

or small poles long enough to extend from the floor to the ceiling; nail strips around the poles sufficiently close to prevent the roots from filling in the air space.

2. The cleaner and freer from soil, the better. This point is where heating and decay first begins. I would advise one ventilator to be put in quite close to where the roots drop into the root cellar.

3. If the earth floor is thoroughly underdrained, or the concrete floor properly made—that is, with plenty of coarse stone between the concrete and the earth—it would not be necessary to have anything between the roots and the floor. On the walls, if they are frost-proof, nothing extra is required.

4. As far as the keeping qualities are concerned, there is but little difference; the concrete is the more easily kept clean.

5. If plenty of fresh air is let in at the top of the root cellar, it will not be necessary to have an underground shaft.

6. Outlets for the foul air should be 18 inches square, and extend from ceiling of the root house to at least three feet above the roof of the building, and to be placed about fifteen feet apart. The outlets can be controlled by hinged doors or slides, and careful watching.

7. Ventilate similar to the Rutherford system. Have the fresh-air chambers coming in at the bottom connected with air chambers at the bottom or on the floor, the air-chambers to be slatted one foot in the clear; also, have extra air-chambers same size standing on top of those every eight feet all through the root cellar; outlets to be 2 feet by eighteen inches, and to be placed about 12 feet apart, the outlets to extend from the ceiling to 3 feet above the roof of the main barn. The outlets can be so arranged on the main floor to allow the roots, when drawn from the field, to be put through them.

(a) The Rutherford system, with floor conductors in addition.

(b) Size and construction all right, if in a convenient place for filling and feeding, and if the above ventilation system is adopted, and care to keep out frost above ground.

JOHN FIXTER.

The Needs of the Hoed Crops.

A late spring season and exceedingly wet weather during the last stages of grain seeding and at the time for preparing the land for the root crops, accompanied by cold weather and frosty nights, served to give the mangels, turnips and corn a setback from which they have not yet recovered, although the warm weather and frequent showers have been doing much toward overcoming the backward condition. Cultivation is the one thing most needed now to keep these crops growing, and if they are to be classed this autumn as good or bumper yields, frequent working is imperative. Held back as they were, they did not get the early cultivation that they should have had; then haying came on, and in many districts showers delayed these operations, and the hoed crops suffered. Corn has had the most difficulty in making satisfactory growth, and many fields look spindly and yellow. This important crop cannot be let dwindle. It must be made the most of, and, besides taking advantage of every shower which stops haying and harvesting to work in the corn and roots, regular weekly cultivation should be resorted to in order that the setback which these crops received earlier in the season be as far as possible overcome. Stock farms must have silage or roots, and the difference between a good and poor crop of these is the difference between thin and fat cattle next spring, or the difference between well-filled and half-filled milk cans during the winter. Scanty fodder also means a small amount of manure, and future crops of all kinds depend more or less directly upon the supply of this material. The stock farmer can ill afford to lose part of his fodder supply. A full crop means much to him, and a short crop proves a menace to his entire season's operations. Therefore, it is necessary that he put forth every possible effort, when the elements have been against him, to overcome the loss by his own efforts, the only method being a frequent and thorough stirring of the soil. The cultivator should be kept going in the corn until it gets so large that further working is impossible. The bottoming of the root crops may be hastened and the size materially added to by scuffling at frequent intervals during July and August. Keeping the cultivator going may yet insure abundant corn fodder and full root cellars in most districts this season.

Commercial Fertilizer on a Dairy Farm.

Buying commercial fertilizer to use on a dairy farm may seem like carrying coals to Newcastle, but W. J. Whaley, of Oxford County, is convinced that it pays. In proof, he points to a splendid field of fall wheat, thick, even, long of straw, and with excellent heads. To this field he had applied 200 pounds per acre of a complete fertilizer, selling locally at \$28.00 a ton. He also used it, with encouraging effects, on spring grain. Three drill spaces in his barley field left without fertilizer were a week or ten days behind in heading out. Mr. Whaley expects to reap a margin over and above the outlay of \$2.80 per acre, and finds the fertilizer also of advantage to the clover seeding. Every field of cereal crop on this 213-acre farm is seeded down each year. The meadow is cut one year, pastured one, and then broken for corn, roots and wheat, the corn being followed by oats, barley and mixed grain. A few acres of emmer were noticed in one field. Five acres were seeded to alfalfa in 1911, and nine more in 1912. Four hundred rods of tile were laid in 1911, some tiling and fencing being done each year. Thirty-four Holstein-grade cows last year returned \$70 each from the cheese factory, averaging a little less than 7,000 pounds milk. Mr. Whaley has been a rather extensive hog-feeder, but is reducing his stock of swine, keeping only enough to use up the whey, which he values at 10 cents per cwt. His hogs have usually brought him about five or six hundred dollars a year over and above the grain feed. A silo 20 x 34 ft. was nearly filled last year with twenty acres of White-cap Dent corn.

Exceptionally good facilities for cooling milk were observed on this farm. A strong-flowing well just outside the milk room fills a three-quarter-inch pipe with the best of cold water. This runs through a cement tank, into which the cans are set, being lifted out and run along under an overhead metal track to a point directly above the milk wagon. The flow is so strong that the water dare not be held back for fear of its forcing out around the curbing. In winter the water runs into a small elevated tank, and thence through the stable.

Mr. Whaley has two sons with agricultural-college training, and his farm shows evidence of enterprise and thrift.

Crop Rotation for Potatoes.

Van Slyke, in his book, "Fertilizers and Crops," gives three crop rotations for potatoes. Crop rotations he considers essential for best results with potatoes for several seasons, and especially because when grown on the same soil they are subject to scab and other diseases. They do especially well after clover or cowpeas. The following rotations are given as illustrations:

(a) Three years: Winter wheat seeded to clover in spring, 1 year; clover hay and green manure, 1 year; potatoes, 1 year.

(b) Four years: Rye seeded with clover and timothy, 1 year; hay, 1 year; potatoes, 1 year; oats or barley, 1 year.

(c) Four years: Wheat seeded with clover, 1 year; clover hay and green-crop manure, 1 year; potatoes, 1 year; beans, 1 year.

In case of long seasons, potatoes often follow some early crop, or are put in as an early crop and followed by something else.

Dead Weight to Return Car.

Pulling back the horse fork or sling car with a three-eighths-inch rope is not only dangerous at times when the rope breaks and one takes an incautious header off the load, but at the best it is hard on the hands. A first-rate idea was observed lately in the barn of John Hopkins, in Oxford County, and afterwards at other places in the vicinity. At each end of the mow a rope chute runs down to the basement. The draw-rope passes down one chute, while in the opposite one hangs a dead weight, connected with the car by a rope. The weight is just sufficient to pull the car back automatically after the load is tripped. When filling the other mow, the draw rope and weight are simply reversed. It works smoothly, and is well worth while. The chutes may be used for feeding or for ventilation, as desired.

Stook vs. Barn Threshing.

Editor "The Farmer's Advocate":

Stook threshing has a decided advantage in getting on with the work, as it saves twice handling, provided enough help can be had for the occasion, which is difficult sometimes, as it requires at least four teams to keep an up-to-date separator going, and more men to handle the grain than on the barn floor. But I consider barn threshing has a decided advantage to the grain, it being stored in the barn for some time in the straw, the storing having a curing effect, even if only for a few days, and makes less risk when stored in the bins, or even if sent at once to the market. If possible, I think it a great advantage to have straw under cover, not only for its feeding value, but for convenience in handling when feeding out. One advantage in stook threshing is in blowing the straw into the space where the grain would otherwise be stored. I have had no experience in cutting and storing straw. If cutting were done, of course, the straw would have to be stored in barn, as stacking would be impossible. Cutting would be an advantage if it were wanted for mixing with chop when feeding; otherwise, I do not see where it adds to the feeding value.

The blower and self-feeder are great savers of help, but I am of the opinion that much more grain is wasted in the straw than with the old method of straw-carrier and hand feeding, on account of the indiscriminate and careless, as well as hasty way of putting the grain sheaves on the feeder, and the strong draft and suction of the blower carrying grain out with the straw, which cannot be detected as it could when a man stood at the straw carrier.

As to the number of hands, that depends largely on capacity of machine and the condition of the grain; if grain is dry and straight it is almost impossible to get it to the machine faster than it can be taken care of. Under ordinary circumstances, at least four men are required to get grain to the machine.

Any thrifty farmer will have his granary in order, with his bins ready to receive the grain, and should see that the best qualities should be set apart for seeding purposes in bins by themselves. For instance, some portions of the field have plump and more matured grain, and the very best should always be selected for seeding purposes. I am convinced, by experience, that, by sowing the earliest-matured and heaviest grain, the returns will be increased to a very great extent, possibly 25 per cent.

The importance of not letting grain stand too long before being cut should not be overlooked. Advantages are better grain, avoiding shelling while cutting and handling, and better feeding value of the straw.

Elgin Co., Ont.

J. C. DANCE.

THE DAIRY.

Conditions of Good Milk Supply.

Following are the conditions as to care of milk insisted upon by the milk-powder factory at Brownsville, Ont. In substance, they are strict cleanliness and thorough cooling. Cleanliness must obtain from the time of commencing milking to delivery. Cooling implies lowering the temperature immediately after milking to 65 degrees, and delivering at that. Any effectual means of cooling may be employed. Some cool by setting the cans in tanks of running or iced water. This is cheaper, but slower, than an aerator. The patron is supposed to whitewash his stable twice a year and ventilate it properly. He also agrees not to feed anything that will impart an undesirable flavor to the milk, turnips being specifically barred.

The Brownsville powder factory took in last year about fifteen million pounds of milk, but the receipts this year will be a little lighter, owing to the price of cheese, labor scarcity and other factors. During the third week of July they were running around 33,000 pounds per day, being a heavy drop from the flush.

Condensaries and Silage.

Condensary prejudice against silos is steadily disappearing. The Aylmer district is peppered with them. The following very reasonable clause is the only stipulation regarding silage-feeding which the Aylmer condensary requires in its contract: "If the dairyman feeds ensilage, he agrees to not feed the cows until after they have been milked, and also agrees to see that the milk is delivered to the factory free from any taints or odors that might be caused by bad ensilage, company not agreeing to accept ensilage milk unless the milk is in A-1 condition." No difficulty is found in complying with the latter condition.