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Another point in soil cultivation that is not impressed on the farmers of this country who do not keep stock, is the value of manure, (although I have seen a few references to it in the FARMER'S ADVOCATE during the past year).

The general impression is that manure produces a late down crop, while all experience points the other way, before getting wild oats we always took the manure right from the stable and spread it thinly on the land, and I have more than once cut the manured land ten days ahead of the land that had had none and got much plumper wheat and more of it.

Manured land in a cool season will gain on the unmanured land very perceptibly, between the time of heading out and cutting. When the unmanured land remains green for days, apparently standing still, the manured land will come right along, and this benefit will remain with the land for years after the manure has been applied. From what I have seen manure is equally beneficial to heavy and light land, but it should not be put on too thickly to get the best results, and if it can be well harrowed before plowing it down in a dry time in the spring, so much the better.

Although this part of the country was partly settled in the late seventies and early eighties, yet the great bulk of the land under cultivation has been broken up during the last six or seven years, and most of the old land has been manured at some time or other, consequently the declining fertility is not so apparent here as it is in some other parts where conditions have been different. The percentage of new land being broken up from year to year, helps to keep up the average yield, so that the falling off in the older land is not noticed. But there is not the slightest doubt but just as soon as the limit is reached in breaking, the average yield per acre will go down hill tumbling and there is no reason why it should be so. With an intelligent system of cultivation and manuring, the original yield can be improved on, I think I can qualify this statement as I know of a field that has produced ten crops without fallowing, and the tenth was the heaviest crop it ever raised, but this is not usual as the final returns of the present crop will show. I think you are right in insisting that the present crop will not yield up to the newspaper predictions. It may thresh better to the straw than usual, but it certainly will not take the twine per acre that the last six crops have taken. I have not seen an acre of down wheat this season, and lots of it would have gone down even last year had there been anything in the head to take it down.

Isabella, Man.

W. I.

The soil which is washed from the surface of our farms every year to the amount of a billion tons, making the further loss of fertilizing elements carried away in solution, the heaviest tax the farmer has to pay, may in the course of centuries be replaced by the chemical disintegration of the rock; but it is decidedly wiser to keep what we have by careful methods of cultivation.

DAIRY

No Test of Separators

It appears there is an effort on the part of some cream separator companies, to make capital out of the results of the butter making competition at the Winnipeg Exhibition. On inquiry of Prof. Carson if there was any data available that would indicate which machines did the best work in separating, we have the following reply, which seems to be conclusive that, as far as giving information on the comparative value of separators, the competition is as silent as the tomb.

"The object of the competition was to test the knowledge, ability and skill put forth by the different competitors in converting the fat of the milk into butter of fine quality. In no shape or form did it consist of a test or comparison of the different machines in use, neither was there a prize offered or awarded for such. As director in charge of the exhibit and also judge of the competition I took special pains in making this clear to the representatives of the different machines. Tests of the whole milk, skim milk and cream from each machine were made daily. These have not been given out to the public and are still in my possession. Without a knowledge of those tests, I fail to see how any firm or individual can draw any conclusion or form a comparison of the work done by the different machines used in this competition."

Creamery Questions and Answers

At a Woman's Institute meeting in Ontario, Prof. Dean gave a short address on dairying, and afterwards answered questions from the audience. These questions and answers are of the kind that go right to the point, hence we take pleasure in publishing them in the general interest of dairy education.

SEPARATOR QUESTIONS

Q. Would you care to say which separator you have found to be the best at the O. A. College?

A. We do not care to recommend any particular make of machine. There are several standard makes on the market, and a person will not make a mistake in purchasing any one of these. We do not recommend the buying of cheap machines sold by irresponsible firms. In any case, we should advise putting a machine in on trial before purchasing. A satisfactory separator will run easily and smoothly, give a cream testing not less than 25 per cent. fat, and a skim milk testing not over .05 per cent. fat. It should be convenient to wash, not require much oil, while repairs and renewal parts ought to be easily and quickly made or obtained.

Q. Will milk separate when cold?

A. Very few cream separators will do satisfactory work if the temperature of the milk is below 80 degrees F. As the milk is about 98 degrees when drawn from the cow, and the temperature of the air in summer is usually from 70 to 80 degrees at milking time, there is very little danger of the milk being too cold in summer if separated soon after milking. In winter the milk is frequently too cold for good results. Some separators do not do good work if the temperature of the milk is below 90 degrees F.

Q. Should water be used to wet the bowl before letting in the milk? Is not warm milk just as good as water?

A. Water should always be put in the bowl before milk, as water prevents milk and cream sticking to the bowl and its parts, thus making the bowl more easily flushed at the close of the run. In winter, the water for wetting the bowl should always be warm, in order to warm as well as wet the bowl.

Q. How much water should be used to flush the bowl?

A. About one quart of warm water may be used for flushing a hand machine. More than this quantity makes the cream too thin. The water should be poured directly into the bowl, and not into supply tank. A separator which will not flush with a quart of warm water is defective. The water used for wetting the bowl should not be allowed to go into the cream can, neither should there be more of the flushing water allowed in the cream than is absolutely necessary. The slimy matter on the inside of the bowl, which appears more or less creamy, should not be put into the cream.

Q. But will there not be a great deal of waste cream unless the bowl is well flushed?

A. There may be some waste, but this slimy matter ought not to be put into the cream can, as it means an inferior quality of cream and butter.

Q. How does the rate of turning affect the richness or test of the cream?

A. Other things being equal, the faster the machine is run, the richer the cream, or the higher the test. Allowing speed to go below normal, feed being constant, means thinner cream or cream with a lower percentage of fat, because it contains more skim milk. The cream has not been so completely separated. Speed should never go below that marked by the manufacturer, nor, on the other hand, is it safe to exceed the manufacturer's directions by more than five turns of the handle per minute.

CREAM TESTS.

Q. Should cream test as high as or higher in the fall than during spring or summer? Our cream tests were lower last fall than they were during the summer. The same person turned the separator all the time.

A. As a rule, cream ought to test higher in the fall, because most of the cows have been milking for some time, and the milk tends to be richer or contain a higher percentage of fat. We are assuming that the speed of the separator was fairly uniform throughout the season, and that all conditions were as nearly alike as possible. This questioner remarked that, if anything, the person who did the turning would likely turn a little faster in the cool weather of the fall than he or she would in hot weather. The temperature of the milk may have had something to do with the

lower test, as cold milk tends to give thinner cream.

Q. Would it pay to buy a separator for four cows? We have not thought that it would, hence do not use a separator.

A. With a clean, cool cellar for shallow pans, or with plenty of cold water or ice and water for deep cans, it is a question whether or not it would pay to buy a machine for this number of cows. On the other hand, with poor facilities for creaming milk by gravity (with pans or cans), it would doubtless pay to invest even for this small number of cows.

Q. Give the rule for figuring the amount of butter which can be made from a given number of pounds of cream testing a certain percentage of fat.

A. There is no definite rule without knowing what is the "overrun." Knowing the overrun, the rule is, multiply the pounds of cream by the test and divide by 100, to ascertain the pounds of fat in the cream. To the pounds of fat add the overrun, to estimate the pounds of butter. Example: 120 pounds cream, test 30 per cent. fat; overrun = 18 per cent.; $120 \times 30 \div 100 = 36$ pounds fat; 18 per cent. or $18 - 100$ of $36 = 6.48$ pounds, or practically $6\frac{1}{2}$ pounds; $36 + 6\frac{1}{2} = 42\frac{1}{2}$ pounds of butter. A common rule in calculating the fat in milk into butter is to add one-sixth to the fat. Example: A cow gives 50 pounds of milk testing 3.5 per cent. fat; $50 \times 3.5 \div 100 = 1.75$ pounds fat; $1 - 6$ of $1.75 = .291$; $1.75 + .291 = 2.041$ pounds butter, or practically 2 lbs. butter.

Q. Should cream testing 36 per cent. fat one month drop to 24 per cent. the next month?

A. This is not likely to occur, unless there was some unusual circumstance to cause this variation.

MANUFACTURING.

Q. If butter sells for an average of 20½ cents per pound for the month, and the patron is paid 20 cents per pound fat, what is the cost of making a pound of butter?

A. It would be impossible to answer this question without knowing what is the overrun for the month. The statement furnished does not say what the overrun is. As one statement which a member has, shows an overrun of 23 per cent. for one month, which is very high, we may assume an overrun of 20 per cent. This is about the maximum in average creamery work. On this basis, then, the manufacturer received for making 100 pounds fat, 20 pounds butter at 20½ cents, which equals \$4.10. In addition, he received ½ cent per pound fat, deducted from the price received for butter, or 50 cents on 100 pounds fat, making a total of \$4.60 received for manufacturing the 100 pounds fat, or, at the rate of 4.6 cents per pound of fat. This is at the rate of 3.833 cents per pound for the 120 pounds butter made from 100 pounds fat delivered by the patron, but it will be observed that the manufacturer got the 20 pounds of overrun. The actual rate to the farmer was 4.6 cents per pound fat. We do not like this plan of taking the overrun as part pay for making, and we are glad that most of the creameries have abandoned this plan.

Q. How much per pound of butter is fair for a creamery to charge for hauling and making? Who should receive the buttermilk?

A. In average creameries the cost of hauling and making is about 4 cents per pound of butter. Large creameries can do the work for less; small ones would require to charge more in order to make it profitable. Cream haulers charge from \$3.00 to \$4.00 per day, and other wages and the cost of supplies are in proportion. In addition to the 4 cents, it is customary for the creamery man to retain the buttermilk.

Q. What points should a monthly statement to creamery patrons contain?

A. We cannot do better than refer to the plan of stub and cheque used by your own creamery. We should advise adding an item showing the cost of manufacturing, and also one showing the overrun. "Cream-drawing" item is not necessary, unless patron is paying extra for this.

Below is a copy of the stub:

No.
Name.
Month.
Cream. lbs.
Test.
Butter. lbs.
Price per lb. Butter. cts.
Average price per lb. Butter. cts.
Cream Drawing.
Butter received, lbs.
Value, \$.....
Cheque, \$.....