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## EXTENSION WORK.

### SUCCESSFUL FARMERS' CLUBS.

The Farmers' club at Burtrum, Todd county, has adopted a good constitution, and writes to the Extension Division that its members are already saving money on the purchase of Paris green and binding twine and in receiving more for their potatoes through co-operation in selling than they could get in their local market. Another club writes that its members saved money in buying dynamite and clover seed. The Hanska club has completed its first year of cow-testing and is co-operating in the sale of stock. Greater harmony prevails in this community. The Leon club has adopted community breeding and effected splendid improvement in the care and feeding of cows. The Clear Lake club finds help through co-operation in buying coal and disposing of potatoes. The Cutler organization has found a better market for produce and a saving in buying supplies. Its co-operation in dairying and stock breeding has put the industry on a better foundation. The club at Sandstone has co-operated in buying seeds and selling products. It is now organizing a creamery. It has twenty-two members. At Cornwell, the club has taken up the matter of selling eggs, buying flour and feed and is endeavoring to raise a uniform variety of potatoes. It also finds better returns for products sold and less cost for things bought. For information regarding the organization of farmers' clubs, write to the Extension Division, University Farm, St. Paul, for Bulletin No. 1.

### SHORT COURSE FOR TEACHERS.

Beginning on June 20th, and continuing for six weeks, the Department of Agriculture at University Farm, will hold a short course for teachers, principals of public schools, county superintendents, and all others interested in agriculture. College credits will be given all whose work is satisfactory. Board, lodging and laundry will cost \$3.50 a week. The course will consist of instruction in agriculture, agricultural chemistry, animal husbandry, and animal nutrition, dairy stock, domestic art, domestic science, entomology, horticulture, forestry plant diseases, poultry, soils, etc.

### ENGINEERS' SHORT COURSE.

The short course in Engineering will begin at University Farm May 24 and continue until June 17th. Tuition, \$15; board, \$3.50 a week. Instruction will be given in steam and gasoline engineering. The course will give a great opportunity to young men to learn how to handle gasoline and other engines. University Farm is equipped with up-to-date machinery for the use of students. Instruction will be given in all departments of engineering. Write Prof. D. D. Mayne, University Farm, for details.

## ENTOMOLOGICAL.

The Plum Curculio and Codling Moth are destructive of fruit. Spray the trees now with arsenate of lead or arsenate of soda and water, or in place of water use Bordeaux mixture; spray again just as the blossoms fall; again ten days later. Eighty per cent of the fruit can be saved. Three pounds of arsenate of lead, to fifty gallons of water or Bordeaux mixture, should be used for the curculio; Paris green arsenite of lime or arsenate of lead kills the insects.

### CHEAPER POISON.

A very cheap and effective insecticide for use on plum curculio or codling moth, potato bugs, etc., is made as follows: One pound white arsenic; 4 pounds crystal sal soda; one gallon water. Boil in an iron kettle (kettle never to be used for any other purpose, it is full of poison) 20 minutes, or until dissolved. This is arsenite of soda. Bottle and label POISON. When ready to spray take three or four pounds of stone lime, and while it is slaking add to the lime one to two pints of the arsenite of soda. Pour the mixture as now prepared

into the spray tank, which should contain forty or fifty gallons of water or Bordeaux mixture. The spray is now ready for use. The Bordeaux mixture formula will be sent on application to Prof. E. M. Freeman, University Farm, St. Paul.

## HORTICULTURE.

Planting Diseased Potatoes in equal amount, on an equal sized plot, with healthy potatoes, at the Minnesota Experiment station, gave this result: The diseased (dry rot) yielded thirty-one bushels per acre; the healthy, fifty-six bushels per acre.

Potatoes Maintain Their Vigor better in the Red River valley than in most parts of the state. Even there the growers are particular about renewing their seed stock with better grown potatoes whenever they can find them. Changing seed is valuable when better stock can be obtained. The most important factor, however, in maintaining the yielding power of potatoes, is plenty of soil fertility which is greatly assisted by a clover rotation and through cultivation from the preparation of the seed bed to the last cultivation of the crop.

Spraying Potatoes for Diseases in Minnesota has not yet proven of great value. Experiments at the Minnesota station, show that both early and late blight can be prevented with fair success by spraying with Bordeaux mixture. Late blight is the more destructive, and comes in the damp, warm, muggy days of August, but is not as common in Minnesota as in some other states. Late varieties suffer most from blight. Early blight may begin any time in June, according to the season and stage of development of the crop, and continue from then on with varying degrees of rapidity. It is this disease for which spraying is most needed in Minnesota. Particulars for the treatment of this disease may be had by asking the Extension Division, University Farm, St. Paul, for Extension Bulletin No. 4. The applicant may have his name placed on the mailing list for all subsequent bulletins if he desires.

Potato Rot. Internal brown rot of the tubers is often had in wet years. The only known remedies are good drainage and the planting of healthy seed potatoes. Diseased tubers may be detected by cutting a thin slice off the stem end. If small brown spots or streaks are present the tuber is probably diseased and should not be planted. Mr. Kohler, of the state experiment station, experimented in 1908 with badly diseased, slightly diseased and healthy potatoes in rows 100 feet long of each kind. They were planted on June 1st. Result: healthy tubers, 139 bushels per acre, no hills missing; slightly diseased tubers, 111.6 bushels per acre, 3 hills missing; badly diseased tubers, 39.4 bushels per acre, 42 hills missing. Moral: never use badly diseased tubers for planting; slightly diseased, only when necessity requires; healthy tubers always.

## VETERINARY.

### CALF CHOLERA.

Calf cholera—diarrhea of calves a few months old—says Dr. Reynolds, veterinarian of the state experiment station, develops more easily among weak and unthrifty individuals. Its immediate cause is sudden changes in feeding, milk from unclean vessels, irregular and over feeding and unsanitary conditions generally. Let the sun, light and air into the pans and keep them clean and dry. The calf becomes dull, has diarrhea with thin, frothy, slimy discharge, perhaps yellowish in color, with an odor not unlike spoiled cheese. Sunlight, cleanliness of water and food, moderate and regular feeding and preventatives. Half an ounce of formalin in fifteen and one-half ounces of water should be kept in readiness for use in a cool place, properly labeled, as a stock solution. Give one teaspoonful of this solution in each pint of milk fed. If cases are bad give 30 drops of tincture of opium and three drams of grain alcohol as a dose. If necessary, repeat the dose in three hours, and if no relief is had give a third dose in three hours after the second. In the third dose, reduce the tincture of opium to fifteen drops. The opium should be

entirely omitted except in the severest cases. The dose may be given in from four to six teaspoonfuls of sweet skimmed milk. Don't confuse the disease with white scours in very young calves, which is very much more serious.

### HOG AND SWILL BARREL CHOLERA.

Dr. Reynolds, veterinarian at the Minnesota experiment station, says that swill barrel cholera should not be mistaken for hog cholera, though it is often as fatal. It arises from different causes and is not infectious. The symptoms often resemble true hog cholera, but the disease does not spread to other hogs differently fed. It only involves those fed from swill barrels whose condition is so filthy as to be self-explanatory of the source of the malady. Dr. Reynolds has found that feeders of garbage from hotels sustain frequent losses due to the presence of washing compounds or other material containing high percentages of irritating alkalies. A case of swill barrel cholera is reported where a farmer lost fifty-nine hogs that had been fed on sour butter milk from a creamery container, whose sides were green with mould, while one hog kept in an adjoining pen, but given other food, lived. The survivor had every opportunity for infection. Neighbors not using swill from the creamery lost no hogs, while other neighbors using the creamery butter milk sustained serious losses. This shows that even a hog must be wholesomely fed. Clean and scald the swill barrel once in a while and let the sun shine into it.

## AGRICULTURE.

### CORN HILLS.

Nearly every corn grower knows very well what constitutes the number of plants in his ideal hill of corn. Yet many fail to secure such a stand and do not realize the importance of having a good stand. The missing stalks and hills in every cornfield represent practically a deduction from the net profit on the field.

The corn planter cannot be held responsible for seed that will not germinate. This must be attended to before the seed is put into the ground and the only reliable method of knowing the vitality of seed corn is to test it all for germination by the individual ear test. By care the farmer may practically regulate the number of kernels planted per hill and the depth at which it is planted. That planting may be as near perfect as possible, there are certain things to be attended to. It is necessary that the seed bed be well worked previous to planting and that it be comparatively smooth on the surface. It is of course essential that the planter operate freely and be in first class working order.

The corn itself is the most common cause of an uneven planting, and one that is easily remedied. Sorting the seed ears into two or more groups according to size and similarity of kernel and then discarding the butt and tip kernels of each ear will help very much in getting a uniform seed. A much better way, however, is to discard the butt and tip of each ear before shelling and then thoroughly grade the shelled corn with a good corn grader.

When seed has been reduced to a uniform size, it becomes quite an easy matter to select the desired seed plates for the planters. Seed plates ought never to be used in planting until the drop has been thoroughly tried with some of the seed. The aim should be to secure a definite drop for each hill and not a general average.

### FLAX NOT HARD ON LAND IF GROWN IN ROTATION.

There is an opinion among farmers that flax is a hard crop on the soil and that it cannot profitably be grown on old land. Investigations in this line do not seem to bear out the opinion. Flax removes from the soil more nitrogen than the grain crops owing to the fact that it is rich in this element. It does not remove so much phosphoric acid and potash, however, and unless grown too frequently will not seriously deplete the fertility of any soil. At University Farm flax is used as a grain crop in a five year rotation, thus raising flax on the land once in five years, and seeding down to clover and timothy with the flax. The clover being a nitrogen gatherer replaces the

nitrogen taken from the soil in the flax crop and eventually leaves the land as rich as in the beginning. While the yields of flax in this particular rotation have not been large the crop is quite satisfactorily grown and with no apparent bad effects on the soil so far as the growth of other crops is concerned. This investigation warrants the statement that flax properly arranged in a five, six or seven year rotation can be grown as safely as any other grain and where market conditions indicate that the flax crop will be profitable it can safely be included in the grain crops grown on our Minnesota farms.

## DOMESTIC SCIENCE.

### LOW COST OF HIGH LIVING.

Miss Sheppard's senior college class gave a dinner the other day, consisting of four courses, to a company of seven persons, among whom were Dean Woods, Prof. Green and wife, and Mr. Bissett, of the agricultural department at Washington. The first course consisted of beef soup with crotons and celery; the second—pigs in blankets, composed of scraps of meat from the soup bone, rolled in veal flank, brown mashed potatoes, stewed tomatoes, Parker House rolls, butter, crab apple jelly, coffee;—third—Fruit salad and cheese straws; fourth—Lemon sponge pie. The jelly was made the past winter of crab apples canned by Miss Mae McDonald during last summer, without sugar. The entire cost of the dinner was \$0.99, less the cost of gas, about nine cents. There was left over from the dinner ten cents' worth of food, making the real net cost of the dinner \$0.98. Mr. Bissett made an estimate of what the dinner would have cost if the same articles had been served at a cafe, to one person, at \$1.40. This was a very fair estimate, by good authority, as Mr. Bissett is traveling for the government and paying for similar meals daily.

## ANIMAL HUSBANDRY.

### DIPPING SHEEP.

The object of dipping sheep is to free them from ticks and other external parasites that commonly beset them and irritate them so as to retard normal growth and development. Early spring and late fall are the times when this task may best be attended to, and a warm, sunshiny day should be selected for this purpose.

The market is flooded with dips, most of which have as their basis coal tar oils. If used according to directions almost any will prove efficacious, though the two that are standardized are the most reliable. Whatever the dip used, it is well to make a trial solution and use it upon isolated ticks to determine its insecticidal strength, unless previous use has taught its value. In some cases, apparently dead ticks will revive in a few hours, which indicates the need of strengthening the solution. Warm dips dissolve the oil of the fleece and penetrate to the skin more readily. Long fleeces retain a greater amount of moisture for a longer time than do short fleeces, and ticks are more readily killed in this case.

A stationary dipping tank is almost essential to successful dipping. Cement has been found to be the cheapest, the most durable and satisfactory for the constructive material where drainage is such that water does not accumulate around. For specific information of such a tank address the Minnesota Experiment Station, St. Anthony Park.

It is of the utmost importance that the sheep be completely immersed in the dipping solution, and it is of the utmost importance for the attendant to thrust the head of the sheep under with a broom or "Y" shaped stick. In all cases, and severe ones especially, repeat the dipping after an interval of nine or ten days, to kill insects which may have hatched in the meantime.

D. A. GAUMNITZ.

### PASTURE FOR HOGS.

Growing pasture for hogs must be considered strictly as an investment for securing feed. Whether one puts \$1.00 into the growing of pasture or whether he buys mill feeds with it, the object is the same.

At the Minnesota Experiment Station, it has been found that 1 acre of clover pasture will replace 1 1/4 to 1 1/2 tons of shorts. Rape pastures did nearly as well. On this basis, no one

can afford to get along without all the pasture that the hogs can possibly use. It is safe to say that an acre of pasture can be had, fencing included, for from 5 to 7 dollars per acre, and it is easily worth from 20 to 30 dollars.

This does not represent all the difference. Hogs grown on pasture do very much better than when confined to a yard. Undoubtedly the best pasture is clover. Other pastures that will do for summer use where clover cannot be had, are rape, rye, and various combinations of the spring cereals. Where possible, nothing is more satisfactory than to enclose from 5 to 10 acres that have been sown to clover; and pasture as much as possible with hogs and calves; early in June cut one-quarter or one-third of the area for hay, and at the regular haying time cut the balance. Immediately after cutting the first portion, the pigs will feed entirely on the green shoots that come up on it and will not disturb the balance, which may be made into hay. It is during the latter part of the summer that pastures for hogs usually run short and early in the summer that pastures are plentiful. In this scheme, all the extra pasture early in the summer is cut for hay, and the entire area later in the fall can be used for pasture, which brings about the required adjustment.

D. A. GAUMNITZ.

## MISCELLANEOUS.

Careless Methods of Farming often result in filling the ground with weeds.

Three Kernels of Corn in a hill give best results when seed is of good quality, testing 100 per cent.

Hot and cold water in the farmers' kitchen will be a boon to the women and no great expense will be required to provide them.

Farm life may be made dismal by shutting in the home so that teams and people cannot be seen when passing along the road.

The Check Row System of planting corn is regarded by the Farmers' Institute as best for the average conditions in Minnesota.

In building a home attention should be paid to proper drainage so that water will not stand in pools around the house nor in the cellar.

Roots for Fall and Winter feeding are said by the Minnesota Experiment Station to have no superior for stimulating the flow of milk in cows.

One Inch Deep, on Heavy Soil, is deep enough for corn to be planted, and two inches deep on lighter soil. Corn germinates more quickly near the surface.

Don't plant corn in a heavy, cold soil if it can be avoided. There is more money in keeping the seed in the sack until the soil can be properly prepared than in such planting.

Much LABOR is wasted in doing work around barns and sheds when it is necessary to work in the mud. Therefore when building a barn be sure to locate it where the water will run off.

A Money Advantage in Planting Corn over small grain comes from the cultivation of the soil and cleaning the land of foul weeds. Corn should be cultivated well. Planting in check rows has an advantage over drills, for it can be cultivated both ways.

Quack Grass and Canada Thistles propagate through seeds and roots. Prevent seeding and seek a method of root destruction. The Division of Extension, Department of Agriculture, University Farm, will send valuable information concerning eradication of these weeds, if asked for.

Good Seed Institutes are being planned by the Farmers' Institutes, to be held in different localities next winter to instruct farmers in the production and selection of good seed. Local business men are signifying a spirit of co-operation with the department in promotion of the work by subscribing from \$50 to \$200 in each town for prizes on good seed exhibits.

County Superintendents and principals of schools will soon be called upon to introduce industrial training, agriculture, domestic art and domestic science into rural schools. They will find valuable help by attending the short course for teachers at University Farm, for six weeks from June 20th. Insight into the subjects now demanding attention of school men and women will be given. They will then be able to introduce the subjects and supervise instruction in those subjects with confidence and intelligence.