the drainage proposition on Colby silt loam.