# Soils and Crops

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### SPRAYING POTATOES FOR LATE BLIGHT.

Late blight, primarily a disease of the potato foliage, is most destructive, and in some years causes tremendous losses. The starch which is stored up in the tubers is manufactured in the leaves, hence loss is occasioned both by the blighting of the tops and the consequent failure of the tubers to attain their normal size, as well as by the well-known tuber rot which follows an attack of the disease before and after the tubers are placed in storage. This loss can be greatly reduced, if not entirely eliminated, by careful and thorough spraying with Bordeaux mixture. This should be done whether the crop is being grown for "seed" or for table stock.

The best spraying solution to use is home-made Bordeaux mixture made up of 4 pounds copper sulphate (bluestone), 4 pounds of quick lime, and 40 gallons of water. In making this solution it will be found most convenient to use stock solutions and to dilute them as required. These solutions are prepared as follows:

Bluestone Stock Solution—This is prepared by dissolving 40 pounds of copper sulphate in a barrel containing 40 gallons of water. A convenient method is to place the chemical in a sack and suspend it, over night, in the barrel of water and just below the surface. A more rapid method is to crush the bluestone crystals and dissolve it in a smaller quantity of hot water and make up to 40 gallons. Each gallon of the solution will then contain one pound of bluestone. Metal vessels must not be used in handling this chemical.

Lime Stock Solution—Slake 40 pounds of fresh quick lime in a barrel by gradually adding water. Mix thoroughly and continue to add water until the barrel contains 40 gallons.

The barrel of stock solutions should be covered to keep out dirt and to prevent evaporation. When ready to spray transfer four gallons of the stock solution of bluestone into the spray tank and add 32 gallons of water. Then add 4 gallons of the lime stock solution, pouring it through a fine mesh strainer to remove all solid particles. This is most essential, as it will prevent the annoying clogging of the nozzles. Keep stirring the solution in the tank while adding the lime. The solution is now ready for use.

Spray mixtures made in the above manner will usually contain the necessary proportions of bluestone and lime. However, since the composition of quick lime is not always constant, it is desirable that the mixture be tested since an excess of bluestone will injure the foliage. A testing solution may be prepared by dissolving once-half ounce of potassium ferro-cyanide in one-half pint of water. This material is a poison. Sprinkle a few drops of this reagent on the surface of the spray mixture, and if on striking the surface of the solution, a distinct brown color results more lime should be added. As an insecticide 1½ pounds of arsenate of lime should be added to each 40 gallons of solution for the control of potato beetles. Spraying should be commenced about the middle of July. When the plants are small an application of about 60 gallons per acre will be sufficient. This amount should be increased as the plants grow larger, using three nozzles for each row so that both upper and under surfaces of the leaves will be thoroughly protected. The spray should be applied under pressure of about 125 to 200 pounds. Experiments have shown that in circumstances four applications may suffice during the season, but five or even six will generally give the best results. The later sprays, given when late blight is known to cause the greatest amount of damage, should be applied with the utmost care. The omission or careless application of one spray at this time may undo all previous efforts at control. This is due to the fact that crops which are sprayed remain in a green, growing condition longer than they otherwise would. If the later applications are not thoroughly applied the unprotected foliage will present favorable conditions for the late blight fungus to become established. Even though the appearance and severity of the disease is usually dependent upon seasonal conditions, a grower will be amply repaid for the labor and expense of spraying in a season when no blight occurs by the obtaining of a larger yield. It is also desirable to increase the proportion of copper sulphate in the later sprays—using the formula 6:4:40. In preparing this mixture the only difference is that six gallons of stock solution of bluestone are added instead of four, and 30 gallons of water instead of 32.

Commence spraying early before the disease makes its appearance. Spray before rather than after rains. Spray thoroughly.—J. B. MacCurry, Plant Pathologist.

## POULTRY

Gasping chicks are too often supposed to have gapes, when in reality they have something else the matter with them. In other words, gapeworms are not so common as is frequently supposed.

Where they are common, however, they are a source of loss and trouble. This little worm, the female of which is four-fifths of an inch long and brownish red in color, while the male is only a quarter of an inch long, gets into the bird's body through the alimentary tract.

The female worm, which is filled with eggs, is expelled by the infested chick through coughing. The worm's body then decays in the soil and the eggs hatch, provided there are the proper conditions of moisture and warmth.

There is a common belief that an intermediate host, such as the earthworm, is necessary, but this is not a fact; there may be such a host, but none is necessary for the completion of the life cycle.

The larvae which have thus hatched are then picked up by the chicks and make their way into the trachea from the gullet. Their presence sets up an irritation and this causes the chick to gasp.

The common method of removing these worms has been by means of a feather or horsehair twisted around in the trachea—that is, the windpipe. The worms are thus dislodged and pulled out. This method, however, is dangerous and unnecessary. It is dangerous because the feather or horsehair is apt to cause injury by tearing the trachea, thus exposing these areas to infection. The same results can be obtained without danger or injury.

The safe method consists in injecting into the trachea by means of a hypodermic syringe one cubic centimeter of a 5 per cent. solution of sodium salicylate, the idea being to cause irritation and coughing, thereby dislodging the worms. The chick coughs them out.

Another is to feed one bulb of garlic a day for each ten birds.

Asafoetida and tobacco may also be used to cause the irritation and coughing.

## DAIRY

**Our method of maintaining the milk flow during the dry period is to provide an ideal all-summer pasture. For this purpose we grow the biennial white sweet clover. An acre of it will keep more than one cow all summer and the pasture will keep green and palatable until there is a new pasture provided after threshing time by the sweet clover that was sown in the small grain in the spring. Occasionally when we buy a new cow that does not seem to like the sweet clover at first, she is given a little grain or dry feed until she will eat the clover well. Cows on sweet clover need very little grain to keep up the milk flow to profitable production.**

**When the cows are turned back in the pasture at night, the flies do not bother so much while they are feeding at night or lying down. Since the sweet clover provides a fine pasture from early spring until fall, it provides milk that has no bad odor or taste, and it points the way to economy in milk production.**

### Elimination of Degeneration Potato Diseases.

Degeneration diseases of potatoes are those such as mosaic, leaf curl, curly dwarf, spindle tuber and the like, which are known to be spread in the field by aphids, plant lice, and which can only be eliminated by removing the source of infection. The source in every case can be traced to tubers which were formed in diseased hills the previous year. The aphids feed on the plants arising from these tubers, and when they go to healthy ones they carry some of the infection with them, and in the course of feeding, inoculate the juice from the diseased plant into the healthy one. In the course of a few weeks the formerly healthy plant is diseased.

In order to prevent the spread of these degeneration diseases it is necessary to go through the field about the time the plants are eight to ten inches high and pull out all that appear undesirable. In doing this be sure to remove the entire plant system, including the seed piece. The removal of plants in this way is known as "rogueing." Two or three weeks later the field should be given another thorough inspection and all diseased or undesirable plants rogued. It is also necessary at this time to remove any foreign varieties which may be present. Should it be necessary to rogue a field after the tubers have begun to form, care should be taken to remove these as well as the plant. This will reduce to a minimum the danger of disease being carried over to next year's crop by means of the tubers.

**Scissors in the kitchen are handy for cutting up greens.**

**These are the days when flies bite hardest and the stock suffers most from the pests.**

### Fanning Mills and How to Use Them.

The points to observe in fanning seed grain are: first, proper air blast; second, right size and combination of sieves; third, right speed; and fourth, running the grain evenly and thinly over the screens.

The wind supply or air blast in all machines is provided to remove as much of the lighter seed and chaff as possible. If the air blast is not sufficiently strong, the chaff and pieces of straw will find their way back into the sample, while if the blast is too strong, some of the good grain may be blown out. The air blast also serves the purpose of keeping the sieves clean of the lighter material thus allowing them to do more efficient work. A trial of the air blast should be made with each new lot of seed to be cleaned in order to see that the correct amount of air is being supplied.

It also may be found necessary to change or readjust the sieves to get the best results. A good assortment of sieves is imperative and a test should be made with different types before undertaking to clean seed in order to ascertain those capable of doing the best work. The top sieves should be large enough to allow the seed to pass through, the remainder of the sample, such as chaff and pieces of straw, running over the top and out at the end of the mill. Sometimes it is expedient to deliver the good grain at the back of the mill instead of at the usual feed point in order to get rid of a certain impurity that cannot otherwise be removed. The lower sieve or sieves should be large enough to allow the weed seeds or broken kernels to escape but fine enough to carry the good kernels over the top. If wild buckwheat is present, a sieve with triangular 8-64 inch holes or slightly bigger will be found a handy one to have.

The following sieves will be found useful for the cleaning of seed grain:

Wheat and barley—The upper sieve should be a zinc or tin perforated sheet with twelve, thirteen or fourteen sixty-fourth inch holes. The lower sieve should be either a perforated zinc sheet with eight or nine sixty-fourth inch holes or should be square woven wire mesh eight by eight or nine by nine squares to the inch, or long woven wire mesh two by nine, two by ten, or two by eleven squares to the inch.

Oats—Upper sieves: zinc sheets with slots seven, eight or nine sixty-fourths inch wide by three-quarter inch long. Lower sieve: zinc sheets with slots one-tenth to one-thirteenth inch wide by one-half inch long.

The feed should be adjusted to allow a thin, even flow of material over the top sieve, with no crowding. A larger quantity of impurities is removed when the grain travels slowly over the sieves than when running quickly over them.

The makers of good fanning machines are always willing to give their advice as to what sieves to use. Should any particular problem arise and in case of trouble, it is often advisable to send a pound sample of the seed to be cleaned to the fanning mill manufacturer for suggestions as to sieves.

### Get Ready for the Grasshoppers.

Poison bait, if properly made and applied in time, will control at a very small cost serious outbreaks of grasshoppers:

Bran, 12 pounds; hardwood sawdust, an equal bulk to the bran; Paris green, or white arsenic, 1 pounds; salt, 1 pound; water, 2 gallons.

Mix thoroughly in a large box or tub the bran, sawdust and Paris green. Dissolve the salt in the water and then gradually pour the liquid upon the poison bran and sawdust, mixing thoroughly. In applying, scatter the mixture thinly over the infested field, sowing by hand like grain. The early morning on a bright warm day is the best time to apply, as the hopper do not move very much when it is cold or dull. Twelve pounds of bran and 1 pound of Paris green is sufficient for two acres.

Modern agriculture must be organized agriculture.

Maybe a bent front axle is prematurely wearing the treads of your front tires.

When the hens are working overtime laying twenty cent eggs, fill a ten or twenty gallon crock with them, using water glass as a preservative. When winter comes, allow each and every one their fill of eggs and it will seem no time until biddy comes across with her fresh ones.

# Home Education

**"The Child's First School is the Family"—Froebel."**

### You Children's Belongings — By Mrs. Nestor Noel.

We hear a great deal about the farmer who gives his children calves and pigs and takes them away when these animals are grown. For years, people have been writing about this. There are other injustices which no one thinks much about, yet they are just as serious because the same lack of principle is there.

I allude to the cool way with which the mother frequently takes a gift received by one child and gives it to another. A child has some rights! Once you have given your daughter something, even if it be but a doll, this becomes hers for ever, unless she herself chooses to give it away.

I recall a child of six to whom I gave several small presents. As soon as she returned home, her mother took them away, to give them to a younger sister!

Very frequently, an older girl is told to give something she prizes to the baby to stop it crying. This is not good for the elder child. It makes her look on the baby as on an enemy from whom her things must be hidden. It certainly is not good for the baby, because it makes her think that anything will be given her, provided she cries loudly enough for it!

What sense of Justice can our children have in later years, when they are brought up in this manner?

Once when I gave a present to a little girl she said, "Is it for me to keep?" It seemed that other people had given her things and she had not been allowed to keep them.

There was another child to whom I gave a doll. I knew she had been longing for one for years, yet when I gave it to her, instead of being delighted as I had felt sure she would be, she looked at me sadly, while two great tears rolled slowly down her cheeks.

"What is it?" I asked. "Do you not want the doll?"

"Oh, I do!" she cried, "But Helen has no doll, and they will give this to her as soon as they see it."

It was only by giving Helen another doll that I could induce the mother to allow the elder sister to keep hers.

A child's mind is easily influenced and it is while one is still very young that clear ideas of right and wrong can be most easily implanted. Later on, there will be many things that we shall try to teach, and those first impressions will either help or hinder.

It is at home that a child should be taught his first moral lessons. What mother is fit to teach if she be not fair?

Even a very little child should be taught to respect his brothers' and sisters' toys. If an elder sister lends a toy to a younger one, the latter should be taught to be extra careful of the toy because it "belongs to Big Sister."

Each child should have a place for his own toys and these should not be lent about indiscriminately by the parent, especially while the owner is away at school. I have seen mothers lend toys when those to whom they belonged were not there to defend their property. I have known the big children to hide their things away "in case Mother might give them to Baby" in their absence. It is easy to see that no true love can grow up between mother and child under such conditions. Mothers should be fair to all their children and not show favoritism. Above all, mothers should teach the little ones as early as possible the difference between "mine" and "thine."

The Prince of Wales, photographed while watching a worker painting at the Cauldron Pottery at Stoke during his recent two-day visit to the potteries there.

# What To Teach Young Children

BY MARGARET CONN RHOADS.

Many farm mothers lament that their days are so fully occupied that they are unable to give their little children more time in preparation for school work.

"I would like to start James on his letters and number work," said a mother to me the other day. "He is a bright child and I feel that he would advance rapidly in his work if I only could."

But my reply to her, based on my own experience and that of many primary teachers, was: "Don't try teaching James either his letters or his number work. To-day all first-class teachers have been trained in methods of scientific teaching. They have wonderful ways of instructing your "James" and your neighbor's "Betty" in both number work and reading. And you might find, if you had the time to spend teaching your children their preliminary work for school, that this would prove but a handicap, for many home-taught children have had to learn all over again. It is more difficult to forget one method and begin another than it is to begin with the right one.

But there are many things that the mother can teach her children in preparation for the first school year. Teachers of consolidated schools and of all schools in rural districts tell me that one of the greatest hindrances they encounter in teaching the country child is shyness. Too often these little children have been kept at home so much that, upon coming to school, they are made incompetent by their abnormal shyness. This is truly a great handicap. The farm mother who wishes to give her children a fair chance with the other children, will see to it that from babyhood her little ones are allowed to make friends with both grown-ups and children outside the immediate family. There are opportunities for the farm child to mingle with others. The Sunday-school affords an ideal opportunity; then there are the trips to town and community affairs which can be attended by the whole family. The farm mother should also allow her children to entertain their own friends occasionally, a wonderful way in which to cultivate poise and ease.

The child can be taught obedience; not the kind that follows a mild threat, but the kind that comes instantly. The child who is taught at home to pay attention to small commands and acts upon them at once, is the one who will give attention to any request of "teacher's" and will be the pupil who will command respect from the entire school body.

The child can be taught cleanly habits. Too often mothers would be surprised to find that their children are only mildly versed in the use of a handkerchief, in keeping their desk belongings in order and in being personally neat. It adds so much to the assurance of a child to know that he is presentable in appearance.

Teach your children independence. Begin, when they are very small, by allowing them to lace their shoes, even if they start such lessons with the shoes in their hands; teach them to put on mittens and rubbers; to hang up their belongings and to button their coats. "Teacher's" temper and patience stand a much better chance of not being strained if the children can perform these duties for themselves.

Teach them to stay at a task until it is done. The child who does not give up easily is the child who will outrun the more timid in the school race.

Give them playthings that will teach them to use their hands. Crayons will be an aid to them. An old magazine and a box of crayons will do wonders in teaching children colors and in training their hands to keep on the lines. Let them cut also; teach them early how to handle scissors, providing them with the kindergarten scissors which have blunt ends. Modeling clay or wax is also recommended; it can be purchased wherever school supplies are sold and in many toy-shops. Modeling familiar objects not only trains the hands, but the eyes as well, developing a sense of proportion that will be helpful in many ways. Provide pencils and paper and train the little hands in the proper way of holding pencil and pen.

Encourage the children to play games requiring fairness and accuracy. Let them receive an occasional beating in a game, for experience of this kind will teach them how to become good losers.

One farm mother of my acquaintance allowed her children to have a sum of money, all in coppers, five and ten-cent pieces and quarters. They are as careful not to lose any of this money as if it were part of a game, such as checkers or dominoes. When they played "keeping store" they used real money with which to purchase commodities, and in this way learned both the value of the different coins and what amount of smaller coins it took to make a quarter or a dime.

Reading to the children is one of the best ways in which parents can instruct them. The child who starts school familiar with the rhythm of good poetry, or who has been taught to listen to a piece of worth-while prose, is a long way ahead in the race for knowledge. Your child will find a true delight in his knowledge of something the teacher brings out in a lesson. One day I was in a schoolroom when the teacher quoted from a poem of Robert Louis Stevenson's, a poem from that admirable collection entitled "A Child's Garden of Verses." Instantly a smile spread over the face of one of the children, and I realized that this child was on familiar ground. He could hardly wait until the teacher had finished when up went his hand and he said: "I can say all of that." You may be sure he had a chance to repeat the poem, and his pleasure was great in having had it as a memory possession.

Therefore, do not lament at lack of time to spend in preparing your child in book knowledge. Direct the conversation at table to such affairs of the day as are not over the children's heads; when an opportunity affords take your small children to places of interest and let them learn by seeing; let them mingle freely with your acquaintances, teach them the simple niceties and courtesies of life and they will overcome shyness and acquire book knowledge with surprising rapidity.

## THE CHILDREN'S HOUR

### THE LITTLE BIRD SAVES THE CABBAGES.

In Woodland, the animal folks have gardens just the same as we do, for they like crisp, fresh vegetables better than you, my little reader, like candy. Rolly and Bruin had the finest garden of all. The warm spring rains had made everything grow and Bruin had not allowed one weed to stick its head above the ground more than an inch.

Every evening when the rest of the work was done, they would go out into the garden and see just how far each new plant had grown that day.

"I believe this lettuce has grown an inch since last night," said Rolly, one evening just as the sun was kissing the earth good night. "Soon we can have some for supper."

"Fine, fine," said Bruin, "and just look at these radishes. They will soon be ready, too." Walking over to the rows of cabbages, he called to Rolly, "Just look what's happened here."

Now Rolly had tended these cabbages faithfully, for they were his favorite vegetable, and he liked them better than anything else in their garden.

In answer to Bruin's call, he came hopping over. But when he looked at the cabbages, he felt very discouraged. Little worms seemed to be everywhere on them, and some had big holes eaten in the leaves. What ragged looking cabbage plants!

"Oh, the horrid worms," said Rolly, "they will ruin my early cabbages. What can we do?"

"Too bad, too bad," said Bruin, "but in the morning, perhaps, I can find something that will drive them away. Bright and early the next morning Bruin was out in the garden to see what he could do. Carefully he looked all the cabbage plants over, but there wasn't a single worm on them.

"Oh, Rolly, Rolly," he called, "come here." And Rolly went hurrying to the garden to see what was the matter.

"There is not a single worm left," said Bruin. "Where do you suppose they have gone to?"

Together they searched the rows to see which way the worms might have gone, but all they could find was hundreds of little bird tracks.

"Ah, I have it," said Bruin. "Our little bird that had the broken wing has come back and helped us for helping him. All those worms didn't go away, but were eaten by the birds."

A little "chirp, chirp, chee-chee" in a tree right over their heads made them look up and there on the limb was the same little bird that had the broken wing. When he saw Rolly and Bruin looking at him, he just winked his eye and off he flew. But they were sure that he was the one who had helped to save their cabbage plants.

### Combat Potato Leafhopper With Bordeaux.

Close observations have shown that the potato leafhopper is the cause of an injury that begins as a slightly yellowing, usually at the tip of a leaf. The injury progresses; the leaf turns brown, curls upward and dies. The disease spreads from the margin towards the midrib of the leaf most rapidly during dry, hot weather. Early potatoes may be so checked by loss of foliage as to reduce all possible chance of profit.

Bordeaux controls leafhopper and prevents hopperburn. The spraying must be thoroughly done and must be applied to the underside of the leaf. High pressure (150 lbs.) should be used in order to cover the leaves with a fine mist. Three applications are necessary and the addition of an arsenical to the bordeaux will provide for the destruction of the Colorado potato beetle at the same time.

**Olive Trees Live Long.**

The olive tree is exceptionally long-lived, some still growing are said to be fully 1,000 years old.

The Island of Madagascar has a belt of forest twenty miles deep which completely encircles it.