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ORCHARD AND GARDEN

April 1-8.

Top-grafting may be done now.

Pansies should go into the cold frame.

Well rotted manure is good for the garden.

It is not too late to test garden and field seeds. Do it now.

See that the cold-frame is sheltered from north and west winds.

Plant annuals in the cold frame as soon as the ground and weather will permit.

Transplant early celery, cabbage, cauliflower, etc., to flats, hotbeds or cold-frames.

Observe potato seed carefully. Treat for scab before planting, and be sure other diseases are not present.

The seeds of the gadiolus contain an oil which will poison one who is easily poisoned by ivy. Be very careful in removing the "wings" from the seed.

The sprouting of gladiolus bulblets may be hastened by soaking them in water or putting in wet sand a few days before planting. They must be planted as soon as they begin to sprout.

Have your strawberry and raspberry plants been ordered yet? It is late now, but not too late, to get them. Try a few autumn-bearing strawberries with the others.

Now is a good time to do pruning. Don't prune very much now the plants that bloom early. Wait until they are through blooming. Fall-blooming plants and roses should be pruned in the spring.

Plant sweet peas as early a possible in well prepared rich soil. They may be planted six inches deep, but should be covered only an inch or two at a time as they grow. Encourage deep-growing roots to withstand drought in July.

Where one has only a small space for the garden, it is well to work out a companion cropping scheme. For instance, onion sets and lettuce or radishes may be planted together. Three or four rows of spinach may be sown between the rows of cabbage or cauliflower and cut out when large enough. Many short- and long-growing-season vegetables may be planted together in this way.—LeRoy Cady, associate horticulturist, University Farm, St. Paul.

ORCHARD AND GARDEN

April 8-15.

Don't sow any seed in cold, sticky soil. It doesn't pay.

The Alaska or some other smooth pea is best for earliest planting.

It is said that 27,000 acres of asparagus are grown in California.

Onion sets and seed should be sown as soon as the soil can be worked nicely.

Use only the best grade of seed in the vegetable garden. Poor seed is expensive at any price.

Phlox may be set out as soon as the ground is in shape. Do not set peonies in the spring.

Burn all trimmings from the fruit trees or lawn trees. They may contain insects or disease.

It will soon be time to begin spraying in the orchard. Is everything in readiness for it? Preparedness counts here.

The Market Growers' Journal of March 15 has some interesting articles on strawberry-growing in different parts of the United States.

When ordering vegetable seed for the home garden, get varieties of the best quality, although they may not be the best in yield.

Watch for cedar apples (an orange gelatinous mass) on the red cedars. This may be carried to apple trees and cause serious damage. Either cut out the growths or the whole tree.

The growth of rhubarb may be hastened by putting a box over the plant, banking the box with manure, and placing a small sash or glass over it.

Put up a bird house now. It does not need to be elaborate. It is only a summer home and so is appreciated more if it is rough and rustic. Have it face the east or south if possible.

The American white elm is the most useful of shade trees in this section. Its wide-spreading, gracefully hanging branches give shade in summer and some protection from wind in winter. It is quite free from insects and disease. Since it is of spreading growth, do not plant closer than forty feet anywhere.—LeRoy Cady, associate horticulturist, University Farm, St. Paul.

SMALL GRAINS ARE GIVING LOW TESTS

When we say that all small grains, especially wheat and oats, are germinating poorly this year, we should hardly have to say that all cereals should be tested before planting. It is, at any rate, safe to advise extra care in grading seed and in making germination tests before planting this spring. It will also pay to treat grains for smut, flax for wilt, and potatoes for scab. It is also well to remember that time is money when spent in this kind of work.—C. P. Bull, University Farm, St. Paul.

PLANT PESTS

Do not set out raspberry plants affected with crown gall.

Cut out and burn all cankered currant canes.

Spray ginseng beds with copper sulfate, one pound to nine gallons of water before the plants come up.

Do not put fresh manure on corn land, especially if there was much smut in corn last year.

A dormant wash does little good in controlling scab. Hence, on account of the high price of spraying compounds, do not spray when unnecessary.

Many diseases of nursery stock are controlled by spraying. Begin spraying as soon as leaf buds unfold. Use lime-sulfur 1-40 or Bordeaux mixture 4-4-50.

Treat oats and barley with formaldehyde for smut. If loose smut was bad in either wheat or barley, get Minnesota Bulletin No. 122, and plan to establish a seed plat.

Be sure to fan seed wheat very thoroughly to get rid of all light and shriveled kernels, which are probably scabby, and then treat all seed wheat with formaldehyde.

Spray currants and gooseberries as soon as leaf buds begin to unfold, with either Bordeaux mixture 4-4-50 or lime-sulfur 1-40, to prevent powdery mildew and leaf-spots.

Copper sulfate has advanced 15 or 16 cents per pound. Lime-sulfur has not advanced materially. Therefore, use lime-sulfur or some of the made-up (paste) Bordeaux instead of Bordeaux mixture, whenever possible. Potatoes can not be sprayed with lime-sulfur.

The aphids are persistent breeders. The trees or shrubs most affected are roses, snow-ball, currant, apple, plum, and elm. The eggs of the plant lice pass the winter on the bark or buds of these plants and hatch as the buds begin to swell. Spray with lime-sulfur (1-9) at this time. As soon as the leaves appear, spray with nicotin sulfate according to directions on the container.

If plum pocket was bad last year, the trees should be thoroughly pruned, then sprayed with copper sulfate, one pound to nine gallons of water, or with lime-sulfur, one gallon with nine gallons of water, before the buds open. This should be followed with 1-40 lime-sulfur or other spray as for brown rot. Methods of controlling plum pocket are not well worked out, so these methods can not be depended upon entirely.

Be sure to look over the apple trees carefully. Cut out and burn all cankers. Black rot has been increasing in the state and since a great deal of early infection may come from cankered limbs, cutting out and burning is necessary.

Last year the spring canker worm was just as active in the state as the fall canker worm. Therefore, just as soon as possible, trees affected last year should be banded with the tree tanglefoot. The moths come out of the soil the first two weeks in April and attempt to crawl up the trunks of the trees to lay their eggs on the limbs.

When raspberries are uncovered, be sure to cut out and burn all of the dead canes missed last fall. The gray bark disease and anthracnose, also snowy tree cricket and red-necked cane borer, are controlled in this way. Keep the young canes covered with a protective spray of resin-Bordeaux mixture. Try it on at least part of the patch. The benefit will not be apparent for a year.

Buy flax seed from reliable sources, on account of the danger of wilt-infested seed. Plant a resistant variety, either Minnesota 25 or one of the North Dakota resistant strains. For more information on North Dakota resistant varieties, write to the North Dakota Experiment Station.

Rose bushes showing insect galls should be cut out and burned and should be sprayed now for rose scale with lime-sulfur 1-9. Old leaves should be destroyed on account of black spot.—Section of Insect Pests and Section of Plant Diseases, University Farm, St. Paul.

PARIS GREEN HIGH; SUBSTITUTE READY

Paris green costs more than twice as much this year as last. It is selling at 50 cents a pound even in large quantities. It is doubtful whether it can be purchased for less than 45 cents a pound. Fortunately, says A. G. Ruggles, University Farm, St. Paul, arsenate of lead, a better stomach insecticide than Paris green, has not advanced in price. The powdered form may be obtained for about 25 cents a pound, and 1½ pounds of the powder is used in making fifty gallons of spray mixture.

"In experiments at University Farm," adds Mr. Ruggles, "we have found arsenate of lead better than Paris green as a remedy for potato bugs, and all orchard insects. It is not necessary, therefore, to allow injurious biting insects to live simply because Paris green is costly."

The orchardist should get his spray materials as early as possible. It is not easy to tell when arsenate of lead may go kiting after Paris green.

SCHEME TO CUT CLEARING COST

The high cost of labor and the abnormal cost of dynamite are to be added to the constant factors that call for consideration in development plans for cut-over lands this year.

A common practice is to cut over a lot of land and then let a part of it grow up to brush a second time. This is, of course, expensive and useless. Six or seven pounds of grass seed—clover and timothy mixed—should be sown on the land and worked in with a spring-tooth harrow.

On the other hand, an extreme expenditure of capital and labor on a given area to get it into a crop is also undesirable, since no definite plan is being followed for future development. Assuming that delayed clearings are usually cheaper, this plan works well:

A tract of a few acres easily cleared, well drained, and fairly well located, that under average summer conditions will give a maximum crop with a minimum of risk and investment to put it in shape, is selected and put into crops. A second area, possibly twice as large, is brushed and seeded to grasses. The first tract supplies the immediate requirements for foodstuffs and income. The second supplies pasture and a hay crop, and is a delayed clearing. One gets certain pasture and forage crops with a cheapening of the final clearing.

By cleaning up an additional area annually in a similar way the farm is developed on most economical lines.—M. J. Thompson, superintendent Northeast Experiment Station, Duluth, Minn.

HOW TO CONTROL THE CABBAGE PEST

How to control cabbage and onion maggots is shown in a letter recently issued by the Agricultural Extension Division, University Farm, St. Paul.

In experiments at University Farm last year and the year before this mixture was used for cabbages:

Lead arsenate.....¾ ounce
New Orleans molasses...½ pint
Water ..... 1 gallon

This mixture was sprayed over the plants every week, or twice a week in rainy weather, from the time they were set out until May 20. For a second brood of the pests the spray was applied from July 1 to 20.

A spray that has been used to destroy the onion maggot at University Farm is made of:

Sodium arsenite.....1/5 ounce
New Orleans molasses.. ½ pint
Water ..... 1 gallon

Such a solution, however, tends to burn the leaves of cabbages. The barred-wing onion maggot is controlled by destroying all old, infested onions in the spring.

The first indication of the cabbage or onion maggots is the wilting of the plant after the pest has attacked the underground parts.

MORE SEED PLACED ON APPROVED LIST

Since printing the annual seed list of the Minnesota Crop Improvement Association, the society has received several reports of available seed supplies. These have been compiled and are ready for free distribution. Those wishing to buy seeds may receive a copy of the new list by addressing the association at University Farm, St. Paul.

NURSES NEEDED IN RURAL DISTRICTS

Medical supervision for infants, school children, tuberculous individuals and others is as feasible in the country as it is in the city. Moreover, it has been demonstrated, according to Dr. I. J. Murphy of the Minnesota Public Health Association, that such work is practicable.

Since the first of the year the Minnesota Public Health Association has had two demonstration nurses working in various counties of the state. Enough work has been done to prove that in communities of between 3,000 and 5,000 one nurse could be kept busy the entire year. Until the schools close the time of the nurse would be, for the most part, taken up with school children. After the school term, she would devote her attention to mothers, babies and communicable diseases, including tuberculosis.

It was found by the Public Health Association nurses that about 25 per cent of the school children examined had defective vision, about 20 per cent had defective hearing, and 95 per cent needed dental attention. There were many others with minor defects. The nurses have visited the following counties: Nobles, Jackson, Waseca, Wabasha, Chippewa, Yellow Medicine, Renville, Kandiyohi and Lyon, and will be sent to any county on application, but only to rural districts where there are consolidated schools.

RUTABAGAS MAKE GOOD DAIRY FEED

Corn is not necessary in order to make Northern Minnesota the Denmark of America. Rutabagas make a good substitute for corn on newly-cleared land which will not grow corn for silage profitably, according to experiments at the North Central Experiment Station, Grand Rapids.

As a succulent feed for dairy cows, young stock and hogs, a twenty-ton crop of rutabagas is equivalent to a twelve-ton crop of corn. With clover hay and oats they make a balanced ration. Twenty pounds of clover, fifty pounds of rutabagas, and six pounds of oats make an ample dairy ration for a cow giving thirty pounds of milk containing 4 per cent of butter fat. From fifteen to twenty tons of roots an acre is the average yield in Northern Minnesota on manured land. So, an acre-yield, on the average, will provide fifty pounds daily to each of three cows for seven or eight months.

Rutabagas may be planted any time in June. The seed bed should be thoroughly prepared. One and a half pounds of seed will sow an acre and seed can be bought at 50 to 70 cents a pound. An ordinary grain drill with a grass-seeder attachment is a good machine for sowing. Three out of every four holes should be stopped up in a seven-inch drill. This will make the rows twenty-eight inches apart. In a six-inch drill, four out of every five holes should be stopped. The seed drill can then be set as for clover seed, of course setting it for four or five times the amount indicated on the register, as only one-fourth or one-fifth of the holes are left open.

The plants may be thinned with a hoe. A strong plant at from every nine to twelve inches will give the largest yield. Cultivation should be like that of potatoes. When ready to harvest, the tops may be cut off with a hoe and the roots dug up with a potato digger.

The roots may be stored in a cellar or root house, which saves the expense of a silo.

The dairymen of Denmark and neighboring countries grow little corn, and depend largely upon rutabagas for feed for their herds. Young animals wintered on rutabagas make faster gains when turned out on pasture in the spring than stock fed on grain.—Otto I. Bergh, superintendent North Central Experiment Station, Grand Rapids, Minn.

SMUTS CAUSE GREAT LOSSES

The smuts of wheat, barley and oats every year cost the farmers of Minnesota from $3,000,000 to $4,000,000.

The smuts which do most of the damage are stinking smut of wheat, covered smut of barley, oat smut, loose smut of wheat, and loose smut of barley. To aid in distinguishing between the two smuts of wheat and the two of barley, pictures in Minnesota Station Bulletin 122 should be studied. The bulletin may be had by addressing the Office of Publications, University Farm, St. Paul.

The great loss may be prevented in large part by the use of the ordinary formaldehyde treatment. This at least will prevent stinking smut of wheat, covered smut of barley, and oat smut. It costs only about two cents an acre to apply.

The farmer who has not a smut machine should either dip or sprinkle his wheat, barley and oat seed. The seed should be fanned before treating, to blow out all smut balls. If the fanning is not altogether effective, the seed should be put into water and stirred so as to allow the smut balls to rise to the surface to be skimmed off and burned. Everything with which treated grain is likely to come in contact, should be washed with a solution of formaldehyde. Sacks in which the treated grain is to be placed should be soaked for about half an hour in the solution. The solution for treating the grain contains one pound formaldehyde—standard strength—and 40 or 45 gallons of water.

The outside of every kernel should be wet with this solution. This end may be attained by dipping the grain in previously cleaned sacks or in fine meshed wire baskets several times directly into the solution, allowing it to drain between dippings. Sprinkling also gives good results. To sprinkle, the floor or other place on which the grain is to be spread, should be swabbed with the formaldehyde solution. The floor having be cleaned, the grain is spread on a layer a few inches thick. Then, while one person sprinkles the grain with the formaldehyde solution, another rakes or shovels it over.

After treatment by either method, the grain should be shoveled into a pile and covered with disinfected sacking for three or four hours, or even over night. Greatest care should be exercised, however, to keep it from contact with any smut infected substance.

Treatment for the loose smuts is not so simple. This is described in Minnesota Bulletin No. 122, already referred to.

FARM GARDENS, MONEY-MAKERS

A good garden on the farm means an income of at least $50. There are more than 150,000 farms in Minnesota. The total income from 150,000 farm gardens should, therefore, be more than $7,500,000.

The Illinois Experiment Station by five years' experiments with a half-acre garden showed that the actual income in excess of expenses was about $100. The estimate for Minnesota is only half the actual returns in Illinois.

A good garden should supply the family table during the growing season, fill the storeroom for the winter, and give ample material for canning by the cold-pack methods.

The soil should be rich and free of weeds. If the soil is poor, it may be enriched with rotted yard-manure. Good seeds should be obtained and planted in rows not too far apart. The soil should be cultivated to hold weeds in check. A succession of the various vegetables is desirable—sweet corn, lettuce, radishes, and carrots.

For 1916 reduce the cost of living by getting more out of the garden—right out of the soil.

DRILLING IS BEST WAY TO SOW OATS

Oats grow best when sown with a drill in a fine and firm seed bed about two or three inches deep. Fall-plowed land is to be preferred. Seeding should be done early.

Oats follow a cultivated crop in a rotation. Fall-plowing is best. If the situation demands spring-plowing, the earlier it is done the better. Following spring-plowing, the soil must be worked back, so as to unite the furrow slice and the "pan." A good seed bed can be made on clean land where corn was grown last year by two diskings and a harrowing with a slant-tooth harrow.

Drilling gives a more even stand than broadcast sowing and covers the seed to a more nearly uniform depth. Less seed, also, is required in drilling. The seed should be covered usually about 1½ inches deep. The rate of seeding should be two bushels to the acre under average soil conditions or 2½ bushels on heavy soils.

Every two or three years oat seed should be treated for smut to hold the disease in check. This year is a good time to begin. A formaldehyde solution will probably save your field several bushels an acre.

A germination test is always advisable, but especially so this year, for tests are showing up poorly. Rigid grading with a fanning mill will also help to get a high test.—C. P. Bull, University Farm, St. Paul.

STATION SELLING PURE-BRED SEED

Farmers in Northwest Minnesota may plant pure-bred seeds soon, if they will cultivate in plots small quantities of pedigreed seeds which the University of Minnesota's Northwest School and Station at Crookston has for distribution.

The Crookston station has been testing out pedigreed seeds of many varieties during the last five years to determine the kind best adapted to conditions in the Red River Valley. The station has a supply of pure-bred barley and oats for sale now.

C. G. Selvig, superintendent of the station, advocates the cultivation by farmers of small seed plots, which will enable them to get into the business of raising high-producing, pedigreed seed for their own use or for sale.

FREE FISH FOR FARMERS' PONDS

The United States Bureau of Fisheries, Department of Commerce, has arranged with the Minnesota Experiment Station to furnish fish free for the stocking of ponds on Minnesota's farms, where conditions are favorable.

This work is in charge of Director A. F. Woods of the Minnesota Experiment Station and and F. L. Washburn of the Section of Economic Vertebrate Zoology. Mr. Washburn says that naturally the service of the Bureau of Fisheries will be limited because of the need of keeping the yearly grants of fish within the limits of the supply. Consequently, the number of farms which can be supplied each year will not be large, and a waiting list will probably have to be established.

Those who wish to make application should send to Mr. Washburn for blanks. These will have to be carefully filled out and returned to the Experiment Station at University Farm, St. Paul.

Mr. Washburn and Director Woods will then approve and forward them to Washington.