CROPS TO GROW.

W. C. Bradley, Hudson, Wis.

Ladies and Gentlemen:—At an Institute meeting the other day the question came up “What is the best crop to grow on a farm?” The minister, who was present, said that he thought a crop of boys was the best crop to grow on a farm. Some one in the back part of the audience improved on that by declaring that a crop of girls was the best thing to grow on a Wisconsin farm. The minister was too much for him, and he said, “Oh, the boys always embrace the girls, so it comes to the same thing.” I think you will all agree with the minister that the crop of boys and girls growing on Wisconsin farms to-day and being educated in our public schools, perhaps not to make farmers but to make intelligent, law-abiding citizens, are the best crop that we can grow on our farms.

But there are other crops, and perhaps some of you are asking, What are the best of those other crops to grow on our farms? This will depend, first, on the farmer himself. Something depends on his family, then considerable in his location as regards distance to market. Then, something will depend on the condition of the surface of his farm, whether it is level or very rough. Then, on the condition of the soil, whether it is low, marshy, sandy, or heavy, clay soil. All of these things we must take into consideration in order to determine which are the best crops for us to grow on a Wisconsin farm.

The Stockman.

In the first place, the farmer himself will have to give these different things a good deal of thought and study in order to know what he is capable of growing. If he is a fairly intelligent, industrious, thoughtful man, who has a good deal of love of live stock feeding and the capacity for growing those different crops that he can turn into feed for his live stock, why the crops for him to grow will be such as will
give him the most feeding value. It does not make much difference where we find this man, whether it is near a market or many miles from a market, whether he is on sand, or sawdust, he is going to grow those crops that he can turn into food to carry live stock of some kind. Where we find these men, we find successful men almost always, because in growing the crops that can be turned into foods, we find he can keep up the fertility, as Mr. Briggs has just told us, by it. That land will produce more and more each year, and he is not selling off according to the location he is in, is what crops he can sell from the farm, selling the least manurial value in the crop; to raise those crops that will take out of the farm the least fertility, and the ones that he can get the most money out of. A man’s family has a good deal to do with the crops he should grow. If he has a large family and can depend upon them for a good deal of help, he can raise crops that a man with a small family, or a man whose family is detrimental to him in his farm work, would not grow successfully. If he is on rough land, his

![Mountain Farm, Home of Mr. Bradley.](image)

his fertility by the bushel or the ton. His crops gradually become better and he can raise more and more each year.

The General Farmer.

But there are a great many farmers who are not given to live stock growing and these men do not want to grow crops for this special purpose. When we find men of this kind, we must allow them, perhaps, to take up a rotation of crops that would be objectionable to the live stock feeder, and the thing for this man to study crop rotation must be of a different nature than if he is on smooth land, because his rotation on rough land must be a very limited one; most of the ground must be kept seeded into grass and only a limited number of acres plowed. If we plow rough land, we will soon exhaust the soil, as we have often seen, especially where grain has exhausted the soil of fertility, of humus, and then our land not only dries up very easily, but it is subject to washing in heavy rains. The ground must be allowed to stay in
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grass a good deal of the time. My idea is that most of such land should be kept in pastures or grasses, and a limited amount in the smooth places can be used to grow such grains as will give us the best feeding value to supplement the grass feed or for winter feeding, a few acres of oats or barley, corn or potatoes, on the level portions of the land.

A Good Rotation.

On a level farm we could grow a larger variety and ought to do so. Our would have to be of a different nature than on rich prairie soils. In some sections of the State there is scarcely any rotation of crops adopted at all. Where the principal crop has been potatoes, year after year, they tell us it is almost impossible in some sections, to get a rotation of crops; that is, that they cannot grow clover. We cannot depend on a rotation of crops without clover, and their soil in some places has become so exhausted of its vegetable humus, it has been cropped so many years with potatoes, that the rotation would be three or four years. We commence, perhaps our land is seeded with clover, then put on corn and potatoes, then sow again to grain of some kind, oats or barley. Then seed again with clover or timothy, making a three or four year rotation. In this way we distribute the fertility on the soil more equally, we distribute the work over the farm more evenly; we keep out the natural tendency for foul weeds or wild oats. If we are on light, sandy soil, perhaps our rotation available potash in the soil has become so exhausted that it is almost impossible to get a stand of clover. For that reason they say they cannot use this rotation of crops.

Rotation for Light Soils.

It seems to me where our soils are light that we ought to be very careful to save the fertility and secure, if possible, a rotation of crops that will put back in the soil the fertility, the humus, the nitrates and the potash that
are necessary, and use such a rotation as will take out of the soil the least of these elements, and furnish the soil with the successive crops which will help to put into it those elements that they lack most, and this should be the study of every farmer. It seems to me that in sections where it is hard to get a stand of clover, we will say a soil where the potash and vegetable humus has been exhausted by con-

often you can get a crop of clover in that way where otherwise it will be almost impossible.

Another way would be to sow a light seeding of oats in the spring, allow the sheep or calves to pasture on this, feeding down the crop and then leaving the land, it seems to me that clover would stand a good chance of getting a catch where it will live through. If the soil has been exhausted of the

MR. BRADLEY'S JERSEY COW, VITOTA EUROTA, No. 42884.
54 lbs. milk per day. 21 lbs. butter per week.

continuous cropping, without returning anything to the soil in the shape of manure, with such a worn out field, let us sow rye on it in the fall. Almost any land will grow rye. Then, by sowing clover seed or timothy seed in the spring on the rye, and then a little later, when the rye is perhaps a foot high, mow that rye, allow it to fall back onto the ground, acting as a sort of mulch, a protection for the seed, vegetable humus, a good idea would be to sow a crop of rye and then plow under that crop when the rye is about sixteen or eighteen inches high. Then sow a crop of buckwheat and plow that under, and then sow rye again in the fall. In that way we lose the use of the land for one year, but we fill it with a good deal of vegetable humus that will be valuable for storing up moisture the coming season and fur-
nishing plant food with some of the elements lacking in the soil before. Some of you will say that this plowing in of green manure will not add anything to the soil and that may be true, but we have changed the mechanical condition of the soil and furnished vegetable humus that was necessary in order to get a crop of clover.

Good Crops.

One of the best farmers I know grows on a 160-acre farm, 20 acres hay, 40 pasture, 20 wheat, 20 barley, 30 oats, 20 corn, 3 potatoes, 3 pop corn, 2 fruit and vegetable garden, and the rotation is complete in four years. He sows clover with all grain, which furnishes fall pasture for stock, and seldom even has a failure of any crop.

Farmers should study the tables of the composition of crops, of the composition of manures, read Thompson’s Science in Farming, How Plants Grow, etc., and there would be fewer crop failures.

DISCUSSION.

Mr. Arnold—In studying crops to grow, there are two things to be considered, profits and condition of soil, and it seems to me that the farmer, everything else being equal, should raise a crop that will shade the soil during the heat of the season. Now, there is no evaporation unless there is heat and moisture, and in my experience these farms where they have been cropped short, where they have raised small grain and the ground has been left bare from the time this small grain is grown until the fall, those farms have gradually been growing poorer. We have been in the habit of laying it to the taking off of so much in the crop, but does not experience prove what I have said, that nature naturally shades the ground and we must follow nature in this regard. That being so, should not we plant some crop in the ground and keep it growing and keep the ground shaded during the heat of the season?

Mr. Bradley—Yes, there may be parts of his farm where the farmer does not want to sow clover. He can sow rape and white turnips and use them as a feeding crop after he has cut off his barley and oats. It will not only shade the ground, but it will furnish us good fall feed at the same time. Then there is another crop that comes in here. Some of these crops will take out from the soil more rapidly than others, and the foods we buy ought to be taken into consideration, their prices, etc. If we are growing wheat largey to sell, we will soon rob the soil of the phosphoric acid and nitric acid. There is nothing we can buy where we can get the phosphoric acid back so cheaply as bran. There are many farmers who seem to think that if they get manure enough on the farm that they can grow a crop successfully and yet there may be some of the elements that are lacking. You see we must study all these things, and the things we buy we should know the nature of their composition and what they can do in the soil, not only to keep it shaded, but to furnish the fertility that each crop needs.

Mr. Briggs—What season of the year would you sow rape and white turnips?

Mr. Bradley—We sow them at the same time as we sow the grain. If it was a very wet season, perhaps it would be well enough to sow the rape a few days after you have sown your oats or barley.

Mr. Wing—I want to speak of alfalfa. I do not mean to say you can
grow it all over Wisconsin, perhaps there is not a quarter of the State, perhaps not ten per cent., but I will say that if ten per cent. of you have succeeded with alfalfa, it will be worth a hundred dollars, yes, a hundred and fifty dollars an acre in the results yielded. I have studied your soils enough here and compared them with other soils, that I know will grow alfalfa, so that I know that you have lots of land that will grow it.

There are three things to consider in sowing it. If the soil is poor, it will do no good; it wants a rich soil and a soil where the water does not stand in the subsoil nearer than three feet from the surface; if it wants a good, rich, deep soil, a soil underlaid with gravel, if you have it. If you have alfalfa you have a gold mine; you have a food that will make more milk and more growth on your animals than anything that I know of. I have grown it since 1886, and I know what I am talking about.

The second condition is to keep it mowed. Cut it off three times the first year and at least three or four times every year after that. Failure nearly always comes from sowing it on the wrong soil or else sowing it on the right soil and neglecting to mow it. There is a reason for this; it grows up six or eight inches tall and a fungus grows on it if it grows too long. Mow it off promptly close to the ground and it will spring right up and grow vigorously for another month; then it is packed together, but that doesn’t hurt it for hay. Cut it off before the leaves drop off. I would like to see every farmer try an acre of it.

Supt. McKerrow—Do you leave what you cut off as a mulch?

Mr. Wing—I would not mulch it as you would mulch strawberries but rake it off. Weeds are deadly to it, the mowing will kill them. You simply run your mower through it, mowing as close as you can. Too many farmers let it get too high.

A Member—I have tried alfalfa to my satisfaction about a hundred and fifty miles east of here. I have cut it three times this summer and it is rather too ripe for my cattle, they don’t like it.

Mr. Wing—Cut it early.

The Member—I cut it as early as there is anything to cut; it grows rank on the land where I sowed it. I have tried it on low ground, deep, black soil. Alfalfa will grow there but I have no success with alfalfa. I would like to ask Brother Bradley if it is desirable to tramp the ground in the spring when you seed your clover?

Mr. Bradley—Three years ago I sowed three or four acres and used it as a calf pasture, sowing clover in the spring and harrowing it in, and found it was all right. I did not expect when I put the calves in there that the clover was going to live, but it did live, and the trampling seemed to be all right. Perhaps it wouldn’t do to put in heavy stock, but I think that calves or sheep, where we take them off after allowing them to eat down some and let it grow up a little, then put them back again, do not hurt it. I think there are many places in Wisconsin where the land is light and ought to have some packing, especially in these sandy soils where it is so light that it will drift. I think in such a location, by putting in sheep or calves on the seeding, of either rye or oats, it would be beneficial for the stand of clover.

Mr. Wing—But they must not forget to take them off before it is too long.

The Chairman—It has been stated here that the ground must not be left bare during the summer. You know some of us old fellows used summer following in the east and we found that
the ground was very much more productive after it had been kept bare all summer. Now, how do you reconcile that?

Mr. Bradley—Well, in the old way of summer fallowing, the way they did out in Minnesota and do to-day, they plow under a crop, usually weeds, in June, perhaps, allowing that ground to stay bare. Now, the ground would no doubt be better with some crop sown upon it as soon as the first plowing was made. I think the land will be in better condition for a crop next season. The fact that the Chairman got a better crop was because he gave the land a rest and then turned under the first growth of that land, which was in fine condition.

Question—Suppose I should summer fallow a small plot of ground and my neighbors had very rich land around it, with a very perfect soil in good condition. Should I get any benefit by summer fallowing on account of my neighbors having so much better ground than myself? Would not the nitrogen inoculate my land from my neighbors?

Mr. Briggs—Wouldn’t that be robbing your neighbors?

Mr. Bradley—No, I don’t think so. There is plenty of nitrogen in the air if you have the right kind of crop to put it into the soil, and perhaps the clover crop or the pea crop, or perhaps a bean crop will act in that way.

There is another thing farmers can do that they do not do in order to keep their land in better condition, and that is, in sowing with the last cultivation of your corn. Go through it and sow rye or barley in your standing corn with your last cultivation, that will furnish you fall feed and it will also keep the land shaded to help keep the fertility in the soil, and it will not be any detriment to the corn.

Mr. Scott—The term “rest” does not quite answer Mr. Goodrich’s question to my satisfaction. There must be some process going on while this land is resting. I can remember when it was the practice in our part of the State when wheat growing was the great interest there, to summer fallow, and invariably we got a better crop. I must say that as yet I have not been able to find any evidence that plants gain from the ground being shaded. The gain in my judgment is in the development of the nitrates there that are breaking down, also the mineral elements, rendering them favorable for plant life by this process of cultivation, and also in the development of the nitrates.

Supt. McKerrow—There is a gain in the sense that you get a better crop following, but while we are fallowing, the processes of nature are going on, refining and making available those elements that are there. Now, the nitrates, when made available for plant food, are inclined to escape quite rapidly; they become volatile and go off in the air. If there is a growing crop there to catch and hold them, then they are saved. So in the summer fallowing we are simply changing the form of the elements in that soil by allowing the air to work in it more freely.

Mr. Scott—But it would lose the nitrates by that process.

Supt. McKerrow—That is what the scientists tell us, that they escape when there are no plants to hold them.

Mr. Scott—Many years ago when we had saltpetre beds for the manufacture of gunpowder, they simply incorporated horse manure in the soil and put it with the requisite amount of moisture, and they found that the nitrates developed very much more rapidly by stirring and rubbing it, while where the air is excluded they lose very rapidly.

Mr. Arnold—Then if that is true, cultivation means manure.
Supt. McKerrow—It is said, you know, by some of the old writers, though the new writers do not believe it, and of course it is not technically true, but in a certain sense cultivation does develop the elements in the soil. We have on our farm many spots that have been summer fallowed every year where foul weeds are growing, and we know that the next crop that grows there starts off very rank, showing that there is an excess of nitrogen, it is a very rich green color, but usually there is a failure in that particular spot to develop that crop, and ripen it properly, showing that the other elements are lacking—have not kept pace with the nitrogen.

Mr. Bradley—There are places in the State where they have been keeping up this cultivation of crops year after year until it is all fallowed, they have got to do something else.

Supt. McKerrow—They have cultivated out the vegetable humus. Provided that soil is supplied with the requisite amount of humus, there can be no loss in its cultivation.

Mr. Wing—I think you are all right. I think summer fallowing undoubtedly renders the nitrates available, but all experiments, I think, show that those are subject to leaching out. If your plant is to take them up you must have the plant there. It is like money, it must be in somebody’s pocket, or else it is going to be lost. You must have it in the pocket of the plants before it is safe. I cannot let this question of alfalfa drop as it has. The gentleman over here says his alfalfa grew too rank. I do not see that this is a charge against Wisconsin. A neighbor of mine was talking alfalfa. He says, “I raise it, it is no good.” “Why not?” “It has no leaves on it.” “When did you mow it?” “At the usual haying time.” “How did it look six weeks after that?”

“Why it looked good.” “Why didn’t you mow it?” “It was not haying time.” That was what was the matter, he was six weeks too late.

A Member—One great disadvantage I find with alfalfa in this climate is its rank growth. It is harder to handle than Mammoth clover. In an ordinary Wisconsin season we cannot cure it. If we leave it as long as our red clover, it is too rank, stocky, woody, and if we cut it early, it is the same as when we cut Mammoth clover before it blossoms, it is impossible to cure it. It does not thrive in our soils as it does in soils further South or West. I have helped grow alfalfa in Western States, on the Pacific coast, and I have tried, I think, four different times, getting a good stand in Waukesha County, and I have not been successful.

The Chairman—It thrives at Fort Atkinson just the same as almost everything else does.

Mr. Wing—This first crop may be used as a sowing crop, and your second, third, and fourth crops, I think you would have no difficulty in curing.

Supt. McKerrow—There are some men growing a little alfalfa in Waukesha County that are thoroughly successful. I have a neighbor who cut three crops last year from a high clay knoll. I took a great deal of interest in those crops, because I am trying to grow some myself. These crops were all mowed and cured out nicely. Probably the poorer soils in Waukesha County will fit the best conditions in Ohio, but this crop was very good. I have seen it growing in the country two different places for the last eight years and I have been very well pleased with the results there, and the climate and soil are very much like a large portion of Wisconsin. Now, we would not advise Wisconsin farmers to go into growing alfalfa in a wholesale way, but
still if you think you have land so situ-
ated that you might experiment in a small way, you can easily satisfy your-
self whether you want it or not. Out around Sun Prairie, in Dane County, they have been growing it with pretty good success.

Question—What is the best way of sowing this alfalfa?

Mr. Wing—If your land is free from weeds I would say to run about fifteen pounds to the acre after the danger of frost has gone by. I don’t know when that would be around here, perhaps after the first of May. If the land is foul with weeds, I would say that about when the oats are in bloom, cut it all down. There is nothing so good for horses and sheep or cows, but, of course, you must use your judgment about the quantity, or they will bloat.

Mr. Taylor—We have confined our remarks a good deal to keeping the ground covered in the summer time. The object of summer fallowing these fields has been for the purpose of putting on a fall crop. You notice this covers up the soil in the fall of the year and takes up the nitrates that have been accumulating. As a matter of fact, soils do accumulate largely of nit-
rates when they are dry. It seems to me that it is important to cover up this soil in the fall, keeping it covered in the winter, and in order to keep our corn fields covered up in the winter, for a number of years I have practiced sow-
ing rye in the corn field at the last cul-
tivation, letting it come up and get quite a good start before the winter in these bare corn fields, and it seems to me that must have saved some of the fertility. I would recommend to the farmers of this State, especially those in the dairy business, after cutting up all their corn, that they sow some kind of fall grain in their corn field, furn-
ishing a covering for the ground in the fall and early spring.

Mr. Scott—It seems to me that the advantage that Mr. Taylor speaks of is simply to prevent the leaching in the fall and spring rains, but leaching is one thing and evaporation is another.

The Chairman—This morning we have been worrying ourselves about how to keep the water in the soil. We have that fixed pretty well, and now we are going to discuss the question of how to get the water out of the soil where it has too much of it in.