Soils and Crops

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Grass and Clover Mixtures.

In large sections of Eastern Canada, the importance of well-balanced grass and clover mixtures, particularly for pastures, is not yet clearly realized. If it were, the commonly used mixtures consisting of timothy and red clover or timothy, red clover and alsike would be seen less often than is now the case.

These mixtures may yield, the year after they are sown, one or two crops of hay composed largely of clover; the following year or years the hay crops secured will consist almost exclusively of timothy. As timothy, however, produces a rather scant and slow-growing aftermath, it follows that fields sown to clovers and timothy and harvested for hay furnish a pasture, after the hay crop has been taken off, that becomes comparatively poor, both in quality and returns, as soon as the clover has disappeared.

For this and other reasons it pays well to add a few other grasses and also other clovers of a persisting nature to the ordinary timothy and clover mixtures. On land of normal fertility a clover and timothy mixture, sown primarily for hay in a rotation will produce more hay if a little meadow fescue and perhaps also orchard grass are added. On account of their rapid growth after cutting, the latter grasses also help a field to produce more pasture after the hay crop has been removed. The same applies also to other grasses, known as bottom grasses, such as Kentucky Blue grass, Red Top, and others, and also to White Dutch clover.

For permanent pastures it is of still greater importance that the mixtures sown contain a variety of grasses and clovers. It is obvious that the most valuable permanent pastures are those which provide green pasturage from the early spring until late in the fall. Under the circumstances it is equally obvious that the most valuable mixtures for permanent pastures are those which contain early as well as medium late and late pasture plants.

This is a point that is too often overlooked in Eastern Canada. It is not so in Europe, where the great value or pastures of proper composition is being more appreciated and where, as a consequence, pasture mixtures holding ten or more grasses and clovers are common. As an example may be mentioned that Sutton & Sons, Reading, England, recommend, among others, a mixture "specially adapted to produce the most profitable crops four to six years grazing or mowing" which contains seventeen different grasses and clovers, and for permanent pastures on medium soils a mixture which consists of not less than twenty-one different pasture plants.

It is impossible in a short article to discuss what particular grasses and clovers ought to be recommended as additions to the timothy and clover mixtures now commonly used, as different rates and combinations of quite a varied nature are required for different soil and climatic conditions. Furthermore, such a discussion is outside the scope of this article, the object of which is simply to emphasize the advantage of including a greater number of grasses and clovers in mixtures than is now the case.

Marketing the Surplus Stock.

Distribute the sale of market birds over as many of the twelve months as possible. Sell when the price is good and the birds ready. As far as possible, get out of the habit of marketing everything in the fall of the year. Watch the markets and have your birds ready when you can get the prices.

Hens.—The best prices are received for hens in the spring of the year. A good plan is to cull out all the hens you do not intend to keep over for breeding purposes another year and sell as soon as the egg yield drops. This will occur after the breeding season is over and usually along about the 1st of July for the poorer ones, the better layers a little bit later.

Whether these birds should be killed before selling will depend upon the demand. In some large cities, a better price is paid for the live bird than for the dressed. The killing, therefore, will depend upon the prices paid.

Which Hens to Market.—When trap-nesting is followed the matter is simple, for the non-producers can be picked out at any time. Where trap-nests are not used the selection is made much more convenient if leg bands are used to distinguish the hens from the pullets, and the early-laying pullets from the later ones. With these marks the hens and the low-producing pullets can be disposed of. The aim should be to keep over the summer months only the birds that are paying well for their keep, and that are to be kept for breeding purposes the next spring.

In the case of Leghorns or other light breeds, it may pay to keep all pullets over the summer, but this must be determined by the number of eggs they are laying as soon after their egg production comes below their cost of keep even Leghorns should be disposed of.

Broilers.—Broilers are chickens weighing not over four to five pounds to the pair. In recent years the demand and the prices have risen for broilers and now for those who are close to a good broiler market it pays to sell their cockerels as broilers rather than hold them until fall and sell them as roasters. It is a good plan, therefore, to get rid of as many cockerels as you intend to sell, during the broiler stage, if the price available at that time makes it worth while, and usually it does. The selling of broilers at this time of the year cuts down on the feed bill and leaves more room for the pullets to mature.

Ducks.—The only time to sell market ducks is when they are about ten weeks of age and can be marketed under the trade name of "green ducks." Usually where there is a demand for this class of ducks they will bring a bigger price per bird at this stage than at any later stage, and the cost of production is materially less.

Roasters.—In spite of the number that can sell broilers, the bulk of the cockerels will be sold as roasters weighing from 4½ to 6 pounds in the fall. In disposing of roasters it pays to crate feed. The last pound of flesh is the cheapest part of the whole carcass and enhances the value of the entire bird. Do not dispose of any class of poultry stock without special feeding, and for the larger cockerels, especially, the crate feeding system is best.

Turkeys and Geese.—Geese are becoming more popular each year and deserve more attention on the average farm than they have received. The grass feeding habit of the goose is an added reason for goose flesh being one of the cheapest poultry meat produced.

Turkeys continue to be our highest priced poultry flesh and no doubt will maintain this position for some time, for the ravages of blackhead each year seem to make it harder to produce turkeys. In marketing turkeys almost more than any other class of poultry meat, it is essential that they be well-fed. Turkeys cannot be too fat and in disposing of them keep in mind that turkeys are used for festival occasions. Have them ready, therefore, in plenty of time for Thanksgiving and Christmas, and do not leave the marketing of them too near the time at which they are required for eating.

For further detail, write the Poultry Division, Central Experimental Farm, Ottawa, Ont., for their bulletin No. 88, "Preparing Poultry Produce for Market."

Preparing for the Next Lamb Crop.

Successful sheep husbandry requires careful preparation for the next lamb crop. It matters little what time of the year it is, whether the ewes are just bred, the lambs just weaned or the lamb crop just due, preparation for the next crop should be kept in mind. So time is more important than during the previous lambing season. At that time notes and records should be kept of all important items regarding the behavior of the ewes, the number of lambs each raises and whether they are good mothers or not, whether their udders are healthy and well-balanced, or any other valuable notes of this kind. Any ewe that does not successfully raise her offspring should be culled rather than re-bred.

Great care should be exercised in the selection of the ram to be used. He should be a typical, uniform, good-sized, purebred animal, full of vigor, active, and in good bloom. It is wonderful the influence a ram may have upon the offspring of a flock of ordinary ewes.

The selection of the ewes is also a very important feature in connection with the lamb crop. This selection may be done when the previous lambs are weaned and again at breeding time. The shepherd has in mind at this time uniformity in type. The more uniform in appearance the ewes are, the more uniformity will be shown in the offspring and hence the better the prices to be obtained when marketing time arrives. Nothing attracts the buyers like uniformity not only in good condition, but in size, age, appearance and type. The ewes teeth should be examined and if any defects are found the ewes should be culled. As a rule ewes are not profitable for breeding after they pass five years of age. Not only should severe culling be done to the mature ewes but careful selection should be practiced in choosing future breeding ewes for the lamb crop, always being careful to retain those as near the ideal type as possible. Too much emphasis cannot be laid upon the culling process.

After the culling and selection work has been completed the ewes are prepared for breeding. They must be well fed and put in good condition but not overfat. As the breeding time approaches they should be flushed on some good, green, succulent pasture. As many as possible should be bred at the same time so that the lambs arrive in a group and the lambing period will not then be spread over a long period, which is objectionable.

As the lambing period draws near the shepherd appreciates the fact that his busy time is approaching. He looks to the increased comfort of his flock. If the lambs are to be born in the barns the buildings are thoroughly cleaned and disinfected; hurdles, lamb-creeps, feeding racks, disinfectants, record books, docking and castrating tools are all put in readiness for the coming harvest, which will represent his profits on the business.

Last Year's Yield of Potatoes.

Dominion statistics show that 1920 saw the largest crop of potatoes in Canada on record, both as regards the average yield per acre, 170½ bushels, and the total yield, 133,831,400 bushels. It was thought that large quantities would be lost in the winter by rotting and freezing, but the mildness of the season reduced the losses so incurred to a minimum. As a consequence the surplus in the hands of farmers on March 31, 1921, was exceptionally large, the largest on record in fact excepting only 1910, when it was 44 per cent. compared with 40 per cent. this year and 25 per cent. last year. Last year the surplus on the date mentioned was 31,646,000 bushels while this year it was 53,313,000 bushels. The loss from frost and rot up to March 31, 1921, was only 16 per cent., or 20,686,000 bushels. As a consequence of all this there has been something like a glut of potatoes and quantities have been fed to live stock. This year there has been a decrease in the number of acres sown; consequently, it is safe to predict that the next annual report, that is for the year ending March 31, 1922, will show a diminution in the merchantable quantity and in the surplus, the annual average of which for ten years has been 26,343,000 bushels, or less than fifty per cent. of what it was at last reports. The average annual merchantable quantity in Canada for the same period was 69,730,200 bushels. In 1920, that is for the fiscal year ending March 31, 1921, it was 105,608,000 bushels.

Transportation and Care of Fruits.

Increased attention is being given to the carriage and storage of fruits. Every year owing to the shortage of help and the briefness of the picking and shipping season large quantities go to waste. This can only be obviated by improved methods of handling and by rapid distribution. It is gratifying to know that fruit growers in all parts of the country are vigorously taking these matters up and that the various departments of agriculture are showing an earnest desire to co-operate. Efforts are being made to reduce waste to a minimum transportation and to increase cold storage facilities to an extent that all fruit-growing centres will find accommodation. The whole future of Canada's fruit trade depends on the success and perfection of these efforts. It has already been shown that tomatoes grown in Ontario can with the proper facilities be successfully marketed in Alberta in competition with shipments from the western States. It rests with express, steamships and railway companies to co-operate with the fruit growers' associations and government operatives who are working in these directions.

Lampblack or tar stains: Saturate with kerosene. Wash with soap and water.

A steel fence post, with the top six inches bent slightly inward for carrying a few strands of barb wire, designed in this way to give better protection to orchards and gardens, has been recently placed on the Canadian market.

Poultry

At no time of the year does cleanliness count for more in the poultry business than during warm weather. Fowls kept in closed, stifling, sleeping quarters cannot be in a really healthy condition, or give very good returns. It would be much better to have the windows removed from the poultry house, to have them cleaned and stored away in some place where they could not be damaged until needed again, and pieces of wire netting put in the place of the windows. This will keep out any vermin and at the same time allow more fresh air for the fowls. Many of the losses among adult fowls in the summer season are the result of unhealthy roosting quarters.

The poultry house should be thoroughly cleaned. Give the roosts a good coat of kerosene or some liquid lice killer, clean out the nests and burn the old nesting material, then give the nests a thorough white-washing inside and out, leaving them to dry in the sun for a while. A thorough spraying with whitewash of the whole interior of the house will make the place more sanitary. If the floors are of earth, remove a few inches of the top soil and replace with some fresh sandy soil. If they are of wood or cement, scrape and sweep them clean, then wash with a fairly strong disinfecting solution. Sunshine, combined with fresh air, is one of the best germ destroyers we have, but it is possible to have too much sun for the fowls if some kind of shade is not provided in very warm weather, to be used when needed.

Colony houses scattered through an orchard make a very desirable place for fowls or growing chickens. Always provide plenty of pure drinking water in clean pans and keep it is a sheltered place, out of the sun. Be sure the adult birds are not too heavily fed, especially on corn or buckwheat or any of the fat-producing foods. Select the fowls that you do not intend to hold over for another breeding season and sell them early while the price is high and while they are in good condition, before they commence to moult.

The fowls which are to be kept over as breeders, and also growing chickens intended for stock birds, should be given liberal range.

Free range where there is an abundance of green food and animal food in the form of insects, worms, ets., to be had, is very essential to the best growth, health, vigor and vitality in stock intended for either breeding or laying purposes.

Keep a supply of salt before the stock.

Warfbles are detrimental to thriftiness, as well as to the hide of the animal. Every grub squeezed out and destroyed is one less to mature and propagate its species.

Half the value, perhaps more, of a pure-bred lies in having the animal registered. If you don't believe it, keep your eyes open when you attend public sales. The pure-bred that isn't registered sells for much less than the registered animal.

Grain is not needed to make first-class lambs if an abundance of good pasture is provided. Cheap as corn is this year, though, a little corn may be profitably fed. Rape is a valuable pasture crop for lambs.

Making Better Silage With Less Work

That many farmers make extra work for themselves by cutting their silage too green is clearly shown by a simple bit of arithmetic. Making silage of green corn means hauling a lot of water from the field to the silo, and, furthermore, the nutritive value of the silage per pound is greatly reduced. I have tried this problem on a lot of silage experts who were not convinced until they had figured quite a while for themselves. So get out your pad and pencil and you will be surprised at the results.

Now for the silage problem. We will assume a case: Suppose that a field of corn when cut at a certain stage yields 20 tons of ensilage with 80 per cent. water content. Suppose we decide to allow the corn to stand in the field and dry out until the water content has decreased to 60 per cent. To simplify the problem we will assume also that there is no further production of dry matter. Such would not be quite the case, but then this is a problem of arithmetic. The problem is, how much would this 20-ton yield shrink in weight with the dropping of the water content from 80 to 60 per cent.?

Men accustomed to handling silage all their lives come back as a rule very glibly with an answer. They reason this way: The difference between 60 and 80 per cent. is 20 per cent.; 20 per cent. of 20 tons is 4 tons, and this they figure will be the amount of shrinkage. The problem is not so simple, nor so unimportant. The true solution of it is as follows:

The silage in the first place contained 4 tons of dry matter and 16 tons of water, or 20 per cent. dry matter and 80 per cent. water. In the second case there is the same 4 tons of dry matter, but only 6 tons of water, or 40 per cent. dry matter and 60 per cent. water. The silage loses just one half its weight, the 20 tons shrinking to 10 tons. The usual error of course comes in the tendency to make the comparison with the figures for water per cent. instead of the figures for dry-matter per cent. A change from 80 to 60 per cent. water seems rather small, but a change from 20 per cent. dry matter to 40 per cent. dry matter obviously means, if the total amount of dry matter remains the same, that the total weight has been cut in half.

This bit of arithmetic points to an important lesson in silage-making. The lesson is to let the water content go as low as possible without injuring the silage quality, before starting to fill the silo. During this period of growth the corn is actually gaining in feeding value as well as getting rid of an immense tonnage of water. Half the labor of overhauling may be saved, and a better product secured, by making a rather dry as against a rather wet silage.

This bit of commonly misunderstood silage arithmetic also gives rise to heated arguments over yields of silage corn. The man accustomed to making a dry silage takes with a grain of salt the story of big tonnage put out by the man who makes sloppy silage, neither party appreciating the fact that shifting the moisture content from 80 per cent. down to 60 per cent. —about the two extremes encountered in actual practice—causes a reduction of just 50 per cent. in weight per acre.

The same question is also involved when it comes to feeding. A wet silage has only half the feeding value, pound per pound, as has a dry silage. All too frequently this distinction is not appreciated when the material is doled out along the feeding platform. Maybe the milk pail will show up the difference, but only a little silage arithmetic will point to the cause. It takes 80 pounds of wet silage to give the same feeding value as 40 pounds with the lower percentage of water—as per the problem with which we started out.

THE SUNDAY SCHOOL

JULY 17.

The Conversion of Saul, Acts 9: 1-19. Golden Text—1 Tim. 1: 15.

Connecting Links—Though Paul was seeking to find the true way of life as a Pharisee in strict observance of the law, and thought he was serving God in persecuting the Christians, he was not happy. He describes the experience of that period of his life in the seventh chapter of the Epistle to the Romans, an experience of discouragement and defeat leading almost to despair. The commandment (or law) "which was ordained to life," this, he says, he "found to be unto death." For the law continually set before him ideals, which he could not reach up to, and was a continual reminder of his faults, his errors, and his shortcomings. The law was holy, and just, and good, but it meant death to him.

He found a conflict within him between good and evil. For, he says, "that which I do I know not; for not what I would, that do I practice; but what I hate that I do."

"For the good which I would I do not; but the evil which I would not, that I practice." From this conflict he found no way of escape. Evil seemed to triumph. He was being brought into captivity to sin. But when, in despair, he cries out, "O wretched man that I am! Who shall deliver me?" the answer comes, "Jesus Christ." And so, he says (8: 3), "What the law could not do," Jesus Christ did. There is no condemnation to them that are in Christ.

Paul must have been impressed by the speech of the martyr, Stephen, which he had heard, and by the heroic and patient courage with which he met his death. He must have met and heard the testimony of many other Christian men and women. While he carried on his work of fierce persecution this leaven must have been working in his mind and heart. The climax of the conflict was reached on the way to Damascus, and Paul's great decision was made then and in the days that followed.

9: 1-2. **Desired of him letters.** The high priest was still the chief magistrate of the Jewish people, and his authority was recognized by Jewish communities even outside of Palestine. Though subject to Rome, these Jewish communities were allowed a large measure of freedom and self-government, and Jewish magistrates appear to have had, at certain times and places, the power not only to imprison, but even to inflict the death penalty, although the latter was usually held by the Roman governor only, or those deputed by him. The letters, therefore, which Saul received from the high priest would be respected by the Jews of Damascus, and would authorize the arrest and punishment of the Christians.

3-7. **A light from heaven.** What exactly it was that happened we do not know. We might conjecture that it was a sunstroke, or an epileptic fit, but no such explanation can fully account for what followed. That a conflict had been going on in the mind of Saul seems beyond question. His mental agitation may have helped to produce a physical crisis. But, however, that may be, the one certain fact is that God spoke to the inmost soul of this zealous persecutor, and compelled him to see and to acknowledge the truth. It was God, and yet it was Jesus, too, whom he met that day on the way to Damascus. "I am Jesus whom thou persecutest," the vision said. In all this early Christian experience there is an identification of Jesus with God. Paul, who had fought so hard against Him, now calls Him Lord, "Lord, what wilt Thou have me to do?"

8-12. **Behold, he prayeth.** It is significant of the reality and truth of the vision and experience which had come to him that Saul was driven to prayer. He came to persecute; he remained to pray. And his prayer was answered. For there came to him, divinely instructed, a good man and true, whose name was Ananias, who was commissioned to lead him into the way of faith.

The street which is called Straight, in which Saul had his lodging, is still to be seen in that ancient city. Most streets of eastern cities in those days were simply open places, square or oblong, inside the gate, where the marketers bought and sold, and where the elders held council and the judges their court. But this, apparently, was already an open thoroughfare, connecting different sections of the city, and with the open shops of the merchants on either side. It was lined with columns, the bases of which can still be seen.

13-19. **I have heard by many of this man.** The fame and dread of Saul's name had already reached Damascus, and the Christian people there knew of his coming and what he had come for. Yet at the call of duty, the call of his Lord, Ananias went to him. He did not know but the going might cost him his life—nevertheless he went.

A chosen vessel. There came, by this word of inspiration, to Ananias a promise of what such a man as Saul might become, if converted to Christianity. A man of his learning and great ability and knowledge of the world might indeed by the chosen vessel to bear Christ's name before the Gentiles and kings and the children of Israel. And that was the divine word to Ananias.

He entered the house and greeted his enemy as "Brother Saul." Who could resist the spirit of brotherhood and goodwill which was so manifest among those early Christians? Paul's heart was won and his eyes were opened. The great decision was made. He was baptized, making public confession that he now believed in Jesus Christ, and would follow Him. It was not long until he was preaching Christ in the synagogues.

"The coming of Jesus to Paul was for him from the very first a miracle of God's favor, or grace; the winning of his heart, an unexampled display of power. The experience could only be the work of God; for it gave him what he had long been seeking—rest of soul, peace of conscience, a free forgiveness, and a love that was also an inexhaustible source of moral power." —Strachan.

Paul repeats the story of his conversion twice in the Book of Acts, once to the crowd which thronged about the stairs of the castle (22: 5-16), and again before Festus and Agrippa (26: 12-20). In both cases he declares that he saw Christ. So also in 1 Cor. 15: 8, he says, "He was seen of me also, as of one born out of due time." "Am I not an apostle?" he asks, "Have I not seen Jesus our Lord?" This testimony of Paul in 1 Corinthians is indeed the earliest record, earlier than any of the gospels, of the appearances of the risen Lord.

Paul could never forget this vision. Nor could he forget that the Christ whom he had persecuted had forgiven him, and had done him this great honor, making him His apostle. "I thank him that enabled me," he writes, "even Christ Jesus our Lord, for that He counted me faithful, appointing me to His service; though I was before a blasphemer, and a persecutor, and injurious. Howbeit I obtained mercy, because I did it ignorantly in unbelief. And the grace of our Lord abounded exceedingly with faith and love which is in Christ Jesus. Faithful is the saying, and worthy of all acceptation, that Christ Jesus came into the world to save sinners; of whom I am chief." (1 Tim. 1: 12-15).

Application.

It is consistent with the Divine attitude as revealed at many times that Jesus should commence speech with the erring persecutor with a question. Men who do wrong are not only sinners but fools. Through the centuries God has been trying to get His children into a sensible frame of mind. "Israel doth not know, my people doth not consider. Come and let us reason together, saith the Lord," was the message of Isaiah. "There is a way that seemeth right unto man, but the end thereof are the ways of death," was the word of that writer who so earnestly urged the advantages of wisdom. It was the same spirit which Ezekiel expressed in "Turn ye, turn ye, why will ye die?" This was the burden of Christ's own complaint over Jerusalem. "How often would I. . . but ye would not." This is a righteous world, governed by a God who loves goodness. There is no figure of speech strong enough to describe the folly of the man who yields himself to wickedness. The whole universe is confederated against him.

Controlling Rabbit Diseases.

In its natural environment a rabbit will have a burrow or a brush heap for a home and it will have a range over plenty of territory and a chance to select a wide variety of food. When rabbits are kept in confinement in the usual type of hutch, each breeding rabbit has a range consisting of twelve square feet of board floor. It is evident that much attention must be given to rabbits in hutches or they cannot be expected to thrive.

Many rabbit breeders have started out with plenty of enthusiasm and good breeding stock, only to drift gradually out of business with the death of the first rabbit from disease. Often before the last rabbit dies it will be bumping its head against the top of the hutch because of the accumulation of manure on the floor.

Rabbit hutches should be cleaned every few days and then sprayed with one of the commercial coal tar disinfectants. This destroys disease germs and gives the hutches a more agreeable odor. There should be a surplus of hutches so that some of them can be empty at certain times. The empty hutches can be placed wide open in the sunshine. This helps to disinfect the hutch and gives the lumber a chance to become thoroughly dry.

I believe that the hutch plan of raising rabbits is such an unnatural environment that it will pay rabbit breeders to have a few fenced yards in which the breeding stock can often be placed for exercise. It gives them a chance to get their feet on the ground and this seems beneficial for all kinds of animals. The yards can be enclosed with strong wire and a trench can be dug around the outside and filled with stone or any material that will keep pests from digging in and the rabbits from digging out.

Of course, the hutches will still be necessary but the yards will be used as exercise runs in which the breeding stock can be placed in turn. It will improve their vigor and help in keeping down disease. One successful breeder has such a system of yards on well drained soil and the rabbits have a deep burrow in the ground in each yard. They seem to enjoy the chance of returning to conditions more or less natural and present the owner with large litters of husky young rabbits.

Sick rabbits can sometimes be cured but the best method is to keep them free from disease. If doctoring becomes a constant practice in a rabbitry it means that something is wrong with the breeding stock or the system of management and prompt measures must be taken or the losses will be large.