

EFFICIENT FARMING

SPRAYING POTATOES FOR LATE BLIGHT.

Late blight and rot is the most destructive disease of potatoes and in some years causes tremendous losses. The potato leaves are the factories in which the starch is manufactured, later to be stored in the tubers produced underground. Should these factories be impaired in any way the yield must necessarily be reduced. In the case of late blight, loss results both from the blighting of the leaves and the consequent failure of the tubers to attain their normal size, and by the rotting of the tubers which follows an attack of the disease. These losses can be greatly reduced, if not entirely prevented, by careful and thorough spraying with Bordeaux mixture. Applications of this spray should be given whether the crop is being grown for seed or for table stock.

Careful experiments conducted over many years have demonstrated that the best spraying solution to use is a home-made Bordeaux mixture of the 4-4-10 strength. The most convenient method of making this mixture is by the use of concentrated stock solutions of copper sulphate (bluestone) and lime, diluting them as required. These solutions are prepared as follows:

(1) 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 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.

(2) 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.

In order to keep out dirt and prevent evaporation, the barrels containing the stock solutions should be kept covered. To make up a tank of spray ready for use, transfer four gallons of the stock solution of bluestone into the spray tank and add 32 gallons of water. To this dilute solution add 4 gallons of the lime stock solution. This should be poured through a fine mesh strainer to remove all solid particles, otherwise clogging of the nozzles will result. The solution in the tank should be kept thoroughly agitated while the lime is being added. The tank now contains 40 gallons of Bordeaux mixture.

If the above directions are carefully followed the resulting solution will usually contain the proper proportions of bluestone and lime, but since the composition of lime often varies it is preferable to test the mixture in order that the foliage may not be injured by an excess of bluestone. A testing solution may be prepared by dissolving one-half ounce of potassium ferrioxalate in one-half pint of water. This material is a poison. Sprinkle a few drops of this reagent onto 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 to each 40 gallons of solution for the control of potato beetles.

Commence spraying about the middle of July and repeat every two weeks throughout the season. When the plants are small 60 gallons per acre will be sufficient. This amount should be increased as the plants grow larger. The sprayer should be equipped with three nozzles to each row, two side nozzles pointing slightly upward and one pointing downward—so that both upper and lower surfaces of the leaves will be thoroughly protected. The spray should be applied under a pressure of 125 to 200 pounds. At least four applications are necessary during the season, but five or even six will usually be found preferable. Particular attention should be given to the later applications. If these are neglected or are carelessly applied a late attack of late blight may cause more damage than if no spraying had been done. In the later spraying the proportion of copper sulphate should be increased, using the formula 6-4-10. That is, add six gallons of the stock solution of bluestone instead of four, and 30 gallons of water instead of 32. Bordeaux mixture will also control early blight and tipburn, and will act as a repellent for the potato flea beetle.—J. B. MacCurry, Plant Pathologist.

USEFULNESS OF COVER CROPS.
Cover crops in an orchard are an essential part of good orchard practice. As the maintenance of humus or organic matter in the soil is necessary to retain proper physical condition, and as manure is becoming more difficult to obtain, and can be used probably to better advantage on other parts of the farm, cover crops fill a very useful purpose in this direction alone. Crops that will make a good growth serve to increase the humus in the soil, but by selecting a leguminous crop such as clover, vetch or pea, not only humus is added, but also it may

be possible to increase the nitrogen content of the soil, thus obtaining a two-fold advantage from the cover crop.

In the colder part of the country, where well ripened wood of the tree is necessary to ensure a chance of proper wintering, it is considered necessary to utilize a cover crop in conjunction with the clean cultivation system. For this purpose the crop is sown about June 30th, allowed to grow all summer and fall, and plowed under the following spring. The cover crop will thus draw upon the soil for moisture and food at a time when the tree should be ripening its wood, and will also serve as a means for holding snow, thus assisting in protecting the roots of the trees from severe conditions.

The use of cover crops in connection with bush fruit plantations has not been revealed to any appreciable extent, but with the growing scarcity of manure there seems to be no reason why a combination of fertilizers and cover crops could not be adopted as good practice on areas where raspberries, currants, and gooseberries are being grown at proper distances. Such a combination offers many advantages, where cost of regularly applying manure is becoming prohibitive.

Following are some of the more important crops used for this purpose: Leguminous: red clover, crimson clover, summer vetch, field pea; non-leguminous: buckwheat, rape.

Live Stock Market Situation.

Although extreme top prices for cattle were rather lower at the principal markets in Canada during the month of May than in the corresponding month last year, as shown by the Dominion Live Stock Branch reports, there was an encouraging improvement over the condition of affairs in the preceding month. An extract from the report reads: "Despite the comparatively heavy weight of receipts, the quality of the butcher and export stock was of such a good character, and the demand for good stock so keen that the range of prices was increased by 50c to \$1.25 per hundredweight. In the West there was a weaker tone at the close, whilst heavy cattle were inclined to drag, but in the last, good quality stock held reasonably steady. There was a continued strong demand for good quality stock suitable for finishing for the British market and the domestic beef trade, in view of the steady increase in the movement to seaboard. Short keep feeders appeared to be very popular with eastern farmers, who paid as high as \$7.75 and generally \$7 per hundred."

Relative to hogs, the report says that receipts and through billing show an increase to date this year of 150,000 over the same period in 1922. The supply was considered heavy for May, with the export bacon market showing considerable price reduction on account of heavy Danish killings, and consequent difficulty in clearing. Prices on spring lams, opened strong in May when few were offered, but as supplies increased, quotations became lower. The top at Toronto was \$20 compared with \$19 in May, 1922, and \$17 in the immediate April. Montreal high was \$18 against \$20 in May, 1922, and \$12.25 in April this year, and Winnipeg top, \$13.50 against \$16.50 last year and \$13.25 in April.

Exports of cattle, calves and sheep have been larger this year than last. From January 1 to May 31, 19,956 cattle were exported to Great Britain and 21,874 to the United States, compared with 3,563 and 9,355 respectively during the corresponding period last year. Export of meat this year up to the end of May was 9,888,000 lbs., against 7,750,400 during the same period last year. Bacon and pork exports were also larger.

Movements of Live Stock.

This year to date, compared with the same period last year, sales of live stock have totalled at the five principal markets as follows: cattle, 307,228, against 256,671; calves, 115,220, against 126,493; hogs, 502,429, against 392,474; sheep, 87,725, against 100,209. It will be noticed that there has been an increased sale of cattle this year compared with last year of 50,557 and of hogs of 109,955, and a decrease sale of 11,273 calves and 12,484 sheep. This situation it will be found is reflected in the prices, hogs in particular having gone down. Billed through, this year compared with last year, there have been 68,153 cattle against 51,085; 353 calves against 355; 78,633 hogs against 26,886, and 17,645 sheep against 21,213; an increase of 17,068 cattle and 51,747 hogs and a decrease of 2 calves and 3,568 sheep.

The fire loss in the United States last year due to matches and smoking amounted to \$25,992,000, against \$16,435,000 in 1918. The insurance men are inclined to believe that the big increase in women smokers may have caused this terrific increase in the fire loss.

The Growing of O.P.V. Silage.

If mixed farming is to be followed in Northern Ontario, and the keeping of live stock to build up the fertility of the soil a cheap and succulent feed must be available to bring them through the winter. Up to the present time it has been found at the Kapuskasing Experimental Station that O. P. V. is one of the best feeds for this purpose, although greater tonnage has been obtained from sunflowers, and at a much less cost of production. The O.P.V. has its advantages over sunflowers, as it can be sown at a much later date, requires no intertilling, is a much more satisfactory crop to handle under field conditions, can be cut by the binder and the blower will handle the full size seed from the wagon, where it can be fed to the blower as fast as it can be taken care of. When it is cut at the proper stage for silage purposes it makes a very succulent feed and is readily eaten by stock of all kinds. When the oats are at the dough stage, and the peas well formed, is the proper time to cut and ensile, right from the binder if possible.

It has been found that when shrinkage takes place there is over-fermentation in the silo, with resultant musty silage. At the Station it is usual to keep a light stream of water in the blower and excellent results have always been obtained, but care must be exercised as too much water will cause injury. O. P. V. generally grows very rank under favorable conditions, and another weeds of any kind; and early fall plowing can be carried on when the crop is removed, which is a great advantage in the north owing to the short season in which to do the work. Every advantage must be taken of silage crops that matures in time for fall plowing to be done, and O. P. V. has the advantage over both corn and sunflowers in this respect.

O. P. V. will grow to maturity in from 90 to 100 days under good growing conditions. As sunflowers and corn take a much longer period to fully mature, the harvesting and silo work is extended into really cold and unpleasant weather; and where fall plowing is as essential as it is in this region this is a big handicap. The clay soil is much easier to work when fall plowing is done, and it also means earlier seeding, which is equally essential where such a short growing season obtains for the cereals which follow a hoed crop. This crop can be highly recommended for the settlers of the clay belt. Where they have no silo it can be cured as hay, makes good feed for live stock and will bring them through the winter in good shape.

Spare the Whitewash and Spoil the Tree

BY J. B. McFARLAND.

Those old, old apple trees you saw along the road in your neighbor's orchard which his grandfather planted so long ago; did you ever stop and examine them? Did you notice how the southern and western sides of trunks were decayed, gnarled and of an unhealthy color, while the northern and eastern sides were comparatively good? If the trunks of those trees had been protected from the sun these past years they would be sound to-day.

Nature did not intend the trunks of those trees to be in such a deplorable condition at the age they are. Nature caused the limbs of the trees to spread down and out so the foliage would shade that portion of the tree. Grandfather, through necessity, pruned those protective limbs away so he might plow closer to the tree. Then the trunk, without any protection from the sun, felt the first stages of decay set in.

The sun seared the tender bark of the tree trunk. The sap, flowing just beneath, was checked on its journey to the leaves. The bark began to peel, crack and check into furrows where dampness held. These damp furrows furnished a culture place for the spores of one or more kinds of fungi which came quickly and began to send their "roots" into the tree to rob it of

Poultry

The water supply should be fresh and clean, and the vessels kept in the coolest possible place. The white of the egg contains 80 per cent. water, and the yolk 52 per cent., hence the necessity of water.

Summer feeding must not be so heavy as winter feeding. A grain ration of two parts each (by measure) of wheat and oats and one part of corn will keep the fowls more comfortable than when more corn is used. A sole diet of corn is injurious, for corn heating and too fattening. It is an ideal winter grain, but must be used with caution during the summer.

Mashes should be made of two parts by weight wheat bran and one part each of wheat middlings, cornmeal, ground oats and meat scrap. Feeding the mashes dry instead of moist is preferred, especially during the summer. There are two reasons: The fowls can eat at will, and there is no danger of the mash souring, which would be the case with moist mash left over. Besides, I do not think fowls will so quickly overfatten on a dry mash as they will on a wet one.

Green food is an important item in the bill of fare. Where fowls are confined to runs, green food, such as lawn clippings, vegetable tops, weeds, cabbages or sprouted oats, should be fed. I have noticed that at no time of the day do fowls seem to enjoy green food so well as in the morning, and it then seems to do them the most good.

Milk is an excellent summer food. No matter in what form—buttermilk, skimmilk or sour milk—it is always relished by the fowls. Some poultrymen give milk as a drink, while others use it for mixing the mashes. Best results, I believe, are obtained when they can have it as a drink, as in that way they get more of it.

Even when traps are not used, visits are made every two hours to the nests so the eggs may be gathered before much heat has been imparted to them by the hens.

Care, too, is taken that they are kept in a sweet, dry atmosphere, that they may not be overcome by bad odors—which eggs quickly absorb. I once had a dozen eggs in a paper bag standing overnight a foot away from a pound of tar-campor balls also in a paper bag. The next day the campor flavor was so strong in the eggs that they could not be used. Storing eggs in cellars is not advisable unless there is good ventilation, for it is important that the air be pure and free from bad odors.

The weed that is killed before it sees daylight helps make the harvest.

The Sunday School Lesson

JULY 29.
Matthew the Publican, Matthew 9: 9-13; Luke 5: 27-32.
Golden Text—I came not to call the righteous, but sinners.—Luke 5: 32.

LESSON SETTING.—This week we study the life and character of Matthew. In the Gospels of Mark and Luke he is called Levi. This is accounted for by the fact that the Galileans had often a strictly Jewish name (Levi), and a Galilean name (Matthew). Matthew are there. So also are the new friends of Matthew there. See the rare courage of Matthew. He holds this feast to introduce his new Master to his old companions. Matthew's sense of loyalty to his friends compelled him to bring to them the best he had to bring. His sense of loyalty to his new Master compelled him to show plainly what his friendships and life had been in the past. He makes a clean break and a clear break with his past. When the Pharisees saw Jesus under constant observation by his enemies and they lose no opportunity of accusing him when he makes what they think is a false step. They said into his disciples: seeking to taunt and undermine their loyalty to Jesus. They that be whole. A physician cannot choose his company. He must go where the sick are. Jesus is a physician of souls. He must go where needy souls are. Learn what that meaneth . . . mercy, and not sacrifice. Jesus not only defends himself, but attacks. What the Pharisees were giving to God was only the mere outward forms of religion, mere religiosity. What God demands is the spirit of mercy that should prompt all religious service.

APPLICATION.
1. A Man with a Dangerous Calling. When he became a publican, Matthew threw in his lot with men who were far removed from the higher influences of life. He took up a calling which had few, if any, refining possibilities and which made worthy living difficult. Vocations do affect character. Every vocation has its own atmosphere, and it exercises a definite influence upon those who breathe it. There are callings which exalt men and increase their self-respect. There are vocations which degrade men, and can only be followed at grave spiritual peril. Matthew had chosen a calling which tended to dwarf the higher attributes of the soul and to develop a narrowing lust for money.

2. A Neglected Man. Because he was a publican, Matthew would be left alone as far as religion was concerned. What possible interest could a publican have in religion? Like Matthew, Zacchaeus had definitely cut himself off from the patriotic and religious Jews who hated Roman domination. The publicans were given a wide berth by their fellow-countrymen.

3. A Man Waiting to be Called. When Jesus called Matthew, how quickly he responded. He had been waiting for that very call. It may have been that he had often heard Jesus, as he stood shamefacedly on the outskirts of a crowd, and the Master's words had gone right to his heart. He is more than ready to obey when Jesus calls.

4. Matthew's Gratitude and Joy. Perhaps gratitude is hardly the word to express Matthew's feelings. There must have been at least an element of glad surprise that Christ should choose him—the man who had forfeited the right to be called a son of Israel. It was a new sensation. He realized his self-respect and passed over from the receipt of custom. Soon after, he showed his gratitude and new-found joy in a very practical manner. He prepared a feast to which were invited many of his friends to meet Jesus. It must have been a sort of public acknowledgment of his discipleship. Then it sprang out of a double sense of loyalty. He was loyal to the men whose calling he had shared. He wanted to put them in touch with Jesus.

10. Jesus sat at meat. Luke puts it, "Levi made him a great feast." The home of Matthew is opened to Jesus as well as his heart. Many publicans and sinners came. Note how "publicans" and "sinners" are used as if they described persons of the same moral standing. Sat down with him and his disciples. All the old companions of

10. Extreme heat is depressing to growth. Whitewash formulas and recipes are numerous, each locality having one or more considered standard because of its proved worth. It is not the object of this article to dissuade any person from using what they consider a good whitewash. There have been numerous objections made to the slaked lime whitewash because of its disinclination to stick for any length of time to a smooth surface and because of the labor and care needed in its preparation.

Of the many recipes tried for making a good whitewash the following has proved the best for one orchardist who washes more than 5,000 trees each year: Carpenter's glue—dry chip glue; outside white cold-water paint; lead arsenate; bluing.

To one and a half gallons of water add a generous handful of the glue. Put on the fire and heat until the glue is dissolved; stir occasionally to keep the glue from sticking to the receptacle. Set to one side and allow to cool.

THE SECRET.
Take three quarts of the dry cold-water paint and add a heaping tablespoonful of powdered arsenate and mix the two thoroughly. Now pour clear water into the tin powder very slowly and mix thoroughly until the mixture is the consistency of thin batter-cake dough. The whole secret of this whitewash is to add the water slowly and mix thoroughly until every particle of the powder has been dissolved.

Now add seven or eight tablespoonfuls of the glue which has been reheated back to its water thinness, stir briskly for a half minute and add the equivalent of a half ball of ball bluing which has been dissolved in water. The whitewash should now be tested with a soft clean brush, a regulation paint brush is preferred. If the mixture flows and leaves a coating very similar to a good oil paint it is ready for application.

The reason the lead arsenate was added to this mixture was because of the hundreds of insects that dislike a

MARQUIS WHEAT

Man has learned to do some remarkable things with organic life, both animal and vegetable. He must do the work experimentally, for, although he has found out much about the laws that govern heredity, he cannot account for some of the things that happen or fail to happen when living stocks are blended. But still he usually finds a way to get what he wants from Mother Nature. Let us consider, for an example, Marquis wheat.

Northwestern Canada is a land of widespread prairies well adapted, so far as soil is concerned, to wheat farming and too far north for any other crop that is nearly so profitable as wheat. But you cannot grow winter wheat in the West. The severe winters are sure to kill any plants that have sprouted and begun to grow in the fall. Canada must have a spring-sown wheat, and if her people are to take advantage of the fields that spread up to the Peace River Valley within a few degrees of the Arctic Circle, it must be a rapidly growing variety, one that matures within ten weeks of planting.

There are other qualities that a useful variety must have. It must be able to resist drought no less than cold, for western Canada is often both cold and dry; if it is to sell at a good price, it must mill well and bake well, and it must produce a high yield to the acre. There have always been varieties of wheat that have one or two of those five essential qualities, but until recently there was none that combined all of them. That there is one now is owing to the long and patient labor of Dr. William Saunders of Ottawa and his two sons.

Beginning with a Russian wheat that will ripen in a latitude of more than sixty degrees north, they crossed it with the well-known Red Fife wheat which has superior milling qualities. When they had got a hybrid variety that would ripen within seventy days and make excellent flour they bred into it a Calcutta wheat that is notable for productiveness and for its power to resist drought. And so year after year they worked away, trying one combination after another, selecting this and rejecting that, finding that one hopeful kind of crossbreeding would not answer and that another tried on the off-chance would answer very well, until at last they had produced a stable seed that would produce wheat with every desirable quality for agronomic culture. That wheat they call Marquis.

Incidentally, the Saunderses established another variety that they called Prelude. It will ripen in eight weeks and has been raised at Dawson within three degrees of the Arctic Circle. It may perhaps be grown even in the lower Yukon Valley. It does not produce heavily, however, and for that reason is not worth planting where any other variety will grow.

The service of the Saunders family not only to their native country but to mankind as well is worthy of more recognition than it has received. They are men who have done better than those whom Dear Swift praised so highly—the men who make two blades of grass or two ears of corn grow where only one grew before. They have caused whole acres of waving grain to spring up where before none would grow. They have pushed forward the domain of civilized man in the face of cold and drought and given to Canada new homes for her people and new sources of inexhaustible wealth.

The Best Stock Pays Best.

A perusal of the market reports issued by the Markets Intelligence Division of the Dominion Live Stock Branch makes plain the fact that none but the best really pay. Take for instance, the Winnipeg report for the last full week in June. Here we find that the top prices of steers and calves were not only 75c and \$1 respectively better than for the corresponding week of last year, also that the better grades of beef steers and heifers were exceptionally strong sellers and that the best butcher cows met a good trade at strong prices, but that plain and medium kinds were inclined to be weak and draggy. The market was topped by a consignment of yearling steers and heifers of desirable quality and finish at a price of \$9.25 per hundredweight, while common steers averaged as low as \$5.02 and common heifers as low as \$4.25, an actual difference of \$4 and \$5. Calves showed a similar discrepancy between the best and the ordinary. Of the Toronto market we read that, of a heavier run of cattle, the majority were only half finished, and that butcher demand was weak, while exporters had enough on hand. At Montreal good quality stock sold well, but medium cattle were inclined to drag. There was a material difference at each centre between good and common.

Clean, oil and paint machinery before the close of the season's work, so that during the months when the machinery is less used, it will not rust or deteriorate.

More Bibles are in farmers' homes and in the homes of villagers than are found in city homes. More than 600,000,000 Bibles have been printed in all languages, throughout the world, since printing was invented in the middle of the fifteenth century.

