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GARDEN AND ORCHARD NOTES.

Plan next year's garden and orchard work.

Cut out and burn diseased or dead trees.

Cover the strawberries with about six inches of clean straw.

Organize a rabbit hunt after the first snow falls and get rid of some of the rabbits.

Tramp the snow about newly set trees to prevent mice finding a harbor under the crust and girdling them. Mulch plum and other trees and shrubs with horse manure. Do not cut closer than four inches from the tree.

Rotted barnyard manure may be spread over the lawn just before snow. It will help next year's grass crop.

Raspberries may be mulched with manure if they have not been laid down, but there is some danger of mice working under the manure.

Short courses and reading circles are being formed now to study horticulture and farm problems. Are you working in one in your community?

Watch any palms or ferns that may be in the house for scale or mealy bugs. The plants should be washed frequently to keep the dust off and to prevent insects getting a foothold.

Pay a fair price for your apple trees, but demand that they be true to name and well grown. If possible get a written guarantee and be sure the company will make the guarantee good if the trees are not true to name.

Cut scions of apples for winter piece rafting and spring top-working. Only this year's growth should be used. Store in sand or sawdust in a cool cellar.

Hundreds of those who purchased apples by the barrel are being disappointed at this time of year by the inferior fruit mixed with the good fruit in a barrel for which a good price is paid.

Bring in a few pots of bulbs that were started last October. Place them in a cool shaded place until they begin to start when more light and heat may be given them. A sunny kitchen window is a good place.

Many of our large orchards, as well as small ones, do not receive the proper care to produce good, clean fruit. Bitter take care of the orchard or reduce the size so it can be made to produce good fruit.

Be careful where and of whom nursery stock is purchased. The gaudy catalog and fluent agent are apt to give you the poorest of trees. Purchase from home nurseries or at least those near at hand who you know have a good reputation.

Why not pack good fruit? Put your name and address on the barrel and build up a direct sale of fruit. People who buy apples would like to buy direct from the grower if they knew how and were sure of No. 1 goods.

Are the apples stored for winter use full of worms? Now is a good time to study spraying methods and mixtures. Send to the Experiment Station for bulletins and information on the subject. Wormy apples may easily be prevented if precautions are taken to prevent them in the spring.

PREMATURE CALVING

Use Little Force and Much Care in Cleaning the Cow.

It is usually wise to wait for at least two or three days in case the after-birth does not come away and the cow is eating and apparently doing well. After this time the after-birth can usually be removed much more easily if necessary. In some cases it is advisable to wait still longer rather than to exert much force in separating the after-birth from the womb. It will usually not come away easily following a premature birth. If the after-birth does not come away easily within two days in summer or three days in winter, call a competent veterinarian and allow him to use his judgment as to further procedure. In some cases it is much wiser to give timely injections of warm antiseptic fluids, such as a weak solution of creolin for some time rather than to remove the after-birth forcibly.—Dr. M. W. Reynolds, University Farm, St. Paul.

A CREAM COOLER.

A Simple, Practical Device Recommended by the State Dairy and Food Department.

"After careful inspection of a large number of Minnesota dairy farms we have found that a very small per cent of dairymen have proper or convenient facilities with which to care for hand separator cream before delivering it to the creamery. We have also found that there is nothing on the market that is practical to cool hand separator cream and keep it cool so that it will meet every day conditions on the average farm. Very few farmers store ice. Many live a great distance from a body of water where ice can be obtained. Many more have shallow wells which furnish only enough water for their horses and household use, and they depend upon the well pit or cellar for a cooler. Neither place is convenient for milk or cream. All of these circumstances have convinced us that some simple, practical and efficient method should be devised which will enable the dairymen to properly care for their cream and at the same time reduce the incident work and expense to a minimum."

We clip this paragraph from Bulletin 44 of the State Dairy and Food Department, St. Paul, Minn., by Geo. A. Miller, Farm Dairy Inspector. Those who are interested in the problem of cooling and separating cream should write for this bulletin. It describes the "Dairy and Food Department Cooler" and gives directions for making and using it. It consists of a number of 4-inch cooling tubes, deep enough to contain a gallon of cream apiece, surrounded by cool water in a container so small that the circulation is more rapid than usual.

We wish to add a suggestion which did not get into the bulletin. There is some work involved in making this cooler which most farmers must have done at a tin shop. It would be well for creameries to work up the interest of a number of farmers in this cooler at the same time so that they may send in their orders all at once to the same shop and secure a lower price.—A. D. Wilson, Superintendent, Extension Division, University Farm, St. Paul.

GOOD ROADS BILL.

Congress to Plan National Good Roads System.

A bill recently passed by Congress, appropriates \$500,000 for experimental road construction. The money is to be spent by the Secretary of Agriculture in consultation with the Postmaster General. These cabinet officers are to investigate the "saving to the government in the operation of the rural delivery service and to the local inhabitants in the transportation of their products by reason of such improvement, and report the results in detail to Congress."

These two cabinet officers are expected to make "such recommendations as shall seem wise for providing a general plan of national aid for the improvement of postal roads in co-operation with the states and counties."

The same bill provides for investigation of this subject by a joint committee composed of five senators and five representatives.—J. O. Rankin, Editor, University Farm, St. Paul.

MARKET POULTRY FAT.

Poultry marketed from the farm consists of cockerels, or males under one year, roosters, pullets culled from standard-bred stock, hens, guineas, doves, ducks, geese and turkeys. They are generally sold alive in summer and early autumn, and both alive and dressed in late autumn and winter.

To bring the highest market price, market poultry, whether alive or dressed, should be in good health, of large size and well fattened. The laws of Minnesota make it an offense punishable by a fine of not less than \$50, or imprisonment in jail for not less than 60 days, for selling, or offering for sale, sick, diseased or decaying poultry. Disease is usually disclosed by a white or black comb and a stilted walk.

All poultry marketed should be fat. This condition is the chief factor in determining the price per pound. Fat old hens, of whatever weight, often command a higher price than young, tender spring chickens. Chickens fattened with ground grains and skim milk or butter milk are called "milk-fed chickens" and command fancy prices. At the Crockston Station, Barred Plymouth Rock Cockerels, three and a half months old, gained two pounds in twenty-one days at a cost of less than five cents per pound gain.—N. E. Chapman, Poultry Specialist, Extension Division, University Farm, St. Paul.

SOIL MUST BE CLEAN.

Diseased Crops Make Big Inroads Upon Profitable Harvests.

If the soil is made sanitary by disease control, a large annual loss in garden crops will be avoided when the seed gathered from this year's crop is planted next spring. It may be laid down as a principle that the foundation of success next year will depend upon the care which is given to keep the seed free from disease and to prevent the soil from becoming unsanitary.

One vegetable which is directly concerned is the potato. The tubers of the potato plant may be troubled with a number of diseases. In Minnesota the potato scab and the internal brown rot, must be contended with. Both diseases live in both soil and tubers, and it is necessary that the soil be free from the disease if next year's crop is to be a large one. If diseased seed or soil be used year after year, the yield of sound potatoes becomes smaller and smaller.

Other common crops which are affected with disease in Minnesota are the bean, cabbage, onion, and beet. Many of the diseases are so serious as to endanger the production of paying crops. Some of the seed may be diseased, and yet show no trace of disease. Bean anthracnose, bean bacteriosis, and black rot of cabbage are among these diseases.

To prevent disease from obtaining a hold, spraying should be done wherever possible. If the soil is diseased, rotation of crops must be resorted to. Only by such careful attention can permanent success be secured.—E. C. Stakman, Assistant in Plant Pathology, Minnesota College of Agriculture.

JUDGING PLOWING CONTESTS.

How Judges Picked the Winner at University Farm.

The School of Agriculture recently conducted a plowing contest at University Farm, St. Paul, and the plan followed may help those who plan similar contests elsewhere. Such contests should be conducted at county fairs, picnics, and a variety of farmers' meetings, as they stimulate friendly rivalry and interest in a very important farm operation and lend interest to what is sometimes regarded as drudgery. If the long days of following the plow are regarded as preparation for a public contest, the work is both improved and lightened.

In this contest, each man used successively a sulky plow, a gang plow, and a walking plow. The same team remained hitched to a given plow throughout the contest so that each man had exactly the same team and plow to work with. A different score card was used in judging the work of each plow. It is not necessary to reprint all three score cards here as the points of one score card will enable local judges to prepare a suitable score card for use in judging the work of plowing with the other two types. The final rank of each contestant is based upon the sum of scores made with the three plows. A summary of the score cards used in judging the work of the gang plow follows. Slightly different score cards were used in judging the work of the sulky plow and walking plow. Subdivisions of the main points together with the weights attached to them are given in parentheses: Furrow and furrow slice, 58 points; (straightness, 10 points; furrow capacity, 10 points; cleanness, 8 points; uniformity of depth, 10 points; covering trash, 10 points; evenness of crowns, 10 points); ridge, 16 points; (straightness, 10; uniformity of crowns, 3; height, 3); dead furrow, 6 points; (depth, 4; finish, 2); ends, 10 points; (evenness, 5; straightness, 3; uniformity of depth, 2); horsemanship, 3 points; time, 7 points.

FARM HEALTH.

The study of rural health conditions is a matter of greatest importance. The extent to which tuberculosis is prevalent in certain rural communities is truly alarming, and the co-operation of the United States public health service and the state department of health is essential to the proper solution of rural health problems.

In stamping out epidemics of live stock and in the study of the more serious diseases such as bovine tuberculosis, Texas fever, hog cholera, glanders, swamp fever in horses, etc., the national department of agriculture co-operates. The same is true in the study and control of the more serious insects and diseases of farm crops, fruit and forest trees.—Dean A. F. Woods, College of Agriculture, University Farm, St. Paul.

VOCATIONAL TEACHERS NEEDED.

Supply One-Third as Great as Demand.

We must not overlook in this connection the rural and village school, and the high schools in touch with rural districts. The next generation of farmers and farmers' wives must have an education that fits them for the great work they have to do. At the present time this development is limited by the lack of trained teachers.

The agricultural colleges must organize departments to help train these teachers. The normal schools should co-operate in the work. A system must be organized and perfected that will produce a constant supply of teachers trained especially for rural work and work in agricultural high schools. A large number of teachers trained for agriculture, domestic science, and manual training must be provided each year to meet the increasing demands. At the present time in all of those departments, but especially in agriculture, the demand is more than three times as great as can be met at salaries ranging the first year from \$1,000 to \$1,500, and when teaching becomes a burden there are always alluring opportunities for the competent to go into practical work.

The great need in this direction has been recognized by congress and provision has been made through the Nelson amendment to enable the agricultural colleges to begin the training of teachers. Many of the states have supplemented this appropriation and through state aid to agricultural high schools and consolidated rural schools have greatly stimulated the movement.

The Page bill provides national aid in extension and demonstration, the preparation of teachers and industrial subjects by colleges and normal schools, and aid to agricultural high schools and consolidated schools, and for industrial work in city schools. The bill is drawn with a view to the logical development of the work in the entire school system.—Dean A. F. Woods, College of Agriculture, University Farm, St. Paul.

FARM PLANNING SAVES MONEY.

Time is money to the farmer, as well as to anyone else. Time saved in doing chores, in going to and from the fields or in working the land, can often be used for the purpose of improving the farm buildings, or in caring for crops or stock that will pay a good profit on the labor. That time can be saved in doing the chores, no one will dispute who is familiar with farming. A trip of ten rods three times a day, across the farmstead, will amount in a year to thirty-four miles of travel, and will require 1½ days. On many farms the arrangement of the buildings may call for a number of such trips in different directions, and the distance traveled unnecessarily will easily reach several hundred miles in a year. No one would think of making such an arrangement of buildings if it called for the waste of time in one stretch, but because the waste is spread out over the daily tasks or chores, no attention is given the matter. The needless trips take energy and cause loss of time, nevertheless. Count your steps for a day or a week, and see how many miles of travel you can save in a year.

Much time is lost also in going to and from the fields. A few hours spent in making a plan of the farm and arranging the fields conveniently, with fences and lanes where needed, leading to the farmstead, will save many hours in the fields. The teams should begin to work as soon as they leave the barns. They can do so if the farm is planned so that the fields radiate from the farmstead. Try working out a plan for your farm, and see how convenient it can be made. One farmer in Minnesota added over 50 per cent to his income, in three years, by revising his farm plan and organizing his method of handling the farm.

Long fields can be worked more economically than square ones. Three-cornered fields are especially expensive to handle. It is calculated that a diagonal ditch or road across a forty-acre tract will increase the cost of operating the land from 18 to 25 per cent.

Bulletin 125, Minnesota Experiment Station, contains much valuable information on farm management, and gives numerous plans for arrangement of buildings and fields. This bulletin will be sent free of charge to anyone requesting a copy. Address the Minnesota Experiment Station, St. Anthony Park, Minnesota.—Andrew Boss, Minnesota Experiment Station.

JUDGING BREAD.

Bread is the staff of life. When well buttered it is sometimes called a "gold headed cane." Its quality has much to do with the health and happiness of the people. Bread making is therefore, given special emphasis in the extensive teaching of the University and in industrial contests.

Those who are called upon to judge exhibits of bread in county or other local contests, will find a brief score card helpful. It would be well for the housewife to see how each baking will score in accordance with these points which apply to either white or graham bread: general appearance, 5; proper baking, 10; odor, 10; flavor, 30; grain and texture, 20; lightness, 10; crumb, 10; color, 5.

It is well to have in mind a loaf that is ideal in all these respects with which to compare the particular sample which we are judging. In general appearance, the ideal loaf is well rounded over the top but not flattened. It does not extend over the sides of the pan and is not cracked at the sides but is evenly baked throughout. It should have a sweet, nutty odor and flavor without any suggestion of a sour or rancid smell, or a wheat-like taste. In grain and texture the cut surface of the loaf should present a silky, evenly honey-combed appearance with rather small holes of aeration. A properly raised loaf has about twice the amount of the dough which was placed in the pan, and the cut surface is elastic when pressed with the finger. The crumbs should be glossy and moist but not gummy when pressed between the fingers and should not be dry and crumbly. The color of ordinary white bread should be creamy white but not a snowy white.—Mary L. Bull, Extension Lecturer in Domestic Science, University Farm, St. Paul.

AGRICULTURAL TRAIN.

An Agricultural Education on Wheels.

The Minnesota College of Agriculture, in co-operation with the Soo Line, has organized a series of agricultural stops in Minnesota. About 45 stops were made and thousands of people received instruction by lectures and demonstrations. It is believed that many farms and farm homes will receive benefit in consequence.

Instruction for women was one of the interesting features of the train. One car out of the ten was especially equipped with models showing the use of modern conveniences for the farm home. It was shown that an expenditure of from \$100 to \$200, depending upon the amount of work hired, would install hot and cold water in the home, and pay for a very serviceable outfit, including a closet, hot water heater, bath tub, kitchen sink, and sewage disposal plant. At every stop a septic tank, made at a cost of \$18.65 for labor and material, was described. The model used was installed several years ago for the disposal of sewage from one of the school buildings at Crookston. By the use of such a tank, the country home may have the same modern conveniences of water supply and sewage disposal enjoyed by the modern city home. The tank costs less than is usually paid by city people for sewer privileges alone.

The train lecturers pointed out the fact that a modern equipment in the farm home is one of the essentials in making the farm pleasant and attractive enough to hold the boys and girls. This is not too expensive to be practical. The income from a couple of good cows, the product from one brood sow, or the income from two or three acres of potatoes will install the improvements suggested.

For information on all these and many other points, inquirers were asked to write to the Extension Division, University Farm, St. Paul for full information.—A. D. Wilson, Extension Superintendent, University Farm, St. Paul.

SHORT COURSES.

The Extension Division at University Farm, St. Paul, has practically completed arrangements for short courses at fifteen different points, including Tracy and Taylor's Falls. Its working force is able to give about 25 courses. A large portion of the 65 towns requesting such courses must be disappointed, but they will be given special lecturers. An attempt is being made to arrange the work in circuits and to favor in next year's plans the towns that must be refused this year. Those who do most to help themselves receive most help from the Extension Division.