

For More And Better Potatoes Diseases And Enemies

(By J. G. Haney, Agri. Exten. Dept., International Harvester Co.)

Third Potato Article.

The subject of potato production has been discussed in previous articles, with the exception of diseases and enemies. This subject is a very broad one, and no attempt will be made to cover it entirely. It is fortunate that the Red river valley as yet we are not subject to a great many of the diseases that are disastrous in many other potato sections. However, the increased interest in the subject of potato diseases indicates that this subject should be given careful consideration.

Seed Potatoes Must Be Free From Diseases.

The market for seed potatoes from the Red river valley has already assumed large proportions. This demand is due to the fact that good potatoes are grown here, and so far they have been exceptionally free from diseases. If this reputation is maintained, it will be because due precautions are taken to prevent any increase in diseases, which may affect the seed.

Strong, Healthy Seed Essential.

While not yet given the same amount of consideration, it is just as essential to select strong seed of all kinds for planting, as it is to insist on having well bred, and well fed breeding stock for our farms. It is also just as essential in maintaining the strength and excellence of the potatoes by providing abundant and suitable food.

Rotation Kills Diseases.

Many of the potato diseases apparently live over in the soil from year to year, and naturally accumulate if potatoes are grown continuously on the same land. One of the most essential factors in controlling potato diseases is to rotate the crop. In fact, seed potatoes should perhaps not be grown on land that has been planted to potatoes for four or five years, which will insure the soil being free from all previous contamination. Then if seed properly selected and treated to kill any disease, is planted in this clean land, reasonably disease free potatoes should be expected.

Healthy Seed on Good Soil.

In this connection, I do not believe there could be a stronger argument presented than to give you the letter from E. C. Schroeder, Moorhead, Minn. This letter is published in a report on Potato Demonstrations carried on in Clay county, Minnesota, by E. C. Schroeder, county agent, who after January 1 will be assistant state leader for the Better Farming association of North Dakota. Mr. Schroeder learned to take advantage of the fact that potatoes need breeding, feeding and cultivation. Many will be surprised to learn that Mr. Schroeder used manure hauled directly from his cow barn, and applied to the ground before the potatoes were planted.

Formula for Treating Potatoes.

"Dissolve four ounces of bichloride of mercury in a gallon of warm water (its acid does not combine with the cold water). Larger amounts may be mixed by using the same proportions. Treat the potatoes for one and one-half hours. (This solution is principal, so a wooden tank or barny metal must be used.)

Treatment of Seed Before Planting.

We do not believe that there is any better information available on the subject than to quote from the above mentioned report of Mr. Clement. His report in part is as follows: "During the summer of 1914 seven farmers co-operated with the county agent in the Minnesota college of agriculture in a demonstration of the effects of disease elimination. The demonstration plots comprised four or five acres in a potato field, and in every way received the same treatment as the field except that the seed was treated in a solution of bichloride of mercury. Some of the results were as follows:

Plot 1. Yield on plot, 360 bushels; type good, practically no disease, yield on field, 260 bushels.

Plot 2. Yield on plot, 328 bushels; good type, practically no disease, yield on field 158 bushels.

Plot 3. Yield on plot, 185 bushels, quality and type very good, practically no disease; yield on field 105 bushels.

"In 1915 demonstrations were carried on in which the effects of disease elimination and seed selection were shown. For seed, potatoes of good type, blocky, with shallow eyes, were selected from the bins. About half an inch was clipped from the surface of the tuber. It is a deadly poison and must be kept out of reach of children and stock while in use and safely disposed of as soon as one has finished with it. It is not injurious to the hands.

The treated seed, when planted in the regular field, the plot being a certain number of rows through the field, and the untreated rows to be compared, having untreated rows on at least one side, to be used as a check for com-

parison. Excepting the seed selection and the treatment for disease, they were treated the same as the field. The field was located where potatoes had not been grown for several years to insure soil as free from disease as possible. In this particular the conditions of the field and the plot were identical. Twenty of these plots were planted in the spring, but the June rains destroyed about half of them.

"The difference in the yields on the plots and fields varied from nothing to 144 bushels per acre, with an average of 44.8 bushels. There were about six per cent more culls on the field than on the plots. Taking the average yield as 100 bushels there would be six bushels more of salable potatoes. This would bring the increased yield of salable potatoes to 50 bushels. The extra labor amounts to about four hours per acre and the material costs about 85 cents.

"While the diseases were not entirely eliminated, they were very much reduced. There was very little difference in the per cent of disease being clipped in the stand between the plots and fields of Mr. Plum, Mr. Lewis and Mr. Hunt. These three treated the seed for the field as well as for the plot, the only difference being the stand between the plots and fields of Mr. Plum, Mr. Lewis and Mr. Hunt. These three treated the seed for the field as well as for the plot, the only difference being the stand between the plots and fields of Mr. Plum, Mr. Lewis and Mr. Hunt.

"The following letters express the opinions of potato growers regarding the value of seed selection and special treatment:

"The potatoes we planted in our trial plot were hand picked as to size and shape, and were treated with corrosive sublimate in the same way as the rest of the potatoes. They were re-examined for stem-end rot, otherwise they were planted in the same kind of ground with no more fertility, and not cultivated any more than the rest of the field. The results were: Selected seed yielded 183 bushels per acre, while the bin run seed yielded only 75 bushels per acre.

"(Signed) "H. P. Hendrickson, Ulen, Minn."

"In making a few remarks regarding the potato seed plot demonstration, I would like to say that for the past two years, I will say it has proven to me to be of great value to the potato growers. My experience has been that the seed selected from 1914 plot was an increase from my 1914 plot of 85 per cent in yield over seed raised from the rest of the field, or check plot. Besides they were more uniform and of greater quality.

"(Signed) "O. J. Grover, Glyndon, Minn."

"Last year I selected and treated seed to plant five acres of potatoes. I found that the cost of the seed selected and treated seed will pay better than ninety acres of common, untreated stock.

"(Signed) "Van M. Storm, Baker, Minn."

"The question of selecting and treating seed potatoes is a very important one. In 1915 I planted 3.4 acres with selected and treated seed in the same field as the rest of the potatoes. The yield on the plot was 244 bushels per acre of large, smooth, uniform potatoes, while the yield on the rest of the field was 100 bushels per acre. Besides they are worth from 25 to 50 cents per bushel above the market price. The vines were very much healthier and more vigorous, looking all summer. I know it to be a paying proposition to select and treat seed potatoes.

"(Signed) "A. W. Berg, Barnesville, Minn."

"I covered ten acres of my 1915 potato ground with barnyard manure in the fall of 1914, at a cost of \$10 per acre. The yield on this ground was very noticeable all summer, though on the manured ground being much more healthy and vigorous. In fact, I harvested better than 100 bushels more per acre from the manured land than from the land not manured. I believe manure is necessary to maintain the productivity of our soil.

"(Signed) "Carl Brandt, Sabin, Minn."

Formula for Treating Potatoes.

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"A very satisfactory method for treating potatoes is to take two or three barrels and set them on a box or some other support high enough to get a tub under. Bore a hole next to the bottom of each barrel, and cork it up. Fill the barrels about half full of the solution, then, when the barrel is filled with potatoes the solution will cover them. When the potatoes have been treated the required time, draw off the solution into a tub, dump the potatoes into a box to drain, and fill again with potatoes. Thirty gallons of the solution will treat thirty or forty bushels."

We urge you to see how anyone can

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look over this report and not realize the importance of taking such precautions as were exercised in making these trials. The careful selecting and treating of seed and keeping the soil in which this is planted, healthy insects that are not plant food, will go a long way in increasing the profits from our potato crops.

Other Diseases.

There are other diseases which from time to time make inroads on the potato crop. These may be treated with spraying. An spraying is about the only means for checking the ravages of potato bugs and other insects. The whole subject may be treated rather generally.

For blights and other fungus diseases, the Bordeaux mixture is used; for beetles and other insects Paris green and lead arsenate are used.

Great Care Should be Taken in Spraying.

Very often spraying does not accomplish the desired results because of some failure in the process. The mixture may be improperly made, or the machinery not adjusted correctly, or the weather may be too dry, or too early. Spraying is rather a preventive than a cure, and should be done at the very beginning of the trouble rather than after it has gained much headway. There is only one way of insuring success and that is to carefully follow directions, to the minutest detail. These directions cannot be given here, but may be secured by writing the agricultural college or department of agriculture.

There is absolutely no question but that spraying is the best means, especially in checking the potato bugs, and in many cases will be prevented by using the Bordeaux mixture.

The following ten commandments on spraying are published by the extension department of the Iowa agricultural college, and are worth preserving by every potato grower.

Ten Commandments of Spraying.

1. Watch and spray. 2. Do the work thoroughly. Cover every leaf and stem. 3. Do not wait until too late in the season. Do not wait until the work is done. 4. Keep up high pressure; 120 lbs. per square inch will do, but 175 lbs. is better. 5. Spray from above, below and the sides, sending the spray all through the vines. 6. Use a good nozzle. The Friend, Bordeaux and Vermorel nozzles are best. 7. Do not buy too cheap a machine. Get a good one and save trouble, time and expense. See that the working parts are in good order. 8. Keep the agitator going constantly. 9. Be sure that the material is properly prepared. 10. Dissolve all the solids separately and strain well before using. 11. Use plenty of fresh stone lime to take up the free poisons and prevent injury to the leaves.

FARM PRODUCE

Eggs.

No. 1 \$.38
No. 2 \$.25
Cracked \$.20

Dairy Products.

Cream (butter fat basis) \$.40
Packing stock (dairy) \$.27

Live Poultry.

Spring chickens \$.12
Heavy hens \$.11
Light hens \$.08
Ducks \$.07
Tom Turkeys, over 1 lb. \$.17
Hen Turkeys, over 1 lb. \$.17
Light Turkeys at market value.

Dressed Poultry.

No. 1 turks \$.22
No. 1 ducks \$.12
No. 2 ducks \$.10
Hay, baled, per ton \$ 7.00
Potatoes, per bushel \$ 1.10 to \$ 1.25
Beans, per bushel \$ 4.50

Hides, Pelts, Wool, Etc.

Review of the hide and tallow market by The Redick Hide & Fur Co., Grand Forks.

HIDES: The market is very strong and active for the season for long haired hides fast approaching their peak is a possibility of a decline later on so market your hides promptly. Calf and kid prices are very high. Horse hide prices higher.

PELTS: Pelts are bringing good prices, according to the growth of wool. Do the best you can.

TALLOW: Strong prices ruling.

No. 1 No. 2
Green salted hides \$.20 \$.18
Green salted calf \$.18 \$.15
Green salted kip \$.23 \$.21
Green salted glue hides and skins \$.17 \$.15
Green salted horse skins, each \$.40 to \$ 6.00
Green salted mules, glues, etc. \$ 1.50 to \$ 3.50
Green salted colt skins, as to size \$.50 to \$ 1.50
Green salted hides 1 to 2c less than above prices on cured stock
Dry hides and skins \$.28 to \$.30
Dry salted hides and skins \$.22 to \$.26
Dry damaged hides and skins \$.20 to \$.24
Dry glue hides and skins \$.12 to \$.16
Dry bull and stag hides \$.18 to \$.20
Rendered tallow \$.74 to \$.60
Green pelts, full wooled \$ 1.60 to \$ 2.00
Green pelts, short wool, each \$.50 to \$ 1.00
Green shearlings and clips, 2c to 1c \$.15 to \$.50
Above prices for butcher lots. Single hide shipments lower.

Resolutions of Sympathy Passed For Dead Officers

Mexico City, Dec. 29.—The committee of the constitution convention in charge of the labor article has asked permission to withdraw its report, but the convention decided to take a vote on the article as presented. Delegate Jose Macias, in three-hour speech, presented a statement from General Carranza dealing with the question of labor and capital on the part of the convention. In the report of the committee several new features have been added to the original articles, including a provision for an eight-hour day.

The convention adopted resolutions of condolence on the death of Colonel Gabriel Calzada, a delegate who was killed with General Torrida De Los Bantos when Villa followers attacked a train near Torreon. The bodies of the two officers were reported to have been horribly mutilated. Similar reports have been received in regard to the majority of the constitutional officers killed in the north fighting.

Sir: Bill Hawkins says that as soon as people begin sending him socks and handkerchiefs exclusively for Christmas, he is going to apply for a berth on the coast. I think you ought to print this in The Herald as a warning.—W. R. H.

Pity is akin to love—and better than most varieties of love.

THE MARKET WORLD

CAR SHORTAGE KEEPS PRICE UP

Minneapolis, Dec. 30.—Dec. wheat 2-1-8c higher; May wheat 3c higher; July wheat 2-1-4 lower. The wheat market was a little lower at the start. After the first trades had been made the market commenced to develop a very firm tone and a sharp advance was registered. May wheat sold at \$1.76 and had a 4c bulge, leading 1c of the advance during the last of the session. Traders were inclined to limit their operations today owing to the approaching holidays.

Grain Quotations.

Grain Markets and Cattle Published by Chas. E. Lewis & Co., Security Bldg., Grand Forks, N. Dak.

DECEMBER WHEAT.

Open \$ 1.72 1/2
High \$ 1.68 1/2
Low \$ 1.64 1/2
Close \$ 1.65 1/2

MAY WHEAT.

Open \$ 1.72 1/2
High \$ 1.75 1/2
Low \$ 1.74 1/2
Close \$ 1.74 1/2

JULY WHEAT.

Open \$ 1.72 1/2
High \$ 1.75 1/2
Low \$ 1.74 1/2
Close \$ 1.74 1/2

ST. LOUIS.

Open \$ 1.77 1/2
High \$ 1.78 1/2
Low \$ 1.76 1/2
Close \$ 1.77 1/2

KANSAS CITY.

Open \$ 1.77 1/2
High \$ 1.78 1/2
Low \$ 1.76 1/2
Close \$ 1.77 1/2

WINNIPEG.

Open \$ 1.74 1/2
High \$ 1.75 1/2
Low \$ 1.73 1/2
Close \$ 1.74 1/2

CHICAGO CORN.

Open \$.92 1/2
High \$.93 1/2
Low \$.91 1/2
Close \$.92 1/2

CHICAGO OATS.

Open \$.50 1/2
High \$.51 1/2
Low \$.49 1/2
Close \$.50 1/2

CHICAGO PORK.

Open \$ 27.75
High \$ 27.75
Low \$ 26.50
Close \$ 27.75

MINNEAPOLIS WHEAT.

May—Puts \$1.73 1/2
Call \$1.84 1/2

MINNEAPOLIS CASH CLOSE.

No. 1 hard \$1.80 @ \$1.85
No. 1 northern \$1.78 @ \$1.80
Arrive \$1.81
Rye, cash \$1.47 @ \$1.48
Regular arrive \$1.70 @ \$1.73
No. 2 northern \$1.73 @ \$1.74
No. 2 hard Mont. \$1.72 @ \$1.73
No. 3 northern \$1.64 @ \$1.73
No. 1 durum \$1.11 @ \$1.05
Arrive \$1.12
No. 2 durum \$1.73 @ \$1.80
No. 2 yellow corn \$.88 @ \$.88 1/2
No. 4 yellow corn \$.86
Other corn \$.78 @ \$.86
No. 3 white oats \$.49 @ \$.50
No. 4 white oats \$.48 @ \$.49
Barley, 100 lbs. \$ 1.11 @ \$ 1.04
Barley, choice \$ 1.04 @ \$ 1.13
Flax \$ 2.80 @ \$ 2.82
Arrive \$ 2.80 @ \$ 2.82
No. 2 northern \$ 1.72 @ \$ 1.73
No. 3 northern \$ 1.69 @ \$ 1.71
No. 4 northern \$ 1.67 @ \$ 1.68
Rye \$ 1.47 @ \$ 1.48
Arrive \$ 1.32
Barley \$.81 @ \$ 1.13
No. 1 durum \$ 1.11 @ \$ 1.12
No. 2 durum \$ 1.12 @ \$ 1.13
December durum \$ 1.82
Flax, cash on track \$ 2.82
Arrive \$ 2.82

DULUTH CASH CLOSE.

No. 1 hard \$1.80
No. 1 northern \$1.78 @ \$1.79
No. 2 northern \$1.69 @ \$1.71
Oats, cash \$1.47 @ \$1.48
Rye \$1.47 @ \$1.48
Arrive \$1.32
Barley \$.81 @ \$ 1.13
No. 1 durum \$ 1.11 @ \$ 1.12
No. 2 durum \$ 1.12 @ \$ 1.13
December durum \$ 1.82
Flax, cash on track \$ 2.82
Arrive \$ 2.82

DULUTH FLAX.

Open \$ 2.84
Close \$ 2.85 1/2

WINNIPEG CLOSE.

No. 1 northern \$1.72
No. 2 northern \$1.69
No. 3 northern \$1.67
No. 2 oats \$1.32
No. 3 oats \$1.04
Barley, 3 C. W. \$.87
Oats, Dec. \$.44
Oats, May \$.53
Flax, May \$ 2.84
Flax, 1 N. W. C. \$ 2.84

Crazed Murderer Taken After Six Hours' Defiance

Baltimore, Md., Dec. 29.—After defying for six hours efforts of a score of policemen and a number of residents of Gwynns, a suburb, to take him, George C. Gantz, 32 years of age, who in a fit of insanity this morning shot his physician, Dr. Geo. A. Hooking, was captured late today. Dr. Hooking was wounded in the arm and shoulder, but not seriously. Gantz's face was cut by small shot and broken glass.

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Security Bldg., Grand Forks, N. D. ADOLF ILDSTAD, Manager

MARKET STOWER AT STOCKYARDS

South St. Paul, Minn., Dec. 29.—Estimated receipts at the Union Stock Yards today:

Cattle 1800; calves 300; hogs 12,000; sheep 400; cars 195.

Cattle—Receipts were a little heavier today than other days this week and with the natural stowing up toward the close of the week packers did not have to work so hard to get supplies. Steady prices ruled generally, although there appeared to be an easier tone to the trade in some places toward the approaching holidays.

The car shortage is still exerting considerable influence as little grain can be handled on this account.

The weather in the northwest continues cold and temperatures are low. The Liverpool spot wheat market was unchanged today.

BEARISH RUMORS IN WHEAT MARKET

Chicago, Dec. 29.—Notwithstanding continued export buying, much bearish sentiment developed in the wheat market today owing to indefinite peace rumors and to uneasiness over possibility of a railway strike. Quotations closed heavy, 1-2 to 4 cents lower, with May at 1.70 to 1.75 and July at \$1.38 1/4 to 3-8. Corn and oats both finished half a cent off to a like advance. In provisions the result was a decline ranging from 22 to \$1.05.

Export sales of 1,400,000 bushels were announced, but the bullish effect was largely offset by word of British government selling at Winnipeg. It was just as the wheat market was approaching the close that bearish pressure which was said to be more or less connected with the railroad wage difficulty exerted a distinct influence.

Corn showed considerable resistance to the depressing influence of wheat. The comparative strength was due largely to opinions expressed that recent high prices of hogs warranted an advance in the value of feed. Oats merely duplicated the action of corn.

Heavy deliveries of December contracts weakened provisions. Besides, there was a notable falling off in prices of hogs.

MARKET NEWS

Chicago, Dec. 30.—Failure of the wheat prices to respond to the bullish news brought a great deal of long wheat from timid holders yesterday with the heaviest speculative pressure on May. Traders are not disposed to extend their commitments for other directions owing to the approaching holiday. The frequency of peace reports which are sprung concerning the market makes many of the large operators cautious about trading heavily and there is a disposition among many of the good traders to sell on all sharp bulges. Among the commission houses a great deal of wheat is mixed with a large percentage of them bearish, especially Logan & Bryan. One of the leading bull houses said it would not be surprised to see a further decline. Bears regard buying on sharp breaks when trade becomes extremely bearish as safest. Coarse grain specialists say the country is doing little buying of foreign and bulk of the trading is between local professionals and eastern interests. The latter are credited with being the holders of the most of the wheat. All traders are puzzled over continued over-liberal buying of May by Nye Jenks. Some claim it is government buying. Others claim it is for seaboard exporters who are working to position where they will be able to do a good cash business on any improvement on the eastern rail situation.

GRAIN OPINIONS.

Bartlett Frazer—We would not be surprised to see a little further decline in wheat. Further weakness in wheat believe corn will yield.

Logan & Bryan—Cannot see the logic of a position on the long side and incline to the belief that sales of wheat at current levels will prove profitable. Believe a much lower range of corn values ultimately is inevitable.

Lansom Bros.—Breaks in wheat caused by such temporary influences such as political news should be taken advantage of to make purchases.

Harris Winthrop & Co.—Events in the political section promise a nervous wheat market for some time to come and meanwhile small receipts and export buying are furnishing a better undertone.

Ware & Leland—Believe purchases of wheat, corn and oats warranted on good declines.

Wagner Co.—Still believe a fair break would make the grains a better investment.

LIVE STOCK MARKET.

Chicago, Dec. 30.—Hogs 21,000, slow; bulk \$10.05 to \$10.40; light \$9.55 to \$10.15; mixed \$9 to \$10.50; heavy \$10 to \$10.50; rough \$10 to \$10.15; pigs \$7.50 to \$8.20.

Cattle, 400, steady; native beef \$7.25 to \$11.80; western steers, \$7.75 to \$10; stockers and feeders \$5.25 to \$10.15; pigs \$7.50 to \$8.20.

Sheep 3,000; wethers \$9.10 to \$10.25; lambs \$11.25 to \$13.50.

South St. Paul, Dec. 30.—Hogs 1,700; bulk \$9.50 to \$9.85; range \$9.50 to \$10.00; light \$9.50 to \$9.85.

Cattle 300; killers steady; steers \$8.25 to \$10.25; cows and heifers \$4.75 to \$7.50; calves steady \$4.50 to \$10.10; stockers and feeders steady \$5.50 to \$7.75.

Sheep 100, steady; lambs \$7 to \$12.50; wethers \$8 to \$9.50; ewes \$5.50 to \$8.50.

Sloux City, Dec. 30.—Hogs 10,000, 10 to 15 cents lower; estimated Monday, \$9.00, bulk \$9.65 to \$10.00; range \$9.40 to \$10.20; light \$9.40 to \$9.65; mixed \$9.70 to \$10; heavy \$10 to \$10.20.

Cattle 100; steady; estimates Monday 3,000. No sheep.

Grand Forks Grain Market

Prices for Tuesday, January 2.

Wheat
No. 1 northern \$1.66
No. 2 northern \$1.61
No. 3 northern \$1.58
No. 4 northern, 58 lbs \$1.33
No. 4 northern, 52 lbs \$1.25
Durum
No. 1 \$1.64
No. 2 \$1.63
No. 3 \$1.62
No. 4 \$1.61
Barley
D. \$1.74
E. \$1.67
F. \$1.60
Rye
No. 1 \$1.17
No. 2 \$1.12
Oats
No. 3 \$.40
No. 4 \$.38
No. 4 mixed \$.38
Flax
No. 1 \$2.71
No. 2 \$2.66
No grade \$2.56

Sarcasm is the gas bomb of language.