Rotation of Crops on a Small Farm.

EDITOR "THE FARMER'S ADVOCATE":

The rotation of crops means that the crops grown on each field are changed from year to year in a regular manner. The majority of successful farmers in our district realize that this is one of the essential factors in getting large and paying returns from the soil. Some of the reasons why the writer found a systematic, short rotation necessary on a small farm of thirty-five acres are.—It helps control weeds and insects; for example, the wireworm and white grub, which are often very numerous in an old timothy and blue grass sod, are controlled. The humus content of the soil is also more easily maintained, and the growth of a legume provided for in each field adds nitrogen. The alternation of deep and shallow-rooted crops gets the most out of the soil without seriously depleting it. The land is also occupied with a crop the greater part of the time, thus excessive leaching of plant food is avoided.

About three-fourths of the total area of thirty-five acres in the farm is a medium grey, sandy loam, with quite a proportion of gravel mixed in it—known as chestnut land. The balance, comprising ten acres, is a black, sandy loam with a sandy subsoil. In short, the soil is productive and early where there is good drainage. The chief difficulty is to maintain and build up its fertility. The previous owner had not followed any systematic rotation of crops, as a result some portions of the land are poor in humus, the outcome of a continuous cropping with cereals. The result, as one might expect, is that there is considerable trouble getting a thick stand of clover.

The class of farming followed one might term as specialized fruit, corn and tobacco culture. Seven acres are devoted to fruit, including four acres of peaches, one of apples, and two acres of raspberries and blackberries. Two acres are taken up by yards, buildings, garden, etc. These nine acres do not enter into the regular rotation.

The area between the trees has been inter-cropped continuously with tobacco and potatoes. These crops seemed to work very satisfactorily for this purpose. During the past four years rye was sown as a cover crop as soon as the tobacco was harvested in September, and likewise the area in early and late potatoes was sown with rye at one bushel per acre. In the spring, when the crop gets about 18 inches high and before it has started to head out, it is plowed under for the succeeding crop. During the four years the ground received two light applications of manure. It is surprising to note how the humus content of the soil, which was formerly in poor tilth and in a run-down state of fertility, has increased each year, until now it is in a good state of cultivation. The 1916 crop of tobacco was better than any previous one; in addition the peach trees have made a splendid growth. No artificial fertilizer was used to supplement the manure and green crops plowed under, but positively clean cultivation was practiced every year.

The two-year rotation followed on the balance of the farm, comprising twenty-six acres, is as follows: The first year cereals, fall rye and oats, seeded with clover at 10 to 15 pounds per acre. This is followed the second year with corn and a small area of such crops as tobacco, potatoes and sugar beets. The manure is applied in the early spring before plowing the clover under in May of the second year. The plan this year is to reserve at least three acres of the ground seeded with clover for hay, and, after the hay has been taken off, use the ground for pasturing and feeding hogs. Finally the sod will be plowed and sown to rye again. This latter-mentioned supplementary change in the rotation the writer has not followed out. Previously the hay for horses had to be purchased, but the idea now is to try to grow the hay on the farm. This short, two-year rotation does not provide for any pasture ground. The writer has found that on a small farm where land is worth from $150 to $175 per acre and where no waste or stony land is available, pasturing is too expensive a method of feeding, especially where the number of stock kept is not large. The whole farm is in one field.

I do not think that a long system of cropping, extending over say five or six years, would be applicable to the specialized line of farming mentioned above. The advantages of the short rotation have been outlined. Two of the difficulties encountered were, an insufficient supply of farmyard manure produced on the farm, which necessitated the buying of as much manure as available in order to build up the fertility, and trouble in getting a real good stand of clover, which is most essential for plowing under.

Essex Co., Ont. W. A. BARNET.

THE DAIRY.

Increasing the Milk Yield by Selection and Better Feeding.

Statistics compiled in the report of the Bureau of Industries give some idea of the trend of the dairy industry for the past few years. With the increased price for dairy products it would be natural to expect the number of dairy cattle to be gradually increasing. However, this is not the case. The number of cows has decreased, although the value of dairy products and the milk yield have increased considerably. It is a good sign to see the average milk yield increasing. It shows that better cows are being kept and that they are being fed to better advantage. In the last five years there has been a decided increase in the acreage devoted to crops like corn for silage, clover hay and oats, which make up a large portion of the dairy herd's ration. It has been found that good silage and clover hay will grow in most parts of Ontario and that they economically and efficiently fill the roughage part of the ration. Sufficient corn is being grown on many farms to furnish silage to supplement the pastures in order that the milk flow will not be interfered with by the summer drought. This provision, together with sowing grain for summer pasture, is having a beneficial effect on the dairy industry, and is to a degree responsible for the average production being increased during the past few years. There is still room for improvement. The extent of feed furnished by the pastures is greatly influenced by the elements. April frosts kill out much of the clover, and dry, hot weather in July is not conducive to rapid growth of grass. Weather which is unfavorable for the best growth of hay and pasture crops is oftentimes satisfactory for the corn crop—at least corn makes rapid growth during hot weather if given sufficient cultivation.

In 1911 there were 1,045,610 cows, according to the Bureau of Industries, with a value of $47,377,588. That year 1,369,856,680 pounds of milk were used in the manufacture of 127,123,016 pounds of cheese. The same year 1,963,768 pounds of butter were made at cheese factories and 13,738,283 pounds manufactured at creameries. In 1915 the number of cows had decreased to 1,022,518, and it is estimated that further decrease took place in 1916. The yield of cheese decreased to 101,712,336 pounds in 1914, but rose to 124,991,026 pounds in 1915, which is about 2,000,000 pounds less than in 1911. There was also a decrease in the amount of butter made at cheese factories, but the amount made at creameries in 1915 was about double that made in 1911. While the number of cows decreased, the estimated value increased from $47,377,588 in 1911 to $62,196,964 in 1915. This increase is partly due to a better class of cows being kept, and partly to the effect of supply and demand which sets the price on many commodities. The increased price of feed makes it more expensive to raise a heifer to the producing stage, so it is only natural to expect that the cost of feed would affect the price of live stock.

During the time mentioned there has been an appreciable increase in the price of cheese so that although there has been a decrease in the amount of cheese manufactured, patrons received over $3,000,000 more for their milk delivered to cheese factories in 1915 than in 1911. The difference in price of butter for the five years in question was not so marked, but the value of the 1916 output will no doubt show a decided increase over that of 1915. Good cows well fed prove more profitable than keeping large herds on a ration which is not conducive to enabling the cows to produce to the limit of their inherent qualities. A larger acreage of corn for silage, clover hay, and special summer pasture crops are factors which tend to the most economical production of milk and butter-fat. The increased acreage each year of corn for silage purposes is an indication of the value of this succulent feed, not only for producing milk but for feeding all classes and ages of stock. Concentrates are also necessary in the dairy cow's ration, but it is sometimes cheaper to buy rather than grow them. If sufficient roughage and concentrates cannot be grown to supply the herd the year round, aim at producing the roughage and purchase some feeds high in protein to bring the ration up to the standard. It is quite a task to figure the cost of a crop when rent of land, seed, labor, etc. are considered, but where it has been done it was found that with an average crop it cost about market price or a little more to grow some of the grains, while clover and silage corn could be grown a little below the ruling market price.

During the past five years dairymen have paid considerable attention to selection of stock and balancing rations. It has resulted in the average production being increased considerably and many records have been made. This work will go on in the future and testing and feeding concentrates according to the milk and fat yield, in order to feed as economically yet efficiently as possible, will be practiced in many stables. In short, a cost system will be introduced on many farms and most time and money will be spent on those crops and cows which prove most profitable. At any rate there is every indication that there will be a greater increase in the average production per cow during the next five years than there has been in the past. Never before was such interest taken in testing work and in endeavoring to break records. This shows that dairymen are tired of sitting down twice a day to draw from ten to fifteen pounds of milk from a cow, when in practically the same length of time they can extract double or treble the quantity from a cow of a little better milking strain and fed a balanced ration, which costs only a trifle more than the ration fed the low producer. As the yield is increased the actual cost of production per hundred pounds is reduced. One cow may cost twice as much as its stablemate to feed and yet produce milk and butter-fat for less money. The aim should be to produce as much milk as possible as cheaply as possible. This cannot be done by use of any old kind of cow, or by feeding timothy hay and straw alone. It costs as much to maintain a poor cow as a good one. Select the cow from high-producing ancestors then give her all the legume hay she will consume, together with a liberal quantity of silage or roots, and govern the amount of grain according to the milk flow. There are a couple of months when the grass is fresh that these feeds are not essential, but when the milk flow drops from shortage of grass, grain, silage, hay or some other supplementary crop should be available. A little more care in selection of breeding stock and suitable feeds in in proper proportion will result in increased profits. Prepare now for the summer months and plan for next winter's feed supply. If there is danger of grass being scarce, sow a few acres of grain for pasture in July and August.

World's Champion Four-year-old Milk Producer.

Mildred Pietertje Abbekerk produced 856.9 lbs. milk and 32.61 lbs. butter in 7 days. For 30 days her record is 3,570.7 lbs. milk and 135.64 lbs. butter. Owned by Roycroft Farm, Newmarket, Ont. W. L. Shaw, proprietor.

POULTRY.

Prepare Now For Eggs Next Winter.

The spring months are the natural time for the production of eggs and practically any kind of hen, whether it be pure-bred or mongrel will shell out fairly liberally for two or three months when moderate to warm weather sets in, and the hens have an opportunity to forage in the barnyard, fields or orchard. After producing a few dozen eggs the majority of hens of the heavier breeds are inclined to go broody. This is but natural with birds in their natural state, but some strains of the domesticated fowls are being selected and bred with a degree of success to eliminate very largely the tendency of the birds to go broody. The Mediterranean class of fowl are practically non-sitters and some of the American varieties are not so much inclined to raise a clutch of chickens as representatives of the breed were a few years ago. This state of affairs is looked upon with satisfaction by many poultrymen, as it means more eggs per bird in a season. These men, however, rely upon artificial means of incubation and brooding to raise pullets to replenish their flocks. With the average farmer it is different. He does not care to invest in an incubator or brooder to raise from fifty to one hundred chicks, consequently he waits biddy's time to go broody. The natural method is very satisfactory and is efficient where only a small number of chicks are raised and a broody hen can be secured early in the season.

The time at which pullets are hatched is a big factor in winter egg production. The birds must reach a certain stage of development before they can start producing. If they are sufficiently matured to commence laying in October or November, all well and good, but if the commencement of laying is delayed until cold weather sets in it is difficult to start the pullets laying until sometime after the New Year. Some breeds mature more quickly than others and feed and care play an important part. Maturity can be forced to a certain degree by feeding. It is generally considered that April is the best month to have chicks hatch, so as to have winter layers. Some prefer setting the eggs so that the hatch will come off early in the month, while others prefer the latter part of April on account of more favorable weather prevailing. Pullets hatched up to the middle of May can be fed to commence laying in October or November, provided they are bred right. There is no getting away from the fact that there is a good deal in the strain of any of the breeds. Heavy layers and practically non-layers are found in every breed of fowl. Although it occasionally happens that late-hatched pullets out-lay the early hatches, it is advisable to set the hens or incubators