Soils and Crops

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Cooling Milk Pays.

Because of the present high prices of raw material, labor and foodstuffs, every farmer is striving to make the most of his farm by economical production and increased efficiency in farm management. This is especially necessary because the margin of profit is an extremely narrow one. We know of no way whereby the selling price can be increased more in proportion to the cost than by raising the quality of the product.

The quality of milk depends greatly upon the method of production or handling. No matter how carefully the milk is drawn from the cow there are always some bacteria in it; and these at ordinary temperatures develop very rapidly. These minute one-celled forms are so small that a drop of milk may contain millions. They grow very rapidly at a temperature of sixty to ninety degrees Fahrenheit, and require food and moisture like higher forms of plant life. Milk furnishes an ideal medium for bacterial growth and unless controlled by some means they will grow or multiply with great rapidity.

There are several methods of keeping down bacterial growth in milk. Cooling is a very economical and practical way which all farmers can practice with successful results, making a more desirable product for the consumer, as well as making one that is more profitable for themselves.

Cooling or even freezing the milk does not kill bacteria, but retards their growth. If milk that has been kept sweet or at the desired degree of acidity is allowed to become warmed, the bacteria which have been kept dormant will at once resume their growth. This explains why milk and cream should be kept thoroughly chilled, and never allowed to warm up until used. The process of cooling milk or cream checks the bacterial growth, and but few organisms thrive at a temperature below fifty degrees F. However, it is very important that the milk immediately after it has been drawn be cooled to fifty degrees F., or as much lower as circumstances permit. The importance of immediate cooling was shown by Dr. Conn in his experiments. He demonstrated that at a temperature of fifty degrees F. bacteria in milk multiply five times in twenty-four hours, while at seventy degrees they multiply 750 times in twenty-four hours. Milk may be kept sweet for quite a while at forty to forty-five degrees F. because the lactic acid bacteria or the principal bacteria that cause the souring of milk, practically stop growing at these temperatures. But dependence cannot be placed on these temperatures, as there are many other classes of bacteria that can grow at these temperatures and produce undesirable effects.

Shortly after the warm milk is drawn from the cow bacteria start their rapid progress of development, and many times the milk is allowed to remain in the cow barn until milking has been completed. This may require an hour or more, depending upon the number of cows to be milked and the efficiency of the milking system. A few hours' delay in cooling reduces the keeping quality of the milk to a far greater extent than many people suppose. Not only the bacteria are very undesirable, but the butter-fat in the warm milk has the power of absorbing outside odors which impair the value of the milk to such an extent that it is not desirable to be put on the market. Many gases and odors can be removed by aeration or exposing the milk in thin films to the atmosphere. Fortunately, the construction of modern coolers is such as to make it possible to do the cooling and aerating in one operation. Dairymen would do well to consider what they expect to accomplish by aeration and cooling. Odors will be removed by aeration, but the milk must be aerated while it is yet warm. The so-called cow odors are removed in the best and quickest way by keeping manure out of milk. Cooling and aerating should always be conducted in a clean cool room which is free from all dirt and contamination.

There are several types of coolers on the market but not all of these could be used economically by the farmer; many farmers who retail their milk cool it with a cone-shaped cooler, the inner part being filled with ice water and the tank or milk receiver at the top has small openings at the bottom near the outside through which the milk discharges in fine streams directly upon the cone below, which is cooled by the ice water. The milk is then drawn off at the bottom of the cone and stored in a cool place until needed.

Another economical and practical way of cooling milk and cream is to place the containers into a tank where cold water is pumped into it in such a way as to enter the bottom, forcing the warm water out at the top. Water should be pumped into the tank at frequent intervals in order to keep the containers of milk and cream at as low a temperature as is possible.

Lowering the temperature of milk and cream tends to keep down the bacterial count, keeping the milk sweet and avoiding the great loss by souring, as sour milk or milk high in bacteria will not be as valuable to the producer or sell on the market for as high a price as the low-count milk produced under favorable conditions.

Poultry

Poultry culling is a summer job. After the flock starts moulting is the proper time for selection of egg producers. Under natural conditions the hens lay best in the spring.

The points to be noted in culling are: Absence of color in: 1, vent; 2, eye ring or lid; 3, bill beak; 4, leg or shank.

If the hen is producing there will be an absence of color. The head of a laying hen is large, the comb and wattles are flushed and the eye is prominent. On the contrary, the hen that is not laying has a small shriveled comb and a white scurf on the comb and wattles.

The lay bones or pelvic arches, after the laying season are farther apart. After the moulting season they are nearer together. A one-finger width indicates a poor layer, two, three, four-finger widths are the best layers for all flocks.

The width between the breast bone and keel bones (lay bones) indicates the hen's capacity. The best producers have a width of four or five fingers. To tell if the hen is moulting, open the wing and note the ten primary feathers. If the hen has eight she has started to moult. Five old and five new feathers indicate the hen is half through the moult. The hen never lays when she is in the moult but will when the feathers are coming back. The small dry vent indicates that the hen is not producing. If the abdomen is soft the hen is a better producer. Don't keep a baggy hen.

We could build a fine poultry house on every farm in the country on the amount of poultry lost last year. More attention should be given to proper housing, breeding of one strain, proper feeding and culling the flocks. For the amount of money invested, poultry can be made the best production on the farm.

Buttonhole the Judge.

When a judge finishes tying ribbons on a class of stock at a fair, he usually explains, to the people who are watching, his reasons for placing one animal ahead of another.

If he doesn't do so, ask him to. There is no better way to learn the points of a good animal.

Poultry judging will start at the Canadian National Exhibition Friday, Sept. 8.

Sheep Notes

The following grain mixtures are recommended for fitting the ram for the mating season: equal parts of oats and wheat bran; two parts alfalfa meal and one part corn; equal parts of corn and oilmeal; equal parts of field peas and oats, or equal parts of corn, oats, wheat bran, and oilmeal.

Use no sheep for service until one year of age. As a yearling, a ram may be mated with as many as thirty ewes without injury. As a two-year-old a ram is at his best. He can be used until eight or ten years of age if properly managed. He should never be allowed to become too fat or to be used excessively. A ewe should be at least a yearling before raising her first lambs; otherwise, her size and vigor will be so stunted as to result in smaller and weaker lambs.

Grass or stomach staggers is common where lambs and ewes are turned into rank, wet growth of clover or other green feed. In some instances the heads and ears swell enormously and the lambs die. Last year there were many losses from that trouble when lambs were turned into rich meadows and stubbles after haying and harvest. One should very gradually accustom all animals to rich pasture. Physic the lambs with castor-oil or Epsom salts. The dose is one tablespoonful of oil and up, and one ounce of Epsom salts up to four ounces for an adult sheep. Keep the lambs off rich pasture for a time.

Exterminating Quack Grass.

I have never seen published in any paper a method I have used successfully for exterminating quack grass quite cheaply. I plow the ground just deep enough to get all the roots and when dry go over it with the potato digger, shaking all the soil off the roots. In a clear hot day the roots will be dry and dead in an hour. If not they can be raked together and hauled off.

The extra work with the digger was well repaid in the crop of potatoes as the yield was double what it was when the digger was not used. There was not a spear of the quack left in the potatoes or in the oats the following season.—M. C.

The city sits like a parasite, running its roots out into the country and draining it of its substance. The city takes everything to itself—materials, money, men—and gives back only what it does not want.

THE CHILDREN'S HOUR

Once upon a time Jack Rabbit had ears about the size of Brother Possum and a tail as long as the next fellow. He'd have had them yet if he had not been such a curious chap. He always was listening and listening to other folks' affairs, sitting with his tail all curled up under him and his little bright eyes snapping like coals.

Whenever there was talking or quarreling or singing there was little Jack Rabbit. Pshaw, but he was a busybody, sure enough. He even went listening around two-legs' houses and more than once nearly got caught and popped into a pie. But he always managed to run pretty fast, and after a while folks really got used to the little chap sitting on his hind paws taking in all the news. The creatures, too, didn't pay any more attention to him than if he'd been a tree stump.

"That's only little Jack Rabbit!" they'd say to one another and go right on with their speechifying.

But not satisfied with all the things he heard in the woods and in the village where he visited, Jack started staying awake at nights and trying to hear what the goblins and fairies were up to. For many, many nights he listened to their secrets and first thing you know he began trying to put into practice the fairy charms and spells he had overheard. One day he met old Mr. Hedgehog. Mr. Hedgehog wished him good-day and asked him what all the news was.

Instead of answering, Jack stopped short and twinkled his whiskers.

"Abra—cabra dabra cob!" mumbled Jack Rabbit, and, pop! away flew Mr. Hedgehog as invisible as air. He didn't know he was invisible either and while Jack Rabbit laughed and laughed and all the creatures ran around telling one another that a ghost was in the woods that talked like Henry Hedgehog, and poor Mrs. Hedgehog when she heard her husband's voice and bumped into something she couldn't see in the parlor fell into a swoon from which the entire village could not arouse her.

Now it happened that a little fairy chanced by and heard all the confusion and putting two and two together decided that some one was practicing magic.

And this conclusion once reached it was not hard for her to find the culprit. Changing Henry Hedgehog to his visible self again she hurried back to her companions and told them of Jack Rabbit's prank.

The fairies were very angry and resolved to teach Jack a lesson. And a little goblin, who was listening to the fairies, on his own account resolved to do the same.

That evening Jack went as usual to the fairy ring and hid in a hole with only his ears sticking out the top. The fairies laughed and sang, all the time drawing nearer to Jack Rabbit's hiding place. And the goblins, led by the one little goblin who had heard of the fairies' plan, dug up through the ground till they were right under Jack.

And all at once the fairies all together jumped into the hole and seizing Jack's ears began to pull away for dear life. At the same minute the goblins broke through the last bit of earth and got hold of his tail. And for all that they were so small they tugged and tugged till between them they nearly tore Jack in two.

"Never do to let the fairies get him!" fumed the goblins.

"Whatever is holding him!" gasped the fairies. And they pulled and pulled till suddenly they all fell over in a heap. The goblins had pulled Jack's tail clean out. But before the fairies recovered their breath the little rabbit was half way across the forest crying in three different languages. And next morning when he saw how the fairies had stretched his ears, and he looked at the poor little piece that the goblins had left of his tail, he cried some more.

But ever after that he ran away from everybody and minded his own business. Which is a good thing.

Clean Milk from Milking-Machines.

An excellent grade of milk can always be obtained with the milking-machine if strict attention is given every day in the year to the proper cleaning of the machine and of the other utensils which come in contact with the milk.

The essential steps in cleaning, milking-machines are as follows:

(1) A rapid but careful washing of the machine by drawing through it immediately after each milking (a) a pail of cold water, (b) a pail of hot alkali water, and (c) a pail of clear hot water.

(2) The immersion of the teat-cups and all rubber parts in a good sterilizing solution (chloride of lime) between milkings, allowing for the escape of air from the tubes so that the solution can reach all parts.

3. A thorough weekly overhauling of the teat-cups and tubes.

(4) The daily scalding and thorough drying of all metal parts coming in contact with the milk, except those parts kept in the sterilizing solution. Care must be exercised to maintain the sterilizing solution at an effective concentration.

Exterminate the Last One!

BY ESSIE H. HALL

If it were not for the fact that some varieties of mosquitoes carry malaria germs our mosquitoes might be compared to the family watch dog whose "bark is worse than his bite." While the bite of a mosquito is irritating and poisonous to a few persons, the greatest annoyance to most comes from his incessant buzzing. The itching from a mosquito bite may be relieved by rubbing with moistened toilet soap, by using a dilute solution of ammonia or a 5 per cent. solution of carbolic acid. Oil of citronella if sprinkled about will help in keeping mosquitoes away while sitting on the porch, but is not effective in protecting one during a night's sleep. A few drops of the following mixture sprinkled on a cloth hung on the bed will keep mosquitoes at a distance for a long time: 1 ounce cedar oil, 2 ounces oil of citronella, 2 ounces spirits of camphor.

Since the mosquito is the means of transmitting malaria from one person to another every effort should be made to get rid of it. To control mosquitoes it is necessary to get rid of all tin cans, old pails, unused barrels and so forth, in which even the least bit of rain or other water may collect. It is also necessary to care for all pools or other bodies of water, because mosquitoes breed in water. They will even bred in chicken pans, water troughs and so forth, if the water is not emptied and replenished every day or so.

Water barrels should be covered with wire netting of at least 14 meshes to the inch. The easiest and most effective treatment for ponds or fountains is to stock them with top minnows, gold fish or other small fish. These eat the larvae and thus prevent their development into mosquitoes. All ponds, fountains and streams should have clean sides with no vegetation growing down into the water. It is the marshy edges that give quiet spots where larvae may mature undisturbed by the current of the stream or by the fish. Mosquitoes only choose quiet undisturbed water for laying their eggs. If fuel oil or some other low grade oil is poured on the surface of water, the larvae are killed. The best oil is one that spreads rapidly and does not evaporate too quickly. An ounce of kerosene to 15 square feet of water surface is about the amount that is needed and such a film will stay about 10 days.

House flies are the filthiest and most dangerous of household pests. Because the disease laden filth they carry on their sticky feet and moist spongy mouths can not be seen without a microscope and because the fly's part in carrying typhoid fever, dysentery, tuberculosis or other diseases is usually overlooked, flies are tolerated in many homes as constant companions. The fly's habit of feeding in rapid succession on human excrement in open closets, sputum on walks or in spitoons, slop, garbage, the food on our table or on baby's face means that unless every effort is taken, much nauseating objectionable dirt will be eaten even when no disease germs are present. If every person could just realize that the innocent-looking fly that rests on the piece of bread we are eating or drops in our milk, has probably left there something from the privy vault or slop barrel, we would not tolerate them in our houses.

Flies prefer to lay eggs in horse manure, although they will use any kind of manure or decaying vegetable matter. They lay from 100 to 150 eggs in two batches at an interval of a few days. From these eggs, flies mature ready to lay eggs in about two weeks.

In controlling the fly nuisance and danger, first, the number of flies must be kept as low as possible by treating or disposing of their breeding places and by killing them, particularly in the early spring; second, privies must be made flytight and have automatically dropping seat covers so the pest can not feast on body waste and thus pick up and transfer germs of typhoid, or dysentery; garbage pails must be kept covered and other filth disposed of; flies must be kept out of the houses and food must be carefully covered. Most housekeepers realize the importance of having the house carefully screened, or killing with poison bait, sticky fly paper or by swatting all flies in the house, of protecting food from flies and of covering the baby with mosquito netting if he sleeps on the porch. But there is much more work to be done on farms in the matter of making privies flytight and caring for manure. To control the breeding of flies, manure can be scattered thinly on the fields every day. This, however, is practically impossible for busy farmers in the spring when possible manure should be stored in a prepared manure pit or tight box, or removed from the stables, piled and treated with borax. Eleven pounds of crude commercial borax, which may be bought for a few cents a pound, is needed for every twelve or thirteen bushels or sixteen cubic feet of stable manure. Sprinkle this over the manure pile and add a little water to carry the borax down into the manure. This kills the eggs and maggots without injuring the manure as a fertilizer. Not more than fifteen tons of manure so treated should be applied to the acre.

THE SUNDAY SCHOOL

AUGUST 28.

From Asia to Europe, Acts 15: 36-16: 18. Golden Text—Acts 16: 31.

Connecting Links—Paterson Smyth (in the Story of St. Paul's Life and Letters), writing of the beginning of this second great missionary journey, says, "I think Paul was already feeling the stir of that ambitious impulse which afterwards took him ever westward, westward; took him to Rome, even to Spain, to the bounds of the Empire, to plant there the banner of the beloved Lord. Soon he saw clear signs that God was guiding him. They started by land up through the northern highlands, out through the dark defiles of the Cilician gates, that great frowning pass, eighty miles long. Then westward for days along the mountain road, till he touched the region of his first missionary journey. One evening, from the heights he looked down on Derbe and rejoiced that he was to meet the old friends again. Next day along the mountain road to Lystra, where Barnabas and he had been Jupiter and Mercury, and where Barnabas had lifted him up for dead after the mob had stoned him, I see him come into Lystra, and the converts crowd around him delighted to see him, and I am sure the first question is, Where is Barnabas? And the next is, Have you recovered from the effects of the stoning? And so they talk together in affectionate intercourse, and Silas is introduced, and at night the presbyters (elders) bring their difficulties to be solved, and are taught still further of the gospel of Christ; for they do not know very much, these presbyters, and there are no written gospels as yet to teach them."

Timothy, who is introduced to us here, is one of the most interesting and engaging personalities of the New Testament. Of mingled Jewish and Greek parentage he had the advantage of instruction both in the Jewish religion and the Greek learning. No doubt he read and spoke both languages perfectly. Paul became strongly attached to him and Timothy was his companion on many long and soil-some journeys.

16: 6-18. **Phrygia and Galatia** are the older names of certain parts of Asia Minor. The Romans, however, included, for administration purposes, a considerable part of Lycaonia and of Phrygia, lying to the south and west of Galatia, with that province and under its name of Galatia. The churches of Derbe, Lystra, Iconium, and Pisidian Antioch are called, therefore, by Paul the Galatian churches, and it is to them that one of his great epistles is written.

The apostles appear to have intended going on into the Roman province of Asia, which lay along the Ægean Sea, and occupied about a third of what we call Asia Minor. It contained the well-known cities of Ephesus, Pergamum, and Smyrna, and was the richest part of Asia Minor. Paul whose interest was always in the cities, must have looked with eager desire upon this western province as a great open field for his gospel. Just how he and his companions were forbidden by the Holy Spirit to preach there we do not know. In some way it was made clear to them that the time was not opportune, or that their work lay elsewhere. From Mysia, in the northern part of this province of Asia, they next sought to go into Bithynia, the northern province which bordered on the Black Sea, but again this mysterious power intervened. The Spirit of Jesus suffered them not.

Paul and his companions did not travel alone. They were always conscious of that invisible presence. Their Master walked with them and His spirit guided them. He was fulfilling to them the promise which He had made, "Lo, I am with you alway." Compare Acts 22: 17.

Troas, or Alexandria Troas, situated on the coast southwest of the ancient Troy, was a Roman colony, and was the chief seaport in the north-western part of Asia Minor for trade with Europe. While there, in a dream or night vision, Paul heard the Macedonian call, and taking it in the simplicity and directness of his faith to be a call from God, he immediately made ready to cross the sea northward into Europe. His decision was indeed a momentous one, and marks an epoch in the history of humanity. For it was in Europe that the gospel was destined to win its greatest triumphs. Europe was to become the Christian continent.

The writer of this history, Luke, uses in vv. 10-16, the pronouns we and us. It seems that Luke joined the company of Paul at Troas, and went with him as far as Philippi where he remained. It has been conjectured that Paul may have previously met him in Pisidian Antioch, or one of the other Galatian cities, on his first missionary journey. When Paul returned to Philippi, some years later, on his thrid journey, he found Luke still there, and took him with him on his way back to Palestine, and then to Rome (see the same pronouns resumed in Acts 20: 5 to the end of the book).

Passing the island of Samothrace half way, they came to the port of Neapolis, and proceeded thence inland to Philippi, chief city of eastern Macedonia, and "a Roman colony." Paul and his companions sought and found work, for they had to support themselves by the labor of their hands (2 Thess. 3: 8). On the sabbath they joined the company of Jews, who had a meeting place outside the city by the river. They were, apparently, too few in number to have a synagogue. Under such circumstances it seems to have been a custom of the Jews to meet by the sea, or river, or lake, where they could obtain water for their ceremonial washings.

Lydia, a seller of purple, is distinguished as the first European convert to Christianity, at least the first of whom we have any definite knowledge. She was probably a Greek woman who had become a convert to the Jewish religion. Her home had been in Thyatira, a city in Asia famous for its dyes. She was now a merchant in Philippi, and in her house the company of missionaries found a hospitable welcome.

Not only to the prosperous and capable Lydia did the saving grace of the gospel come, but also to the poor half-witted maid, whose abnormal condition of mind was being exploited for gain by certain unscrupulous traffickers in the superstitions of the people.

Application.

When Paul decided to go west in obedience to this vision, it was one of the really great moments in human history. We do not mean to say that if Paul had not done this the gospel would not have travelled west; but it would have been delayed perhaps for centuries. Thus it is that our actions have a far-reaching significance that we very seldom realize. Sometimes we are conscious of the importance of what we are doing, but more often we are not. Before the great naval battle between the Russians and the Japanese, Admiral Togo sent word to his men: "The future of our empire depends upon your conduct here to-day." There is a sense in which our own future depends upon decisions which have to be speedily made.

Shoot Before You Set.

From many experiments all over the country has come the approval of "shoot before you set," for the results following blasting have shown that when setting young trees in soil underlaid by hardpan, it is profitable first to blast the holes with explosives.

Also, this shattering and thorough opening up of the under soil allows for the best of drainage and aeration, two important factors in orcharding.

If instead of merely spade-digging, the holes are shot with half a cartridge of farm explosive per hole, a tree set therein will usually make enough more rapid growth to make it come into bearing a year earlier.

A number of years ago in planting some apple trees a friend of mine living in a distant state, set some trees with the aid of explosives, as well as some without, and when I saw them last winter there was a great difference in their growth and general appearance. His trees set in blasted sites were outstripping those planted in holes prepared in the ordinary way with a shovel.

To get rid of an under layer of hardpan it is only necessary to punch a hole and load with some low-grade dynamite. One common-sized cartridge will be found sufficient for preparing a couple of holes. The work should be handled during a dry period, the drier the better, for while wet soil will break, it does so in lumps and is not shattered like dry earth.

After loading, the tamping should be done thoroughly, as a tightly tamped shot will result in much superior results by holding the force of the explosion in the under soil where it is desired, and the more thorough the shattering the easier will the tree roots be able to penetrate in their search for food.

Fuse burns slowly, averaging, as I remember, about two feet a minute, so that after lighting there is an abundance of time to get away. With a proper shot there will be no throwing of dirt, but merely a heaving of the soil, for a large portion of the explosive force is downward and sidewise.

Soon after the shot it is advisable to take a pole and tamp the earth to settle any air pockets that may have been formed, for if this is not done the settling will take place during the first season's growth of the tree and the earth may settle away from the tree roots. After this tamping the site is ready to be dug out and the tree set.

Ten Rules for the Shipper.

1. Be sure that your product is in perfect condition.

2. Handle as little as possible, to avoid bruising.

3. Take up directly with the railroad details of crop to be shipped, and service required. Give ample advance notice, so that proper car service can be supplied.

4. Get a written acknowledgment from railroad, covering number and kinds of cars to be supplied and the rates to apply.

5. Load containers in car so that there is proper air circulation. Without this, icing or heating will be almost worthless.

6. Pack and brace contents so that load cannot shift or settle in transit, causing breaking of packages or bruising of product.

7. When using ice or heat, prepare the car in advance. Pre-cool the product, if possible.

8. Make exact check or count of contents of shipment, while it is being loaded.

9. Have arrangements made for immediate unloading of shipment at destination; if there is any damage, delay may greatly increase the loss.

10. If shipment is reported "off condition" at destination, arrange for immediate inspection. Get a government inspection report, if possible, as such a report is admissible as evidence in court.

The new one million dollar live stock arena at the Canadian National Exhibition will have 8½ acres under roof.