

Swine Breeding in Ontario.

In bulletin 149, recently issued by the Ontario Department of Agriculture, it is reported that, taking the Province as a whole, the evident tendency is to produce more hogs of the approved bacon type. In the western part of the Province there is an inclination to use more Berkshires than heretofore for the purpose of crossing, principally with the Yorkshire, although crosses with other breeds are also noted. In the eastern part of the Province the tendency in most sections is to go more to Yorkshires. In one or two counties the Chester Whites find considerable favor, also the Tamworths; although the general impression given by the reports is that these two breeds are both decreasing in popularity. It may be noted, however, that in the counties where the Tamworths are mostly found, there seems to be no general tendency to change; the principal breed in these counties, however, is Yorkshire, the Berkshire being slightly in excess of the Tamworths. It would also appear that while the Yorkshires are increasing in the greatest numbers throughout the Province, the Berkshires are showing a higher percentage of gain.

PRODUCTION.—The general tendency throughout the Province is slightly to increase production. In the eastern part of the Province it has been customary for many farmers to depend upon breeders in their locality for their supply of young pigs for feeding; it has been noted that the demand this spring considerably exceeds the supply, the breeders who usually sell their pigs retaining them this year on account of the good prices for hogs. It is quite probable that the feeders who are short this year may be inclined to breed pigs for themselves another year, which would add considerably to the production in that locality. While the tendency throughout the Province is to increase as above, considerable caution is observed among many individual breeders and feeders not to go into the business too extensively, for fear that over-production might bring prices down to an unprofitable point.

The number of breeding sows was decreased considerably during 1905, while 1906 shows an increase in the number not only over 1905, but also over 1904. The reports indicate that in 21 counties the sows were decreased in 1905, while 13 counties report slight increases, and 8 counties report no change. Comparing 1906 with 1905, 35 counties report increases, while only 2 report decreases, and 5 counties no change in the number of sows. Comparing 1906 with 1904, in 26 counties correspondents report increases in sows, while in 9 counties decreases are reported, and in 7 counties no change.

COST OF FEEDING.—Taking the averages of the cost of feeding, as given in the different counties, the average for the Province for summer feeding is \$4.51 per cwt., and for winter feeding, \$5.38 per cwt. In very few cases do correspondents state that the figures given are the results of actual experiments. In a number of cases no information is given as to whether the figures are the result of experiment or an estimate. In a small number of cases, however, it is stated that experiments have been made and that the figures given are the result of such experiments. It is almost invariably noticed where this is done that for both summer and winter feeding the cost is considerably below the average given above. A number of correspondents, especially in Western Ontario, state that with comfortable quarters and roots, the cost of feeding is no greater in winter than in summer.

THE FARM.

Loss of Fertility by Successive Cereal Cropping.

The chemist at the Minnesota University, Prof. Harry Snyder, who, by the way, is one of the most eminent authorities upon wheat-growing, is the author of a very valuable bulletin, just issued from the Station.

It is in two parts, the first treating of fertilizer tests with wheat and corn, and the second part the loss of nitrogen from soils. We quote as follows from Part II. of the bulletin:

"In former bulletins the influence of different methods of farming upon the nitrogen content of soil has been discussed, and in the case of those that have been exclusively cultivated to grains it was found that larger losses of nitrogen occur. In some of the experiments at the University farm it was learned that the main loss of nitrogen is due to oxidation of the humus, of which nitrogen is one of the constituent elements, rather than to the removal of large amounts by the grain crops. A crop of wheat yielding 30 bushels per acre removes less than 40 pounds of nitrogen per year, but tests have shown that in twelve years of exclusive grain cultivation, the loss of nitrogen in the case of rich soils has approximated 1,600 pounds per acre. Numerous analyses of soils that have been under cultivation for different periods have shown similar losses of nitrogen. In some cases the losses have been very large, while in others, where mixed farming has been followed, they have been comparatively small."

"In order to determine the extent to which losses of nitrogen occur from soils under different experiments upon a number of farms in the state were undertaken in 1895, 1896, and 1897, soils from representative fields were obtained and analyzed. Ten years later samples from the same fields were again taken and analyzed, and the extent to which losses of nitrogen had occurred was determined. The soils were originally sampled by young men who were then students of the Minnesota School of Agriculture; about ten years later other samples were taken by the same persons, and from the same places and fields. It is believed that this gives a reasonable basis for making comparison as to the extent of the losses of nitrogen from these fields."

"At Kennedy, Kittson County, a soil of unusually high fertility contained in 1895 .601 per cent. of nitrogen. It is seldom that a soil is found with such a large amount, but, as pointed out in previous bulletins, the soils of the Red River Valley are excessively rich in nitrogen, except in cases where they have been under long periods of cultivation. After ten years of exclusive grain farming, in which wheat was the main crop produced, the land being one year in fallow, the soil contained .523 per cent of nitrogen, a loss during that time of 2,600 pounds per acre. The wheat crop during this ten-year period removed less than 350 pounds. Hence the heavier losses have occurred through too rapid decay of the humus, of which nitrogen forms a part, and subsequent loss of the soluble nitrogen in the drain waters, and by the formation of volatile compounds of nitrogen. The soil still contains a large amount of nitrogen; in fact, ten times more than is found in some soils that are producing fair yields of wheat. The loss of nitrogen from this soil has not been sufficient as yet to appreciably affect its crop-producing power."

"At Childs, Wilkin County, in the Central Western part of the State, a sample of soil in 1895 contained .422 per cent. of nitrogen, and ten years later .389 per cent. On this farm live stock has been kept, and, in addition to wheat, corn and other crops have been grown. Once during the ten-year period manure, at the rate of eight tons per acre, was applied to the land. No clover or grass has been grown. It is to be noted that from this farm, where the soil is rich in nitrogen, but contains less than the soil in the preceding experiment, the losses have been proportionately less, due in part to the different systems of soil treatment practiced. A loss of .033 per cent. of nitrogen in ten years is equivalent to a loss of nearly 1,000 pounds per acre. It is estimated that one-third of this has been removed by grain crops, and two-thirds have been lost in other ways. The large amount of nitrogen in this and the preceding soil occasionally makes itself manifest in unbalanced crop growth, the nitrogen becoming available in larger proportional amounts than the phosphoric acid and potash of the soil, and, as a result, the crop makes a rank growth of straw and a restricted yield of grain. On some of these rich soils it is often difficult to adjust a satisfactory rotation of crops, as the further addition of organic matter sometimes unfavorably affects the balance of the plant food. These soils are exceedingly rich in nitrogen, and can, without seriously impairing the crop-producing power, sustain further losses, but heavy losses should be prevented, as they are unnecessary, and will, if continued, make themselves felt in an impoverished condition of the soil. If more live stock were kept, and mixed farming were more extensively followed, the losses of nitrogen would be much reduced."

"At Hutchinson, McLeod County, in the central part of the State, soil in 1896 contained .286 per cent. of nitrogen, and ten years later the same field showed .247 per cent. Wheat, oats, corn and barley have been the crops produced during this time. The land has received a dressing of farm manure, but no clover or grass crops have been grown. It is to be observed that, during the ten years, a loss from the soil of .039 per

cent. of nitrogen has taken place, amounting to nearly 1,200 pounds, a much larger loss than the amount required as food for the crops produced. It has been observed in former work that the heaviest losses of nitrogen occur in the case of soils which contain the largest amounts of nitrogen, and that the fermentation and decay of the humus is much slower in soils where the content of humus and nitrogen is comparatively small. It is rich soil that suffers heaviest losses. It is to be noted that, in the case of mixed-grain farming, as in this last example, even where manure is periodically returned to the land, if no grass crops are grown, loss of nitrogen is continually taking place. The soil, however, is still rich in nitrogen, and produces good crops of wheat, but if a rotation were followed in which clover formed an essential part, this loss of nitrogen would be checked."

"A soil in the Chippewa River Valley, in the south-western part of the State, in 1895 contained .363 per cent. of nitrogen. Since that time it has produced wheat, oats and corn, and received one light dressing of manure. At the end of ten years of cultivation the soil contained .24 per cent. of nitrogen, a loss of 12 per cent. Notwithstanding this loss, the soil is still rich in nitrogen, and the crop-producing power has not been affected. Unless clover is grown, the loss will, however, in a few years, make itself felt materially in the reduced grain yields."

"A soil at Lakeville, Dakota County, contained in 1895 .31 per cent of nitrogen. During the subsequent ten years, wheat, oats, corn and clover were grown. The land was manured once during this period, at the rate of 20 tons of manure per acre. Mixed farming has been followed, and only a small amount of grain has been sold from the farm. This system of farming has had a marked effect upon the nitrogen content of the soil, as, after ten years of cultivation, .309 per cent. of nitrogen was found, practically the same amount as at the beginning."

Live stock was the principal product sold from this farm, the income being derived from the sale of sheep, hogs and cattle. Practically all of the crops raised on the farm were fed to the live stock. The farm crops were supplemented by the purchase of a small amount of bran and shorts. Under this system of farming the yield of wheat has been increased, and the last year that wheat was grown an average of 28 bushels per acre was secured. The rotation followed upon this land was wheat, seeded to clover; one year of meadow; followed by corn, to which manure was applied; and then two grain crops following the corn. Because of the production of clover, practically no loss of nitrogen has occurred. Losses of phosphoric acid and potash have been very small. The effect of the farm manure upon the soil has more than offset the small amount of mineral matter lost in the live-stock and farm products which have been sold. In fact, it is largely the action of the farm manure upon the mineral matter of the soil, making it more active and available as plant food, that has resulted in increasing the crop-producing power of the soil."

"Since clover has been a prominent factor in building up the fertility of soils, it occupies a unique and important position among farm crops, and the conditions affecting its growth have naturally received a good deal of consideration from both scientists and practical farmers. Atmospheric nitrogen acquired by the action of the bacteria which are on the clover roots, is the source of the increase of nitrogen in soils where clover has been grown."

"In this State clover failures have been found to be due in most cases to poor seed, lack of proper preparation of the seed-bed, or to lack of available phosphoric acid and potash in the soil. Poor seed has probably more often been the cause of failure of the crop than all other causes combined. The soils of this State are chemically and physically well adapted to the production of clover. The prevalence of the nodules on the roots of clover and the negative results of the inoculation tests show that general inoculation of the soil is unnecessary in Minnesota for the production of clover to restore nitrogen to old grain soils."

SUMMARY.

"The loss of nitrogen from four grain farms in



Britannia of Tweedhill 73153.

Aberdeen-Angus bull, owned by E. A. and G. S. McIntosh, Seaforth, Ont.