

this is probably due to the fact that the seasons of 1913 and 1914 being comparatively dry the heavier seeding was favored. It will be interesting to observe the results of this experiment over a longer period of time.

There were 26,717,587 bushels of potatoes produced in Ontario in 1914. This was fully seven million bushels more than in 1913, and eight million bushels more than the average of the past thirty-three years. The four counties in Ontario which produced the largest yields of potatoes in the past year were Simcoe, Middlesex, York and Grey. The question of numerous varieties still is before the Ontario people, and they have not solved the problem sufficiently to eliminate the necessity of importing car loads of potatoes from other provinces. In the enquiries made in 1914 it was found that fifty-one varieties were mentioned one or more times as being the most extensively grown in the different counties. The accompanying table gives the average results of the co-operative experiments with two varieties of potatoes successfully tested on 293 farms in 1914. The Davies' Warrior variety of potatoes made a high record at the College previous to the last two years. In 1913 and 1914 it did not give quite as good results in the experiments at Guelph as it did previously. This was probably due, however, to unfavorable climatic conditions. In 1914 it will be seen from the table that the average yield per acre of the Davies' Warrior throughout Ontario was 153.2 bushels, and of the Extra Early Eureka 95.9 bushels per acre. The latter variety is an early potato of excellent quality, but owing to the lack of yield was not quite as popular as the Davies' Warrior variety.

Varieties.	Compar- value	Per cent.	Meali- of small tubers	ness when cooked	Bushels of whole crop per acre
Davies' Warrior	100	10	92	153.22	
Extra Early Eureka	86	15	100	95.86	

BEAN GROWING IN ONTARIO.

The production of beans in Ontario was fully discussed by J. O. Laird, of Blenheim, Ont. In his remarks regarding the production of beans he stated that the outlook for the bean market in the coming year or two was particularly favorable and that growers could increase the crop with confidence of a fair price. In the preparation of the land the speaker said light soil was better plowed in the spring and heavy soil was better plowed in the fall. The spring-plowed land is rolled down and disced thoroughly before seeding. The seed is sown from a drill, leaving only three tubes open, thus making the rows 28 inches apart. They are harrowed before they appear through the ground, but as they germinate and come above the ground in from four to six days this is sometimes omitted, but the weeder is used frequently after they are up. It is hard on the nerves of the owner to see them gone over in this way, but if he can control his passions for the time and allow the weeder to do its work, the crop will ultimately result in a better production than though that operation had been omitted. The cultivator is then brought into use, and used frequently up till the time the plants bloom. Implements and horses will knock the blossoms from the plants quite easily, so cultivation should be suspended at that time. The harvesting is done with a set of knives attached to a cultivator, and after they have lain on the ground for a little time they are raked in bunches with the side-delivery rake. After about four days in this position they are turned either by hand or with the rake and allowed to remain one or two days further on the ground. In drawing in it has been found that where they are dropped into the mow with slings or fork they fall quite heavily and lie compact in the mow. Mr. Laird said that to overcome this he had put a stout pole across beneath the fork or slings and in dropping over this they are broken up, and it is much easier to mow them away properly.

The threshing of beans is a difficult proposition in a country where bean-growing is not the general crop grown. However, in large bean-growing centres the bean thresher does away with this difficulty, and makes the operation quite easy. In discussion lead by W. R. Reek following Mr. Laird's address it was mentioned that in some places threshers had taken the concave out of their machines and replaced it with one made of wood. However, Mr. Reek's objection to this was that it was too slow and that it was hard on the machine, and altogether unsatisfactory when used on a large scale. It was furthermore brought out in discussion that the dealers now have machinery for cleaning the small beans, and beans colored by inclement weather, from the good grain, but they have no machinery yet to separate the diseased beans from the healthy ones.

Prof. Howitt, from the Ontario Agricultural College expressed the opinion that seed selection

must take a more important place than it has in the past, yet a bean seed may have the disease in it and it will not be noticed. For plot work, the most efficient way is to select the seed while in the pod, as the disease is noticeable there. This is impracticable, of course, in field culture, but unless something is done in the way of purifying seed and exterminating the disease called anthracnose the crop production per acre will be very much lessened.

FINDINGS IN BEE CULTURE.

The operations in the apiaries during the summer of 1914 were unencouraging indeed. Morley Pettit, Provincial Apiarist, opined that unfavorable climatic conditions were responsible for the low production of honey. The co-operative experiments in this work included seven experiments.

Number one had to do with the prevention of natural swarming in extracted honey production by holding the colony together. By this method, swarming was reduced from thirty-five to five per cent., the honey crop per colony being increased. Experiments regarding the prevention of natural swarming in comb-honey production demonstrated that comb honey can be produced without natural swarming.

The prevention of natural swarming by manipulation of hives instead of combs has been carried on, and the results indicate that it is of great advantage to give the queen an extra brood chamber of combs for a week or two before the opening of the clover flow, provided the colony is strong enough to need the extra space.

Results of experiment number four demonstrated that it pays to give hives extra protection when they are taken out of the cellar early in the spring. The extra warmth so obtained is of great value to them in early brood rearing.

Experiment number seven concerned a problem which is very much before apiarists in Ontario, being that of the smoke method of introducing a queen to a full colony, and the results proved entirely satisfactory with two-thirds of the experimenters.

ERADICATING BAD WEEDS.

A committee of the Experimental Union was organized a few years ago to make experiments in the eradication of weeds, the results of which might furnish data from which definite statements might be made regarding the best methods of controlling the various bad weeds. It is recognized that at the present time we have very little reliable information concerning the best methods of dealing with our various bad weeds on different kinds of soils and under various conditions of cultivation and cropping. The weeds selected for the experiments in 1912 and 1913 were Perennial Sow Thistle, Twitch Grass, Bladder Campion and Wild Mustard. Ox-Eye Daisy was added to this list in 1914 and there were in all seven experiments, but no satisfactory results have been obtained from two experiments of the list, Prof. J. E. Howitt, of the O.A.C., has been conducting this work and gave the following report:—

During the past three years, forty-five men co-operated in this work, including eight District Representatives of the Ontario Department of Agriculture. Thirty-six of these carried out the directions for the experiments and reported the results obtained. Summarizing the reports received it is found that seven men tried experiment number one, "The use of rape in the destruction of Perennial Sow Thistle." Three reported the method entirely successful, three only partially successful and one reported it a failure owing to exceedingly dry weather preventing the rape growing properly. One of the men who obtained only partial success did not carry out the directions completely.

Five men tried experiment No. 3, "The use of rape in the destruction of Twitch Grass." Four reported the method a complete success and one reported it a partial success. This man however, did not carry out the direction for the experiment in detail, he sowed the rape broadcast instead of in drills.

Five men tried experiment No. 4, "A method of cultivation and cropping for the destruction of Twitch Grass." The experiment requires two seasons to complete. One man completed the experiment and reports success with the method. At the end of one year one man reported success as far as the experiment had progressed, two men partial success and one man reported it a failure.

Three men tried experiment No. 5, "A method of cultivation and cropping for the eradication of Bladder Campion." All reported that they found the method a complete success.

Fifteen men tried experiment No. 6, "Spraying with iron sulphate to destroy Mustard in cereal crops." Fourteen reported the method a success and one reported but partial success.

In conclusion it may be said that the reports received of these co-operative experiments indicate, first, that good cultivation followed by rape sown in drills provides a means of eradicating both Perennial Sow Thistle and Twitch

Grass. Second, that rape is a more satisfactory crop to use in the destruction of Twitch Grass than Buckwheat. Third, that rape gives better results in the eradication of Twitch Grass and Perennial Sow Thistle when sown in drills and cultivated than it does when sown broadcast. Fourth, that thorough, deep cultivation in fall and spring followed by a well-cared-for hoed crop will destroy Bladder Campion. Fifth, that Mustard may be prevented from seeding in oats, wheat and barley by spraying with a twenty percent solution of iron sulphate without any serious injury to the standing crop or to fresh seedlings of clover.

Points of interest brought out by the experiments in spraying with iron sulphate to destroy Mustard were:

1. The necessity of spraying early, just when the plants are coming into bloom. If the spraying is left too late, the older plants will not be destroyed by the solution, and will form seed, and hence the experiment will not be entirely satisfactory.

2. To spray thoroughly, and with a good pressure. In order to spray thoroughly with an ordinary broadcast attachment, it is necessary to keep the horses walking very slowly. If an attempt is made to cover the ground quickly, some of the plants will be missed, and the results will not be satisfactory.

3. In regard to the cost of spraying with iron sulphate it was found that the cost of material per acre varied from \$1.00 to \$2.40. If the iron sulphate is bought wholesale, it can be purchased at \$1.00 per cwt., so that \$1.50 to \$2.50 per acre should cover the entire cost of spraying.

At the annual Convention of the Experimental Union in 1914, a committee was appointed to make a study of the present weed acts of the different provinces of Canada, and if thought advisable to make suggestions as to how eradication of weeds in Ontario could be made more effectual. A notice was sent out to the various townships of the Province asking in all six questions, and prominently on the front of the sheet this notice appeared, "If this form is not returned it will be taken for granted that your township council has done nothing to carry out the provision of the Ontario Act to prevent the spread of noxious weeds." Of 600 townships circularized in this way only 168 replied. Ninety-two said some attempts had been made to enforce the Act, 49 townships had no inspectors, in 17 townships the work of the inspector was satisfactory, whereas in the majority of cases the Ontario Act regarding the eradication of noxious weeds was not put into force.

Complaints and suggestions accompanied these letters, in which some stated that the inspector should be an employee of the Government with residence outside the townships so he would not be brought under local influence. It was found that an effective inspector loses his job if he is active, because his operations militate against the success of those in power at election time. It was furthermore suggested that sheep be pastured on the roadside, and that it be made compulsory to cut all noxious weeds. Another suggestion submitted recommended that it be made compulsory for every municipality to appoint an inspector.

The committee in question from their considerations submitted the following suggestions: First, by organized effort the Ontario Department of Agriculture, through Institutes, District Representatives and all its various offices should acquaint farmers with the Act, and with the nature and significance of certain noxious weeds.

Second, that an amendment should be made to the present Act to enforce every township council to appoint an inspector, whose duty it would be to enforce said Act.

Third, that the Ontario Government should appoint a county or district inspector, whose duty would be to oversee the work of certain township inspectors in his district.

Fourth, that the present Act should be extended to include other weeds not now mentioned in its list.

It was mentioned in discussion that legislation depends largely upon sentiment and public opinion, and that no legislation is effective until the people, for whom it is enacted, desire that legislation or understand its significance, and owing to the fact that the farmers of Ontario do not now understand the Act, generally speaking, and are not acquainted with the significance and seriousness of the noxious weeds, and their way of reproducing it would be advantageous through a campaign of education to bring the present Act more prominently before them and help them to understand it before any alterations are made.

As Chairman of this committee, Prof. J. E. Howitt, of the O. A. C., has done efficient service, and the committee was advised to go on and make a further study of conditions relative to this Act.

THE FUTURE OF HORSE BREEDING.

The future of horse breeding has engaged the attention of a good many farmers, and at the