

have them for three counties—Niagara, Orleans, and Wayne. They are given below:

THREE-YEAR AVERAGE PER ACRE.			
Pastured with	Niagara.	Orleans.	Wayne.
Hogs	138	312	271
Sheep	129	308	216
Cattle	117	153	159
Not pastured.	141	217	185

CATTLE PASTURING THE MOST INJURIOUS.

What do these figures show us? In the first place, they all show that the orchards pastured with cattle give poorer returns than those not pastured at all. The reason for this, I think, is evident. The cattle run against the trees and break the bark and branches, and browse the bark and branches as far as they can reach, and do considerable damage. The little expense which would be incurred in securing pasture elsewhere will be saved many times over by preventing the injury to the trees. Sheep, we see, give better returns than no pasture at all. The reasons are again evident. In the first place, sheep receive most of their feed outside of the orchard, and the manure dropped is a constant addition to the humus and fertilizer. In the second place, sheep graze grass close to the ground, preventing excessive evaporation from the surface on the blades of grass.

HOGS THE BEST STOCK FOR AN ORCHARD.

Hogs give the best results. As in the case of the sheep, hogs receive most of their feed outside, and the manure dropped adds to the fertilization. Hogs eat the apples which fall early in the summer, which apples fall because they are wormy, and thus hogs do a great deal of good in destroying insects.

Again, most important of all, a hog-pastured orchard is really a cultivated orchard. If the hogs are allowed to root, they break and turn over the sod under the trees wherever the apples are, and in the course of two years will have completely turned over the sod of the whole orchard. This is cultivation which differs only in the kind of machinery. In the one case the machinery is the hog, in the other case the machinery is the cultivator. The comparison of this table with the one preceding is interesting. We see that, although hogs give the best results, often these results do not equal the results of tillage. As a matter of fact, 70 orchards in Orleans Co., which were pastured with hogs and sheep, only one in five gave yields equal to the average yield of the tilled orchard.

TOO MANY UNCULTIVATED ORCHARDS.

I do not want you to think that I believe that all orchards ought to be tilled, as the tables might indicate. It is impossible and impracticable to till all orchards, because some might be on soil which could not be tilled, or might be on hillsides where tillage would be impossible or not advisable. Again, some of the sod orchards pastured with hogs, or mulched, give results which, considering the expense of tillage, would be better than the results from tillage of the same orchard. Our work, however, enables us to say that, taking into consideration the expense of tillage, extra cost of barrels, labor, handling, etc., four-fifths of the orchards which are now in sod in these counties would bring up the net results if they were tilled.

Our tabulation on spraying is given below:

SPRAYED AND UNSPRAYED ORCHARDS.				
All Orchards.				
	Niagara.		Orleans.	
	Bush.	Income	Bush.	Income
Unsprayed.....	261	\$ 45	245	\$ 92
Sprayed once	364	93	307	116
Sprayed twice.....	509	101	343	127
Sprayed 3 times ...	577	171	322	139
Sprayed 4 times ...	390	183	569	211
Well-cared-for Orchards.				
	Niagara.		Orleans.	
	Bush.	Income	Bush.	Income
Unsprayed.....	266	\$ 95	328	\$103
Sprayed once	355	146	346	139
Sprayed twice.....	422	147	374	143
Sprayed 3 times ...	440	201	414	184
Sprayed 4 times ...	285	226	569	211

This table shows us, considering well-cared-for orchards only, that those in Niagara County which were sprayed four times gave more than twice as much income per acre as those which were unsprayed; and in Orleans County we have the same results. It seems to me that this proves, without the shadow of a doubt, the beneficial results of spraying.

These are not experimental figures; they are the results of a comparison of the results the fruit-growers have obtained in the last eight or ten years in their orchards, whatever their methods of treatment. The figures are astonishing, scarcely believable, and yet they are facts. We cannot doubt their accuracy.

As I said before, there are four factors entering into the good care of an orchard—tillage, spraying, fertilizing, pruning. None of these should be omitted. In some cases, one might be omitted without seriously affecting the results, or perhaps one might replace another. For example,

tillage might take the place of fertilizing, or we might use fertilizing instead of tillage. Often a grower receives good results from one of these factors, and he immediately becomes convinced of the importance of this factor, makes it a hobby, and loses sight of the others. Such practices are wrong. A proper balance must be maintained between all four of these factors, if the fruit-grower is to be successful. If he maintains a proper balance he will be successful.

GOOSEBERRY MILDEW CONQUERED.

The control of mildew has long been a live question with gooseberry-growers in Canada. A sure and certain remedy that can be applied at low cost and with reasonable labor, has been looked for as a boon to gooseberry-growers.

"I have conquered gooseberry mildew completely," was the cheering information Joseph Tweddle, one of the best-known fruitmen of the Niagara district, had for a representative of "The Farmer's Advocate" at Toronto during the Horticultural Exhibition and conventions. "For four years in succession," continued Mr. Tweddle, "I have been successful in keeping this enemy to successful gooseberry culture under control. These four years of experimenting have resulted in my going back to the growing of English varieties. The remedy is our old reliable remedy for orchard pests—the lime-sulphur wash. One application of this mixture, prepared as for San Jose scale, and put on as the buds are swelling, thoroughly covering all parts of the bush, will do the work. I simply blundered onto this remedy by wholesale use of lime-sulphur for any orchard injury. I had a few bushes that had been infested for years, and one day gave orders to have some lime-sulphur left from the orchard work put on, knowing that it would do no harm. The result was marvellous. That was four years ago, and I have not seen mildew on those bushes since. To prove that the treatment would do the work every season, it has been used each spring since with equally satisfactory results."

"But why do you wish to grow English gooseberries?" was asked the fruit-grower.

"Because they are more prolific bearers than the American varieties," was his reply. "With rich soil, a liberal use of barnyard manure, and annual pruning, especially in the center of the bush, opening it out so as to allow circulation of air, but not to admit too much sun, the yield will average 50% higher, and in many cases will run to 100% or more of an increase. The berries are twice or thrice as large, and there is no comparison for dessert or culinary purposes. They are particularly desirable for commercial jam-making, to supply a rapidly-growing demand in the Canadian Northwest."

"In addition to greater productiveness, we find higher prices. As a rule, buyers will pay 20% to 25% more for English berries. It is not impossible, with proper care, to have gross returns of \$1,000 from an acre. I have seen bushes bear two 11-quart baskets each. The price runs from 60c. to \$1.00 a basket, and I have seen them bring \$1.25."

"What do you consider the most advisable system of planting gooseberries?" was the next question.

"I want my rows far enough apart to use a two-horse cultivator between them," said Mr. Tweddle. "Besides, I prefer to have gooseberry rows run north and south, so that the ground will be shaded as much as possible in the hot part of the day. A temperature of 85° in the shade is not suitable for gooseberry production. As to distance apart, I consider rows ten feet apart and bushes 3½ to 4 feet apart good planting. With the rows ten feet apart, closer planting in the row can be practiced, as the roots can forage widely in the row spaces."

"In the spring, as early as the soil is in fit condition to permit of cultivation, a thorough working of the soil is desirable, forming a fine mulch to a depth of about three inches. Then I aim to mulch under the bushes with coarse barnyard manure or straw. If I find it necessary to use the latter, I take the precaution to apply well-rotted manure the previous autumn, and have it well worked into the soil before the straw is put on. No further cultivation is required under the bushes until the crop is harvested. Very few weeds come in the shaded rows, and if they do appear it is an easy matter to remove them with a scythe. The land between the rows can be cultivated frequently to maintain a dust mulch and keep down weeds. Such treatment, with reasonably favorable weather conditions, practically ensures a good crop."

NATIONAL APPLE SHOW.

Premiums amounting to \$35,000 are announced for a National Apple Show, to be held at Spokane, Wash., on December 7th to 12th. Exhibits will be present from many States of the American Union, from England, Scotland, Wales, Germany, France, Denmark, Japan, and Canada. For carloads, the prize is \$1,500. Canadians will compete for this, as well as for class prizes throughout.

THE FARM BULLETIN

LECTURE PROGRAMME AT ONTARIO WINTER FAIR.

The special feature of the addresses this year at the Ontario Provincial Winter Fair, to be held in Guelph, December 7th to 11th, 1908, will be the discussion of the causes, prevention and treatment of the common ailments of the different classes of live stock.

The time at which the various subjects are to be discussed will be as follows:

Tuesday, Dec. 8th, 8 p. m.—Poultry: "Fattening Chickens and Demonstration in Trussing"; "Brooding and Rearing Chickens," illustrated by Stereopticon Views; "Winter Egg Production, and the Production and Market for Broilers."

Wednesday Morning, Dec. 9th.—Dairy: "Pasteurizing of Whey"; "The Feeding Value of Pasteurized Whey"; "Cleanliness of the Milk Supply"; "Stock-owning Associations."

Wednesday Afternoon, Dec. 9th.—Cattle: "Cause, Prevention and Treatment of Common Ailments." Attention will be given, among others, to the following: "Milk Fever," "Contagious Abortion," and "Indigestion."

Thursday Morning, December 10th.—Horses: "Cause and Prevention of Common Ailments." Among others, attention will be given to the following: "Indigestion," "Colic," "Lymphangitis," "Heaves," "Azoturia," and "Joint Ill."

Thursday Afternoon, December 10th.—Sheep and Swine: "Cause, Prevention and Treatment of the Common Ailments of Sheep." Attention will be given, among others, to the following: "Scab," "Worms," "Indigestion," "Growing and Handling Wool," "Outlook for the Swine Industry in Ontario."

Thursday Evening, December 10th.—Seeds: "Alfalfa-growing in Ontario"; "Identification of Weeds," illustrated by Stereopticon Views.

FREE COURSES IN AGRICULTURE.

During January and February, the regular work of the Ontario Agricultural College is supplemented by short courses, intended to meet the requirements of busy farmers, who are unable to get away from home at any other season of the year. Last year nearly five hundred men attended these special classes. For these short courses there is absolutely no charge, and no examination. Each day will be spent in practical work, as follows: judging the seeds of the principal farm crops; examining and identifying the weed seeds commonly found in grass and clover seed; judging the various breeds of live stock, including horses, sheep, swine and poultry; judging, grading and packing apples, pears, peaches, etc.; cultivation, storage and marketing of vegetables, making and packing butter and cheese and testing milk, cream, etc.

Reduced rates are obtainable on all railroads. The average personal expense, including travelling and living expenses, should not exceed \$12.00 to \$15.00 for a period of two weeks. This is an opportunity no enterprising farmer should miss. Particulars can be had by writing President Creelman, O. A. C., Guelph, Ont.

The dates for the free courses this winter have been arranged as follows:

Stock and seed judging—Jan. 12 to 23.
Poultry-raising—Jan. 12 to Feb. 11.
Poultry convention—Feb. 8 to 11.
Horticulture—Jan. 25 to Feb. 6.
Dairying—Jan. 4 to March 31.

DEATH OF SIR HENRI JOLY DE LOTBINIERE.

In the death of Sir Henri Joly De Lotbiniere, in the 79th year of his age, which occurred at his home in the City of Quebec, on November 16th, there has passed from the scene of earthly activities one of the finest characters that ever graced public life in Canada. He was a model citizen, honored and beloved by all who knew him. A statesman of the highest type, he took an intelligent interest in agriculture and horticulture, and, wherever he went, was active in the promotion of any movement for tree-planting and forest preservation, on which topics he wrote and spoke with authority. Sir Henri was born and educated in France. At the age of 32 he was elected to the Canadian Parliament, sitting for the County of Lotbiniere, and for over forty years he remained in public life, holding at various periods the premiership of the Province of Quebec, a portfolio in the Dominion Government as Minister of Inland Revenue, and the Lieutenant-Governorship of British Columbia, but his principal contribution to public life was as an apostle of tolerance, and a promoter of harmony and goodwill between the French and English elements of the population. He was a devoted member of the Church of England, having served on many important committees of that denomination.