

will raise the right kind of hogs and feed them on the Danish principle they will find hog raising to pay them better than anything else on the farm. He recommends that a steady supply be maintained throughout the year in order to meet and satisfy the demands of the English customer.

Crushed Oats, Cut Hay and Straw Better than Whole Oats and Hay.

The London General Omnibus Company have recently completed an interesting experiment with their horses. They divided them off for the purpose of testing the effects of two systems of diet. The first section were given daily 16 lbs. of crushed oats, 7½ lbs. of cut hay, and 2½ lbs. of cut straw. The other section had 19 lbs. of whole oats and 13 lbs. of uncut hay. It was found that the condition of the animals under No. 1 diet had decidedly improved, while at the same time a saving was effected of 2½d. per horse a day. The whole stud is accordingly now placed on the first-named dietary.

Feeding Beans to Hogs.

To the Editor FARMER'S ADVOCATE:

SIR.—There is no doubt but that the extremely low price of beans during the past two or three years has been the cause of large quantities of them being used for feeding purposes. Milch cows, fattening steers, hogs, sheep, and even horses come in for a share. Parties who wintered their horses on boiled beans as grain ration claim great things for them. By converting them into pork, beef, milk, etc., it is claimed that \$1.00 a bushel and better can be made out of them. The usual method of preparing them for feeding (except for sheep, which eat them raw) is to boil them in a large cooking pan made for the purpose, and then mix in bran, shorts or chopped coarse grains, or else boil beans and whole coarse grains together. Although some of the local hog buyers think that beans are the cause of the soft pork which is supposed to come from this district, we can't see it that way, as the hogs we kept for our own using last winter were fed on the above, and better tasting pork we never handled. W. A. MCGEACHY.
Kent Co., Ont.

Corn vs. Peas.

To the Editor FARMER'S ADVOCATE:

SIR.—We are hearing a great deal these days about the comparative merits of pea and corn fed pork, the latter being generally condemned as being too soft and fat. The quality of the carcass, in my judgment, depends not on the feed alone, but also upon the type of hog, determined by its breeding and the system of feeding, a longer period of fattening, with more exercise, tending to produce a greater proportion of lean meat, but probably at a slightly increased cost. I trust our experiment stations will take up this most important question. From its composition we look for fatter pork from a corn diet, but other conditions being right, I do not think, judging from my own observation, that good Canada corn makes soft pork, and it certainly makes the lean meat of a fine bright color. I find in Prof. Robertson's report of 1890, in a comparison of carcasses of hogs given different rations, that the corn-meal-fed meat was brighter than that from peas, was equal to it in firmness of flesh and lard, but the latter had more of a "chalky" color. Shorts and rape ensilage gave the largest proportion of lean to fat, shorts second, barley meal and shorts third, while corn and pea meal were equal at the bottom of the list in that particular. We evidently need more trustworthy light on this subject, because we cannot afford to risk injuring the growing popularity of Canadian bacon by taking any course about which there is doubt, as the FARMER'S ADVOCATE very clearly points out. ESSEX, Ont.

FARM.

The Guelph College Chair of Biology.

The chair of biology at the Ontario Agricultural College which was made vacant by the death of the late Prof. Pantan has been filled by the appointment of Mr. Wm. Lochhead, B. A., late Science Master of London Collegiate Institute. Mr. Lochhead graduated from McGill University in 1885 with first rank honors in natural science, after a brilliant four-year course. After working for a time as a Fellow in the Science Department of Cornell University he filled positions as Science Master in Perth, Galt, Napanee and London Collegiate Institutes, teaching eleven years in all. In all these positions he has proved himself a popular, efficient and painstaking teacher. He returned to Cornell and took the degree of Master of Science in 1895. He has also been an active member of the Ontario Entomological Society, to which he has contributed some special studies. He has withal a particularly practical turn of mind, which will give him peculiar value in connection with his College work.

There has also been created a position on the College staff, of Assistant Biologist, which has been filled by the appointment of Mr. W. Doherty, B. S. A., a graduate of Guelph College in 1895. Since his graduation Mr. Doherty has pursued a course of studies at Cornell University along the lines in which he will be called to assist Prof. Lochhead in his new field of labor.

Winter Wheat Growing in Ontario.

VARIETIES TO GROW—SELECTION AND TREATMENT OF SEED
—SEEDING OPERATIONS.

(BY C. A. ZAVITZ, B. S. A., EXPERIMENTALIST, ONT. EXP. FARM.)

The area now devoted to winter wheat in Ontario amounts to about one million acres annually. This crop occupies more land than any other farm crop grown in this Province, with the exception of the hay and the oat crops, for each of which nearly two and one-half million acres are used each year. The annual market value of the winter wheat grown in Ontario is upwards of ten million dollars, and this amount is likely to be considerably increased in 1898. A large portion of the Province is well adapted to the growth of winter wheat, and this crop will undoubtedly be one of considerable importance to Ontario for many years to come, notwithstanding the facilities for growing wheat in Manitoba and the Northwest. The winter wheat occupies an important place in a regular rotation, admits of the autumn sowing of timothy, tends to a more even distribution of labor throughout the year, supplies straw in abundance, and furnishes a grain which will sell for cash at any season of the year.

The great aim in wheat growing in Ontario should not be so much the sowing of large areas as the adoption of methods of cultivation and the selection of varieties most likely to give the best results. With this end in view, the importance of making a proper selection of seed, of sowing at the right time, and of having suitable conditions of soil, cannot easily be overestimated. It would usually be much better not to sow winter wheat at all than to sow it under conditions not likely to produce a good crop.

Selection of Varieties.—The winter wheat grower who does not give special attention to the varieties which he sows in his fields is certainly not looking after his best interests, as undoubtedly the variety used has a marked influence upon the character of the crop produced. To this fact thousands of farmers who saw the varieties of winter wheat grown side by side under similar conditions in the experimental grounds at the Agricultural College during the present season can testify. The varieties grown on these plots in 1898 varied from 43 to 60 inches in height, from 0 to 92 per cent. in amount of crop which lodged before being ready for cutting, from 2.1-5 to 4.7-10 tons in yield of straw per acre, from 58.2-5 to 65.4-5 pounds in weight of grain per measured bushel, and from 30 to 52 bushels in yield of grain per acre. For heavy, rich soils, which usually produce a large growth of crop which is apt to lodge badly, those varieties possessing short, stiff straw should be selected, while for light, weak soils those varieties with long, heavy straw would likely give the best satisfaction. Generally speaking, the white wheats possess stiffer straw and yield more grain per acre than the red varieties, but the latter produce grain which weighs about one pound per measured bushel more than that produced by the white varieties. The hard, flinty red wheats produce a strong flour, which is comparatively dark in color, while the white wheats produce a white, weak flour. Millers frequently mix the red wheat of Manitoba with the white wheat of Ontario in order to get a flour having a proper combination of both color and strength. The very hard wheats, such as are principally grown in the Canadian Northwest and in the North-western States, are nearly all red in color, while the softer wheats are represented by varieties of both the red and the white classes.

The five varieties of winter wheat which have given the highest average yields per acre among seventy varieties grown for five years on the experimental plots at the Ontario Agricultural College are as follows:

Varieties.	Weight per bu. 5 years.	Yield per acre. 5 years.
Dawson's Golden Chaff.....	59.7 lbs.	52.6 bus.
Early Genesee Giant.....	59.8 "	48.7 "
Egyptian.....	60.6 "	48.6 "
Imperial Amber.....	59.8 "	48.6 "
Early Red Clawson.....	58.9 "	48.5 "

The first two of these are white and the rest are red varieties, and none of them are very hard wheats. In comparison with these varieties the hard wheats yield less grain per acre, but in most cases produce wheat which weighs a little more per measured bushel, as illustrated by the records of the five following varieties of very hard wheat taken from the average of the five years' test:

Varieties.	Weight per bu. 5 years.	Yield per acre. 5 years.
Tuscan Island.....	60.6 lbs.	42.8 bus.
Red Velvet Chaff.....	58.3 "	41.3 "
Longberry Red.....	60.0 "	38.8 "
Kentucky Giant.....	60.0 "	38.8 "
Turkish Red.....	61.5 "	36.8 "

The Dawson's Golden Chaff and the Early Genesee Giant are among the stiffest-strawed varieties, and the Tuscan Island, Longberry Red, Kentucky Giant, and Turkish Red are among the weakest-strawed varieties of all those grown in our experimental grounds within the last nine years.

Selection of Seed.—While it is important to select the varieties which are best adapted to the locality and the soil in which they are to be sown, it is also important to select seed which is of superior quality. Nothing but large, plump seed, true to name, and having a high degree of vitality, should be used. From a test made in our experimental grounds with two varieties of winter wheat in 1897 and again in 1898, we found that large, plump seed produced a yield of 6.3-5 bushels per acre more than that produced from small, plump seed, and 8½ bushels per acre more than that produced from shrunken seed; and also that seed grain which had been broken by the threshing machine gave a yield of only about one-fifth as much as that grown from the large, plump grain. In this experiment the yield of straw and the weight per measured bushel of the grain produced was also greatly influenced by the different selections of seed which were sown.

Treatment for Stinking Smut.—On a good many Ontario farms the winter wheat is badly infested with what is known as the stinking smut, which is also sometimes called hard smut, bunt, or smut balls. This disease produces a very unpleasant odor, and, besides reducing the yield of wheat

per acre, it frequently lessens the market value of the grain fully 25 per cent., and in some cases renders it practically useless for the production of flour. This disease can be so easily and so effectually treated that there is no reason why any farmer cannot practically rid his wheat fields from this trouble in a very short time. An experiment in treating seed wheat for the prevention of smut has been conducted on our experimental grounds during each of three years with very gratifying results. Badly infested seed wheat not treated for smut produced a crop containing an average of 170 smut balls per pound of grain, while that treated with potassium sulphide produced an average of 12 balls of smut, and that treated with either copper sulphate or hot water an average of less than 1 ball of smut per pound of grain. The treatment with copper sulphate was made by immersing the seed for five minutes in a solution of one pound of copper sulphate dissolved in one gallon of water. The hot water treatment consisted in immersing the seed wheat for fifteen minutes in hot water at a temperature of 132 degrees F. For this treatment the water should not go below 130 and not above 135 degrees. Every farmer in smut-infested districts should treat sufficient seed to insure the harvesting of clean grain for seed next year.

Date and Method of Seeding, etc.—The proper time for sowing winter wheat must be largely governed by locality, season, quality and preparation of soil, and variety of grain selected in order to get the best results. A well-kept bare summer-fallow can be sown with safety somewhat later than a soil which has produced a crop the same season, and which is apt to produce a slower growth of winter wheat in the autumn. A well-drained, rich, low-lying soil can also be sown later than a high, light, weak soil, even though the other conditions are similar in both cases. Our experiments in sowing at different dates for six years in succession show that under ordinary conditions we get the best results at the College by sowing during the last week of August or first week of September, and that it is not usually safe to sow later than about the 9th of September.

It would not be wise to sow the same amount of seed wheat per acre under all circumstances, as less seed may be sown on a rich than on a poor soil, early in the season than late in the season, by using a large-strawed variety than by using a small-strawed variety, etc. An experiment which has been conducted at the College by sowing different quantities of seed of each of two varieties of winter wheat for five years in succession shows that 1½ bushels of seed per acre produced an average of 2.3-5 bushels of grain per acre more than when one bushel of seed was used. There was not much difference in the results from using either 1½ or 2 bushels of seed per acre.

If the soil is in a good state of cultivation and the seed is sown carefully, it matters but little whether it is drilled or sown broadcast. In the average of five years' carefully conducted experiments there is a difference of only 1-500 part of a bushel between the two methods of seeding, the same amount of seed being used in both cases.

The average yield of winter wheat per acre throughout Ontario for the past fifteen years is practically 20 bushels per acre. This is a greater average yield than that of any of the wheat-growing States of the American Union. We are pleased with the good record of our Province, and feel confident that with a more general adoption of the very best methods in wheat growing our average yield and financial profit can still be considerably increased.

Distribution of Seed Wheat for Testing Purposes.

The Ontario Agricultural College will send the following three sets of winter wheat varieties free, by mail in one-half pound lots of each variety, to farmers applying for them, who will carefully test the three kinds in the set which they choose, and will report the results after harvest next year. The seed will be sent out in the order in which the applications are received as long as the supply lasts:

SET 1.	SET 2.
Dawson's Golden Chaff.	Dawson's Golden Chaff.
Early Red Clawson.	Imperial Amber.
Early Genesee Giant.	Golden Drop.

SET 3.
Dawson's Golden Chaff.
Bearded Winter Fyfe.
Stewart's Champion.

Each person wishing one of these sets should apply as early as possible, mentioning which set he desires, and the grain, with instructions for testing, and the blank form on which to report, will be furnished free of cost to his address, until the supply of grain for distribution is exhausted.

All communications should be addressed to—
C. A. ZAVITZ, Agricultural College, Guelph, Ont.

Saving the Second Clover Crop.

To the Editor FARMER'S ADVOCATE:

SIR.—As there was an unusual amount of clover throughout the country this season, and being cut early, has since made a very rapid growth, which is now almost ready to be cut again. This will be done in many instances, and as it is difficult to save, a few words giving our method, which has been practiced successfully for a number of years, may be of use to some who are thinking of saving their second cut of clover this year for the first time. Cut as soon as in full bloom. If very heavy it will require turning. It is difficult to describe the degree of dryness or time after cutting at which to turn or rake up, as so much depends on the weather and the thickness of the swath. A very important consideration is having plenty of room in which to store it without packing or tramping it. This may be accomplished by threshing the grain right after harvest, thus making room for the clover. Do not leave the clover in the field to dry perfectly, but haul it in as soon as thoroughly wilted, and better if warm with the heat of the sun. Make a scaffold across the center of the mow, resting on the beams. This may be accomplished with the aid of a few