DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
DOMINION EXPERIMENTAL FARMS

EXPERIMENTAL STATION

KENTVILLE, N.S.

REPORT OF THE SUPERINTENDENT

W. SAXBY BLAIR

FOR THE YEAR 1924

Printed by authority of the Hon. W. R. Motherwell, Minister of Agriculture,
Ottawa, 1926

TABLE OF CONTENTS

DOMINION EXPERIMENTAL STATION, KENTVILLE, N.S.

REPORT OF THE SUPERINTENDENT, W. S. BLAIR

THE SEASON

The winter of 1923-24 was about normal in temperature, snowfall, and hours of sunshine. January was considerably milder than usual so that sleighing was possible for only about two-thirds of the month. February temperature was below normal, with more sunshine than usual. The month was steadily cool, and there was sufficient snow on the ground for good sleighing and satisfactory work in the woods. The lowest temperature of the winter was in January, 11 degrees below zero. Only five below-zero temperatures were registered during the winter, (—2, December 22; —2, January 22; —11, January 27; —2, February 10; —4, February 20). March was slightly warmer than usual but with less sunshine. The snow began to disappear after the 18th of the month, but occasional snowfalls occurred until well on in April, followed by warm days, so that the ground was alternately bare and slightly covered for about a month. The last snowfall of the season, six inches, occurred April 19 and 20. This was melted by a heavy rain on the 23rd. The ground was too cold and wet for ploughing, except in favoured locations, until the first week in May. The first seeding, oats, was done May 5. May temperature was higher than usual, with much less than the normal precipitation. This lack of rain allowed farming operations to be undertaken in good time, but most seeds were slow in germinating, and crops generally were beginning to suffer for lack of moisture towards the last of the month. This condition was accentuated during the first half of June, only .34 inches of rain having fallen up to the 15th of the month, but the latter part of the month was warm, with showers every few days, and was practically ideal growing weather. At the end of the month crops were as far advanced as usual, corn and roots probably being further ahead. July precipitation was light, but a good hay crop was harvested. August rainfall was considerably heavier than usual. September and October conditions were about normal, allowing crops to be harvested in good time. The first noticeable frost occurred on the 16th of October, when four degrees was registered. November was slightly warmer than usual, and ploughing was possible till the last of the month. Winter set in on the 15th of December, and there was fair sleighing the rest of the month.

METEOROLOGICAL RECORDS AT EXPERIMENTAL STATION, KENTVILLE, N.S., FOR THE YEAR 1924

1924 Month	Temperature, Fahrenheit				Precipitation						Sunshine		
	Highest	Lowest	Mean	Mean average 1914 to 1923, inclusive	Rainfall		Snowfall		Total precipitation, inches	Average precipitation, 1914 to 1923, inches	Days	Hours	Average hours, 1914 to 1923, inclusive
					Days	Inches	Days	Inches					
January	49·0	−11	22·34	19·24	11	2·44	9	26·25	5·06	3·41	18	86·95	79·20
February	41·0	− 4	17·41	19·05	1	0·03	6	13·25	1·35	3·11	24	121·35	98·52
March	49·0	10	30·62	28·45	6	0·38	12	12·50	1·63	2·93	16	91·05	136·44
April	58·0	20	37·18	39·17	11	1·81	7	11·0	2·91	2·79	27	136·10	143·60
May	77·0	28	51·0	49·38	8	0·67	.....	.....	0·67	1·98	29	224·85	200·62
June	83·0	37	58·76	58·80	13	4·44	.....	.....	4·44	2·87	27	219·0	208·05
July	89·0	44	67·45	65·29	7	0·99	.....	.....	0·99	2·97	31	284·15	213·11
August	90·0	40	64·90	64·18	11	6·36	.....	.....	6·36	3·04	27	200·90	211·65
September	77·0	30	55·81	57·46	9	2·02	.....	.....	2·02	3·26	28	186·10	184·38
October	72·0	23	47·49	48·56	8	3·00	.....	.....	3·0	4·12	27	157·95	151·11
November	66·0	8	38·61	36·40	9	1·80	4	9·50	2·75	4·15	21	94·10	79·96
December	58·0	− 1	22·88	25·03	5	1·58	10	12·25	2·81	3·89	19	47·55	58·39
Totals or averages	67·4	18·6	42·87	42·58	99	25·52	48	84·75	33·99	38·52	294	1,850·55	1,765·03

EXTREME HIGHEST, EXTREME LOWEST, AND MEAN TEMPERATURES AT EXPERIMENTAL STATION, KENTVILLE, N.S., 1914 TO 1924, INCLUSIVE

Month	1914			1915			1916			1917		
	Highest	Lowest	Mean	Highest	Lowest	Mean	Highest	Lowest	Mean	Highest	Lowest	Mean
January	53	− 3	19·68	56	− 4	22·83	51	− 4	22·36	45	−15	18·85
February	43	−17	14·19	54	− 9	25·61	49	−19	18·77	49	− 7	18·33
March	50	11	30·72	50	9	26·81	55	− 2	22·09	57	9	28·52
April	61	16	36·80	64	21	39·36	57	21	39·81	62	22	38·40
May	84	23	50·72	71	28	46·14	70	29	49·07	63	30	43·63
June	82	32	56·20	81	33	56·81	,9	37	59·16	83	34	60·36
July	85	39	62·88	82	46	64·00	88	41	66·04	87	46	65·93
August	87	40	63·06	81	39	63·86	87	42	64·91	87	42	67·67
September	88	35	57·65	83	30	57·25	84	33	58·93	78	31	53·94
October	78	25	49·55	72	28	49·05	76	24	48·96	76	29	48·69
November	65	5	36·41	61	22	39·16	o4	3	36·01	55	10	33·01
December	56	− 6	22·89	54	11	29·14	52	2	27·83	51	− 7	19·66

Month	1918			1919			1920			1921		
	Highest	Lowest	Mean	Highest	Lowest	Mean	Highest	Lowest	Mean	Highest	Lowest	Mean
January	43	− 5	18·16	53	− 7	24·20	38	−19	10·10	52	− 3	21·45
February	52	−13	17·49	40	9	25·44	52	−24	21·80	43	−11	18·28
March	52	−13	24·44	55	8	33·32	67	−10	31·09	71	10	35·95
April	66	16	38·74	61	22	40·43	61	17	38·14	79	13	43·61
May	88	26	53·97	75	27	50·17	81	24	48·71	84	29	51·12
June	83	34	57·58	87	34	59·58	84	34	58·14	84	35	58·84
July	88	45	65·43	86	37	65·03	90	43	66·05	91	38	69·43
August	90	37	61·80	80	41	63·17	91	42	67·95	88	40	62·20
September	81	34	58·56	82	31	58·01	82	33	58·55	91	29	59·06
October	74	28	48·60	66	20	45·25	78	30	50·91	76	20	49·06
November	58	15	35·85	60	15	37·63	63	15	35·65	67	12	33·84
December	57	3	27·32	50	−11	20·81	49	− 1	27·41	54	− 1	24·12

HIGHEST, LOWEST AND MEAN TEMPERATURES—Continued

Month	1922			1923			1924		
	Highest	Lowest	Mean	Highest	Lowest	Mean	Highest	Lowest	Mean
January	49	− 9	18·15	51	−18	16·71	49	−11	22·34
February	48	−22	19·76	39	− 9	10·87	41	− 4	17·41
March	51	3	30·91	47	− 6	20·69	49	10	25·48
April	66	21	39·83	61	5	36·63	58	20	37·18
May	80	28	50·98	76	30	49·35	77	28	51·00
June	87	41	63·78	86	38	57·63	83	37	58·76
July	86	44	65·01	85	40	63·11	89	44	67·45
August	85	45	66·56	80	38	60·66	90	40	64·90
September	81	26	56·16	78	31	56·56	77	30	55·81
October	75	25	47·25	73	23	48·35	72	23	47·49
November	55	17	34·21	62	18	42·23	66	8	38·61
December	46	−14	20·03	57	− 2	31·18	58	− 1	22·84

RECIPITATION (RAINFALL AND SNOWFALL) RECORDED AT EXPERIMENTAL STATION, KENTVILLE, N.S., 1914 TO 1924

Month	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	Average, 1914 to 1924, inclusive
	inch.	inch.	inch.	inch.	inch.	inch.	inch.	inch.	inch.	inch.	inch.	inch.
January	2·80	4·75	1·80	3·93	2·18	4·73	2·91	2·01	3·18	5·87	5·06	3·56
February	2·59	1·25	4·16	3·69	3·44	1·94	4·83	4·22	2·96	2·12	1·35	2·96
March	3·73	0·95	4·06	3·01	2·17	2·38	3·04	3·02	2·35	4·59	1·63	2·81
April	2·33	1·70	2·34	4·39	0·89	3·28	3·66	3·91	2·46	3·24	2·91	2·83
May	1·46	2·50	1·78	2·92	1·21	2·48	1·69	1·91	1·51	2·34	0·67	1·86
June	4·20	2·43	3·69	2·93	2·30	2·25	2·98	1·93	2·48	3·54	4·44	3·01
July	1·45	1·52	2·66	3·65	4·99	2·77	2·70	2·04	5·63	2·32	0·99	2·79
August	2·58	3·84	0·86	5·15	1·72	2·21	3·58	0·93	5·56	4·03	6·36	3·35
September	3·65	0·85	1·74	3·72	8·06	3·13	2·99	1·82	2·71	3·93	2·02	3·15
October	1·90	3·88	5·38	8·54	4·36	3·93	0·69	3·10	6·38	3·05	3·00	4·02
November	3·22	2·81	3·28	3·03	4·14	7·27	3·30	6·88	2·37	5·60	2·75	4·06
December	2·58	3·87	4·50	4·49	3·25	3·56	3·90	3·26	4·81	4·74	2·80	3·79
Totals	32·49	30·35	36·25	49·45	38·71	39·93	36·27	35·03	42·40	45·37	33·98	38·19

HOURS OF SUNSHINE AT EXPERIMENTAL STATION, KENTVILLE, N.S., 1914 TO 1924, INCLUSIVE

Month	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	Average, 1914 to 1924, inclusive
January	91·6	73·4	93·4	84·2	81·6	53·50	59·85	55·60	105·85	93·05	86·95	79·91
February	118·7	99·6	60·3	95·5	103·3	95·00	68·70	112·15	100·80	131·20	121·35	100·60
March	118·2	103·1	120·4	166·3	149·9	130·10	123·45	129·20	184·35	139·50	91·05	132·32
April	196·0	107·4	139·9	107·6	203·7	118·00	128·55	133·60	117·70	183·55	136·10	142·92
May	189·6	160·9	186·8	101·7	224·6	200·40	251·60	238·90	233·75	218·05	224·85	202·83
June	250·3	180·2	160·5	176·2	214·9	244·85	232·65	214·20	205·65	201·15	219·00	209·05
July	238·9	215·7	205·7	195·6	197·8	221·95	260·05	207·70	180·05	207·65	284·15	219·57
August	211·1	168·3	221·2	202·1	234·2	191·75	207·25	255·40	181·30	243·95	200·90	210·68
September	173·8	194·0	174·6	214·7	165·8	158·45	169·50	206·05	219·80	167·10	186·10	184·54
October	158·2	171·1	166·0	157·9	115·5	124·50	182·45	166·40	117·80	151·40	157·95	151·74
November	109·7	65·5	108·7	78·1	80·5	57·25	101·05	47·80	57·35	93·70	94·10	81·25
December	85·1	56·4	50·6	33·5	56·2	83·80	51·95	55·55	64·30	46·60	47·55	57·41
Totals	1,941·2	1,595·6	1,688·1	1,613·4	1,828·0	1,679·55	1,837·05	1,822·55	1,768·70	1,876·90	1,850·05	1,772·82

ANIMAL HUSBANDRY

CATTLE

The Shorthorn herd at the end of the year consisted of 1 herd bull, 24 cows, 5 two-year-old heifers, 12 yearling heifers, 12 heifer calves and 3 bull calves, a total of 57 head. Nineteen head were disposed of during the year, 5 young cows and one yearling heifer being sold for beef, one cow and 11 bull calves for breeding, and one cow killed because of having developed a bad case of actinomycosis.

The general care of the herd is much the same from year to year. The aim is to develop a herd of dual-purpose or milking Shorthorns, which may be defined as cows that produce a medium quantity of milk as dairy cows and that will sell at a good price for beef animals when fattened. A dual-purpose breed is one in which these characteristics are fixed so that they are transmitted with reasonable certainty.

With this end in view the herd is cared for along dairy lines. Meal is fed according to milk-production, and roughage according to the capacity of the cow. All normal cows are entered for Record of Performance testing, which is used as a standard for retaining cows in the herd. The poorest producers are culled out as soon as they prove of no value in building up the herd. Both male and female calves are reared by hand; they are fed skim-milk until about six months of age. Meal, hay, roots, and ensilage are fed in such quantities as will keep them in good growing condition. Cleanliness, fresh air, and sunlight are all provided.

The regular meal mixture for the greater part of the year was made up of 300 pounds of bran, 200 pounds of ground oats, 200 pounds of linsed oil meal, and 100 pounds of cotton-seed meal, the average price of this mixture being $2.15 per cwt. Averages prices charged for other feeds were $10 per ton for hay, $4 for roots and ensilage, $4 for green feed, and $2 per month for pasture.

The tabulated data show the production of the seventeen cows which completed their lactation periods during the year and the feed consumed by them. This lot is made up of 5 mature cows, with an average production of 5,432.5 pounds of milk; 7 four-year-old cows, with an average of 5,794.2 pounds; 2 three-year-old cows, with an average of 4,179.3 pounds; and 3 two-year-old cows, with an average of 4,718.1 pounds. The average production of the whole herd was 5,307.9 pounds of milk, and 260.73 pounds of fat.

AMOUNT AND VALUE OF MILK PRODUCED BY SHORTHORN COWS WHICH COMPLETED LACTATION PERIODS DURING THE YEAR ENDING DECEMBER 31, 1924

Name of cow	Age in years	Date of dropping calf	Number of days dry	Number of days milking	Total milk	Daily average yield of milk	Average per cent fat	Butter produced	Value of butter	Value of skim-milk	Total value of product
					lb.	lb.	per cent	lb.	$ cts.	$ cts.	$ cts.
Kentville Jessamine	10	April 23, 1924	175	235	7,501·6	31·92	4·54	401·04	146 57	14 32	160 89
" Victoria	10	April 17, 1924	113	135	3,536·1	26·19	4·00	166·80	58 28	6 78	65 06
" Fairy	6	May 29, 1923	90	278	4,428·4	15·93	4·23	220·30	82 51	8 48	90 99
" Fairy 2nd	6	Mar. 21, 1924	115	247	5,113·0	20·70	4·63	278·70	103 02	9 75	112 77
" Susan	5	June 13, 1923	78	278	6,583·3	23·68	4·20	325·43	123 35	12 61	135 96
" Victoria 3rd	4	June 19, 1923	94	279	6,483·1	23·23	4·04	308·29	117 66	12 44	130 10
" Lady	4	Nov. 24, 1923	90	373	10,224·2	27·41	3·96	476·83	188 40	19 63	208 03
" Meadow Flower 2nd	4	Dec. 25, 1923	69	261	4,877·2	18·68	3·90	224·54	88 75	9 37	98 12
" Jessamine 4th	4	Feb. 17, 1924	123	214	5,118·9	23·92	3·77	227·57	86 38	9 85	96 23
" Jessamine 5th	4	Jan. 7, 1924	145	211	3,377·9	16·00	4·01	199·85	62 53	6 41	68 94
" May 2nd	4	Feb. 23, 1924	146	233	5,716·7	24·53	3·97	267·40	101 66	10 97	112 63
" Lass	4	May 17, 1924	54	252	4,761·5	18·89	4·17	233·95	87 44	9 12	96 56
" Victoria 4th	3	Dec. 24, 1923	96	207	3,805·0	18·38	3·85	172·52	68 84	7 31	76 15
" Jessamine 6th	3	April 6, 1924	122	252	4,553·7	18·07	3·92	210·05	77 66	8 75	86 41
" Victoria 6th	2	Jan. 11, 1924	First calf	311	6,230·5	20·03	4·20	308·30	119 95	11 93	131 88
" Lady 2nd	2	Dec. 27, 1923	"	273	3,563·8	13·05	4·27	179·34	69 40	6 82	76 22
" Victoria 7th	2	Jan. 27, 1924	"	320	4,360·0	13·62	4·51	231·56	88 99	8 32	97 31
Average	5	.....	107	256	5,307·9	20·84	4·17	260·73	98 31	10 17	108 48

FEED CONSUMPTION AND COSTS FOR SHORTHORN COWS WHICH COMPLETED LACTATION PERIODS DURING 1924

Name of cow	Age in years	Date of dropping calf	Amount of meal consumed	Amount of roots and ensilage consumed	Amount of hay consumed	Amount of green feed consumed	Months on pasture	Total cost of feed	Cost to produce 100 pounds of milk	Cost to produce one pound butter	Profit on one pound butter, skim-milk disregarded	Feed profit on cow
			lb.	lb.	lb.	lb.		$ cts.	$ cts.	cents	cents	$ cts.
Kentville Jessamine	10	April 23, 1924	2,675	14,010	4,292	1,605	1	113 06	1 50	28 19	8·36	47·83
" Victoria	10	" 17, 1924	1,132	7,590	2,072	285	2	53 42	1 51	32·02	2·92	11 64
" Fairy	6	May 29, 1923	1,815	13,255	3,690	1,680	½	89 16	2 01	40·47	−3·02	1 83
" Fairy 2nd	6	Mar. 21, 1924	1,897	11,560	3,462	1,605	2	88 39	1 72	31·71	5·25	24·38
" Susan	5	June 13, 1923	2,814	13,215	3,486	1,680	½	109 83	1 66	33·74	4·16	26 13
" Victoria 3rd	4	" 19, 1923	2,983	13,825	3,698	1,680	½	115 80	1 78	37·56	0·60	14 30
" Lady	4	Nov. 24, 1923	3,693	13,680	4,337	1,550	2	140 73	1 37	29·51	10·00	67 30
" Meadow Flower 2nd	4	Dec. 25, 1923	1,699	10,840	3,017	845	2	77 93	1 59	34·70	4·82	20 19
" Jessamine 4th	4	Feb. 17, 1924	2,026	11,140	3,159	805	2	86 76	1 69	38·12	−0·17	9 47
" Jessamine 5th	4	Jan. 7, 1924	1,603	12,440	3,115	150	2	80 17	2 37	40·06	−8·78	−11 23
" May 2nd	4	Feb. 23, 1924	2,125	11,425	3,631	1,605	2	92 51	1 61	34·59	3·42	20 12
" Lass	4	May 17, 1924	1,644	9,050	2,901	1,605	2	74 90	1 57	32·01	5·36	21 66
" Victoria 4th	3	Dec. 24, 1923	1,623	10,840	2,927	1,200	2	76 17	2 00	44·15	−4·25	− 0 02
" Jessamine 6th	3	April 6, 1924	1,968	12,210	3,633	1,605	2	92 08	2 02	43·83	−6·86	− 5 67
" Victoria 6th	2	Jan. 11, 1924	2,217	7,105	2,730	1,605	2	82 90	1 33	26·88	12·02	48 98
" Lady 2nd	2	Dec. 27, 1923	1,459	5,720	2,199	1,565	1	59 89	1 68	33·39	5·30	16 33
" Victoria 7th	2	Jan. 27, 1924	1,455	8,495	2,927	1,605	2	69 06	1 58	29·82	8·61	28 25
Average	5	.....	2,048	10,964	3,251	1,334	1·6	88 39	1 70	34·75	2·81	20 09

RECORD OF PERFORMANCE

The Record of Performance work was begun in 1916, and has been continued to date. Six cows qualified in the R.O.P. during the year, as follows:—

Name of Cow	Age	Pounds of milk	Pounds of fat
	years		
Kentville Susan	5	6,584	268
Kentville Victoria 3rd	4	6,483	279
Kentville Lady	4	10,174	413
Kentville May 2nd	4	5,717	219
Kentville Jessamine	10	7,503	329
Kentville Victoria 6th	2	6,193	259

Since 1916, twenty-one cows have qualified; one, seven times; one, six times; six, three times; four, twice; and nine, once; making a total of 48 qualifications for advanced registration. These tests include records of 20 mature, 8 four-year-old, 17 three-year-old, and 13 two-year-old cows. The average milk-yield of the 48 records is 6,577.7 pounds; the average fat production, 272.4 pounds; the average per cent of fat, 4.14, and the average age, 5 years. The R.O.P. records of these cows are tabulated:—

CANADIAN RECORD OF PERFORMANCE TESTS AT KENTVILLE, 1916 TO 1924, INCLUSIVE
Breed: Shorthorn

Name and Number of Cow	Age in years	Number of days milking	Pounds of milk produced	Pounds of fat produced	Average per cent fat
Hillview Victoria, 78985	9	272	7,587	325	4·28
" "	11	343	8,697	375	4·31
" "	12	308	6,596	275	4·17
Hedgyn Susan, 116786	3	316	7,813	328	4·19
" "	4	324	8,426	349	4·14
" "	6	302	7,072	294	4·15
" "	7	265	7,534	304	4·03
" "	8	365	10,717	445	4·15
" "	9	326	9,481	381	4·02
Kentville Jessamine, 108025	3	272	4,817	189	3·92
" "	4	326	5,930	238	4·01
" "	5	319	6,009	231	3·84
" "	6	256	6,788	254	3·74
" "	7	321	7,533	290	3·84
" "	9	348	8,405	323	3·84
" "	10	235	7,503	329	4·38
Meadow Flower 24th, 82636	8	299	7,296	260	3·56
" "	9	343	8,749	342	3·90
" "	11	314	6,786	257	3·78
Meadow Princess, 91625	9	258	5,671	261	4·60
" "	11	295	6,074	271	4·46
Meadow Blossom, 91626	10	290	6,283	259	4·12
Kentville Princess, 108024	2	363	5,523	276	4·99
Kentville Fairy, 121819	2	365	4,601	217	4·71
Kentville Victoria 2nd, 114063	2	365	5,281	211	4·00
Kentville May 2nd, 151029	4	233	5,717	219	3·83
Kentville Mayflower, 123802	3	343	5,447	238	4·37
" "	4	271	6,006	266	4·43
" "	5	268	5,677	245	4·31
Kentville Fairy 2nd, 132922	2	365	4,769	220	4·61
" "	3	281	5,471	247	4·51
Kentville Primrose, 135889	3	296	5,496	227	4·13
" "	4	281	5,656	230	4·06
Kentville Victoria 6th, 177554	2	305	6,193	259	4·18
Kentville Jessamine 4th, 151030	2	305	5,976	237	3·96
Kentville Lady, 143992	2	305	6,988	288	4·12
" "	3	365	7,727	322	4·17
" "	4	365	10,174	413	4·06
Kentville Susan, 137215	2	304	5,175	234	4·52
" "	4	305	6,449	252	3·92
" "	5	278	6,584	268	4·07
Kentville Victoria 3rd, 140454	2	365	6,910	301	4·36
" "	3	263	5,478	224	4·09
" "	4	279	6,483	266	4·10
Kentville Victoria 4th, 164155	2	305	4,546	185	4·07
Kentville Meadow Flower 2nd, 150498	3	305	5,418	217	4·01
Kentville Lass, 164156	2	305	4,866	206	4·40
" "	3	355	5,354	228	4·26

STEER-FEEDING EXPERIMENT, 1923-24

The object of this experiment was to obtain data as to (1) the most economical method of feeding grain for beef production; (2) the comparative values of clover hay and timothy hay for beef production; and (3) the comparative values of clover hay and corn ensilage for beef production.

Twenty-eight steers were divided into four lots of seven steers each, as equal in weight and type as possible. All had free access to water. Lot 1 received a medium meal ration, and clover hay at the rate of 20 pounds per steer per day throughout the period. Lot 2 received a light meal ration, 12 pounds of clover hay and 30 pounds of corn ensilage per steer per day throughout the period. Lot 3 received a medium meal ration, 12 pounds of clover hay and 30 pounds of corn ensilage throughout the period. Lot 4 received a medium meal ration, 12 pounds of timothy hay, and 30 pounds of corn ensilage throughout the period.

The light meal ration was fed at the rate of 3 pounds per steer per day throughout the period. The medium meal ration was started at 3 pounds per steer per day, and continued for two weeks, when 4 pounds were fed for four weeks, then 5 pounds for five weks, and 6 pounds for the remaining two weeks, making an average per day of 4.54 pounds. The meal mixture was composed of 200 pounds wheat bran, at $1.75; 200 pounds ground oats, at $2.30; 100 pounds cotton-seed meal, at $2.80; 100 pounds oil meal, at $2.50; and 6 pounds salt at $1.60; making the cost per cwt., $2.25. Hay was charged at $10, and corn ensilage at $4 per ton.

It should be noted that the hay used in these tests approximated what the experiment calls for as far as could be managed, but that the timothy contained a percentage of other grasses, and the clover hay a small portion of timothy. The following data were obtained:—

CLOVER HAY VS. TIMOTHY HAY VS. CORN SILAGE AND LIGHT VS. MEDIUM GRAIN RATIONS

Experimental Ration	Pen No. 1 Medium meal ration 20 lb. clover hay daily	Pen No. 2 Light meal ration 12 lb. clover hay and 30 lb. corn silage	Pen No. 3 Medium meal ration 12 lb. clover hay and 30 lb. corn silage	Pen No. 4 Medium meal ration 12 lb. timothy hay and 30 lb. corn silage
Number steers in test.....No.	7	7	7	7
Total weight at start of test..... lbs.	6,510	6,510	6,500	6,515
Total weight at finish of test... "	7,655	7,840	7,910	7,895
Total gain during feeding period (91 days)..... "	1,145	1,330	1,410	1,380
Average gain during feeding period "	163·5	190	201·4	197·1
Average gain per day..... "	1·80	2·09	2·21	2·17
Amount meal eaten at $2.25 per cwt..... "	2,891	1,890	2,891	2,891
Amount hay eaten at $10 per ton. "	12,740	7,644	7,644	7,644
Amount of silage eaten at $4 per ton..... "	.....	19,110	19,110	19,110
Total cost of feed..... $	128 74	118 96	141 48	141 48
First cost steers at $5.25 per cwt. $	341 77	341 77	341 25	342 03
Selling value at $6.30 per cwt.... $	482 26	493 92	498 33	497 38
Increase in value..... $	140 49	152 15	157 08	155 35
Profit per pen..... $	11 75	33 19	15 60	13 87
Profit per steer..... $	1 68	4 74	2 23	1 98

Deductions.—A comparison of lots 1 and 3 shows the value of silage in the ration for fattening steers. It will be seen that while the addition of corn silage to the ration increased the cost of feeding slightly, it also increased the gains and made greater profits than when clover hay was fed as the only roughage. The 19,110 pounds of silage fed replaced 668 pounds of meal and 2,943 pounds of hay, giving silage a valuation in this experiment of $3.11 per ton compared to other feeds at prices charged.

2. A comparison of lots 2 and 3 shows the comparative economy of feeding a light vs. a medium grain ration. It will be seen that while the lighter grain ration did not produce as great gains, it produced over double the profits per steer that the heavier grain ration did. In this case, 459 pounds of hay and 1,147 pounds of silage proved equal to 888 pounds of meal; therefore any meal over the amount fed in the light ration acquired a value of only $10.32 per ton in this experiment with other feeds at prices charged.

3. A comparison of lots 3 and 4 shows the comparative value of clover and timothy hay for feeding fattening steers. It will be seen that with rations of equal cost, the clover produced the most gains and the greatest profits. In this experiment, 7,644 pounds clover hay proved equal to 64 pounds meal, 7,812 pounds timothy hay and 420 pounds of silage, giving timothy hay a valuation of only $9.20 per ton with clover hay worth $10 per ton and other feeds at prices charged.

TRIAL SHIPMENT OF STEERS TO BRITISH MARKET

Twenty-seven of the steers used in the test just described were shipped April 21 per ss. *Canadian Leader* from Halifax to Cardiff. A summary of the cost, selling price, etc., follows:—

Dr.

Transportation charges:—		
Freight on 27 steers, Kentville-Halifax, at $2.40		$ 64 80
Stockyard expenses at Halifax		25 65
Loading, roping and tagging		46 17
Insurance, at 7/8% on 27 steers valued at $140.00 each		33 21
Feed, straw, pails, etc., on ship, at $5.00 each		136 62
Boat freight from Halifax to Cardiff, at $20.00 each		540 00
Expenses in England, at $3.86 per steer		104 22
		$ 950 67
Total cost (on 31,560 pounds, live weight)		$ 950 67
Cost per steer		35 21
Cost per 100 pounds		3 01

Cr.

Sale of steers in England:—			
10 steers at £27	£270 0 0		
13 steers at £25	325 0 0		
4 steers killed for beef	67 7 2		
		£662 7 2	
£662 7 2 at prevailing exchange, $4.44 per pound sterling			$ 2,940 82
Less transportation charges, etc			950 67
Net returns for 27 steers			$ 1,990 15
Net returns per steer			73 71
Net returns per 100 pounds			6 30
Net returns on 31,560 pounds			1,990 15
Original cost of 27 steers at 5¼ cents per pound			1,295 04
Gross profit on 27 steers			$ 695 11
Gross profit on 1 steer			25 74
Feed cost per steer			28 39
Loss over feed per steer			2 65

SWINE

The breeding swine on hand at the beginning of the year included one three-year-old boar, one six-year-old sow and one sow one and one-half years old. Four litters of pigs, totalling thirty-five, were raised from these sows, an average of 8.75 pigs to the litter. The spring litters were disposed of as breeders, four of the best sow pigs from the younger sow, Nappan Augustine, being retained in the herd. The cost of raising these sows is given. The fall litters were kept for experimental feeding during the winter. The old boar, Sheldrake, was sent to the Experimental Station, Cap Rouge, and a young boar, Ottawa Augustus 226

—101981—, from the Central Farm took his place. The old sow, Ottawa Lass, was sold for pork late in the year. There was no loss of breeding stock during the year.

The total cost of maintaining the three head of breeding swine during the year was $113.97. Eighteen small pigs were sold for breeders at $8 each, which realized $144, and seventeen were kept for feeding, these being valued at $3 each, or $51; this making a total of $195. This leaves a balance of $81.03 profit over feed costs for the year.

FEED CONSUMED BY MATURE BREEDING SWINE DURING YEAR 1924

—		Ottawa Lass	Nappan Augustine	Ottawa Augustus
Sex		Sow	Sow	Boar
Age of individual	yrs.	6	1·5	3
Number of days fed	days	335	365	365
Total meal eaten in period	lb.	1,755	1,819	1,311
Average meal eaten per day	"	5·24	4·98	3·6
Total mangels eaten in period	"	580	785	549
Average mangels eaten per day	"	1·73	2·15	1·5
Total clover ensilage eaten in period	"	357	357	602
Average clover ensilage eaten per day	"	1·06	0·98	1·6
Total skim-milk eaten in period	"	597	667	
Average skim-milk eaten per day	"	1·78	1·83	
Total cost of feed	$	40 79	42·71	30 47
Average cost per day	cts.	12·14	11·70	8·35

Prices Charged for Feeds

Meal mixture	per ton	$43 00
Mangels	per ton	4 00
Clover ensilage	per ton	4 00
Skim-milk	per cwt.	0 20

COST OF RAISING BROOD SOWS FROM WEANING TO FARROWING AT ONE YEAR OLD

This test was conducted with four sows, Kentville Beauty, Kentville Charlotte, Kentville Rose and Kentville Primrose. These sows were weaned at five weeks of age. They were fed skim-milk only for one week, when a small amount of middlings was added to the milk. The middlings was continued for seven weeks, after which a meal mixture was given composed of 100 pounds bran, 200 pounds middlings, 100 pounds oats, 50 pounds oil meal, 15 pounds charcoal, and 4 pounds of salt. An average of about 8 pounds of skim-milk per day was given until the pigs were six months old. Mangels were fed during the winter months. Drinking water was given each day. The total quantity of the different feeds consumed by each sow was 1,148 pounds of skim-milk, 856 pounds of meal mixture and 960 pounds of mangels, and the total cost of the feed for each sow was $22.61.

SWINE-FEEDING EXPERIMENT, 1923-24

The objects of this test were as follows:—

1. To determine the most economical method of feeding ground grain to hogs.
   - (*a*) In water slop;
   - (*b*) Dry feeding;
   - (*c*) Soaking from one feed to next;
   - (*d*) Soaking from one feed to next and fed warm.
2. To determine the most suitable method for bacon production.
3. To compare the feeding value of buttermilk vs. meat meal and linseed oil meal.

Thirty Yorkshire pigs six weeks old and as equal in weight as possible were divided into six lots of five each. Lots 1, 2, 3 and 4 received the meal ration containing meat meal and oil meal; lots 5 and 6 received an equal amount of buttermilk and the meal ration without meat and oil meal. All lots received water to drink as required. The following table shows the methods of feeding the various lots:—

FEEDING TABLE, SWINE-FEEDING EXPERIMENT, 1923-24

Lot	Total weight at start	Method of Feeding	Composition of meal mixture, pounds
	lb.		
1	123	Meat meal; roots; meal mixture, fed in water slop.	Ground oats, 200; barley meal, 100; middlings, 200; wheat bran, 100; linseed oil meal, 50; meat meal, 50; mineral mixture, 35.
2	125	Meat meal; roots; meal mixture, dry fed.....	Same as that of lot 1.
3	125	Meat meal; roots; meal mixture, soaked.....	Same as that of lot 1.
4	126	Meat meal; roots; meal mixture, soaked and fed warm.	Same as that of lot 1.
5	126	Buttermilk; roots; meal mixture fed dry; no meat meal or oil meal.	Ground oats, 200; barley meal, 100; middlings, 200; wheat bran, 100; mineral mixture, 30.
6	129	Meal mixture in buttermilk slop; roots; no meat meal or oil meal.	Same as that of lot 5.

The mineral mixture was made up of ground limestone, 100 pounds; edible bone meal, 100 pounds; charcoal, 100 pounds; and salt, 50 pounds.

SWINE-FEEDING EXPERIMENT

December 1, 1923–March 31, 1924

——	Lot 1 — Meal in water slop, plus meat and roots	Lot 2 — Meal dry, plus meat and roots	Lot 3 — Meal soaked from one feed to next, plus meat and roots	Lot 4 — Meal soaked and fed warm, plus meat and roots	Lot 5 — Meal dry, plus buttermilk and roots	Lot 6 — Meal in buttermilk, plus roots
Number in lot..... No.	4	4	4	5	5	5
Total weight at beginning of test..... lb.	112	115	109	126	126	129
Average weight per pig lb.	28	28·7	27·2	25·2	25·2	25·8
Total weight at end of test..... lb.	603	544	584	718	792	854
Average weight per pig lb.	150·8	136	146	143·6	158·4	171
Gain in 122 days..... lb.	491	429	475	592	666	725
Average gain per pig... lb.	122·75	107·25	118·75	118·4	133·2	145
Average daily gain per pig..... lb.	1·00	0·88	0·96	0·96	1·09	1·18
Meal eaten..... lb.	1,551	1,541	1,551	1,925	1,890	1,890
Roots eaten..... lb.	1,236	1,226	1,236	1,485	1,464	1,464
Buttermilk eaten..... lb.	.....	.....	.....	.....	4,258	4,258
Cost of feed for period. $	35 72	35 49	35 72	44 40	47 71	47 71
Cost of one pound gain. cts.	7·27	8·27	7·52	7·5	7·16	6·58

It was found during the first month that the smaller pigs in lots 1, 2 and 3 did not thrive, and it was necessary to remove one from each lot. In making up the table, therefore, these are eliminated. The pigs receiving the dry feed drank much more water than the others, and those receiving buttermilk drank more than those getting the water slop.

It will be seen that the lots fed buttermilk made greater and more economical gains than the others, with the advantage of reaching a marketable weight in a shorter time. The mixing of the meal and the buttermilk before feeding gave

the most rapid gains and also the most profitable gains in this test. The supplementing of the dry meal ration with buttermilk is apparently a less desirable practice, but it is more beneficial than using such supplements as meat meal and oil meal either in a dry meal ration or in a slop.

The feeding of a dry meal ration supplemented with water for drinking purposes was the most expensive and gave the lowest gains of any method in this test.

Soaking the meal from one feed to another and warming before feeding did not show any advantage over feeding unwarmed, but both these methods were superior to dry feeding.

The meal in a water slop gave more rapid and more economical gains than any method of feeding other than the supplementing of the ration with buttermilk.

All lots dressed out as good bacon, with no one lot noticeably better than another. The percentage of dressed meat to live weight was much in favour of the buttermilk-fed pigs. The dressing percentages were as follows for the different lots: Pen 1, 70 per cent; pen 2, 70 per cent; pen 3, 69.8 per cent; pen 4, 68.2 per cent; pen 5, 76.6 per cent; pen 6, 74.2 per cent.

FIELD HUSBANDRY

A COMPARISON OF DIFFERENT FODDER CROPS

This experiment was continued in 1924, and mangels, turnips, corn, sunflowers, and oats, peas and vetches were grown on half-acre plots treated alike in every way as to manuring, ploughing, and other preparation of the soil. The object of this experiment is to determine the amount of fodder it is possible to secure from each crop, and the cost of each per acre.

The land on which this test was carried out had been in hay. It was manured in the spring at the rate of 20 tons per acre, ploughed, disked, levelled, and seeded on May 30. Corn and sunflowers were seeded in rows 3 feet apart, corn at the rate of 30 pounds, and sunflowers at 12 pounds per acre. For the root crops, rows were made with the horse-hoe and after rolling down were seeded with the hand-seeder, mangels at the rate of 10 pounds, and turnips at 2 pounds per acre. The O.P.V. mixture for seeding was made up of 2½ bushels of oats, ½ bushel of peas and ⅓ bushel of vetches.

The dates of harvesting were: O.P.V., August 15; sunflowers, September 11; corn, September 24; mangels, October 6; and turnips, October 15.

In the following tables the details of the cost of each crop are given. Manure is charged at the rate of $2 per ton, and one-half the application is charged to the first crop. The rental charge is based on a valuation of $50 per acre at 6 per cent interest.

SUMMARY, COST OF PRODUCTION OF DIFFERENT FORAGE CROPS, KENTVILLE, N.S., 1924

Charges in producing one acre	Corn	Sunflowers	Turnip	Mangels	Oats, peas and vetches
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Rental of land, preparation, and fertilizer	28 76	28 76	29 24	29 24	28 28
Seeding operations	0 72	0 72	0 84	0 84	0 48
Seed	1 20	1 80	1 00	2 90	4 16
Cultural operations	12 68	19 68	23 06	23 90	.....
Harvesting and storing	10 21	15 74	12 20	12 20	5 54
Use of machinery	3 00	3 00	3 00	3 00	3 00
Total cost per acre	56 57	69 70	69 34	72 08	41 46
Yield per acre ..... tons	13·31	18·13	13·41	19·62	4·95
Cost per ton ..... $	4.25	3.84	5.17	3.67	8.37

COST OF PRODUCTION

The itemized cost of production for 1924 of one acre each of corn, mangels, mixture of oats, peas and vetches, oats, wheat, and clover hay are given in the following tables, records having been kept of the exact time, material, etc., required.

COST OF GROWING ONE ACRE OF CORN, 1924

Rental of land	$ 3 00
Share of manure, ½ of 20 tons at $2	20 00
Use of machinery	3 00
Seed, 30 pounds at 4 cents	1 20
Ploughing, 8 hours at 48 cents	3 84
Disking and cultivating, 4 hours at 48 cents	1 92
Seeding, 1½ hours at 48 cents	0 72
Cultivating, 10 hours at 48 cents; 6 hours at 38 cents	7 08
Hoeing, 20 hours at 28 cents	5 60
Cutting, 1½ hours at 48 cents	0 72
Twine, 3 pounds at 16 cents	0 48
Loading and hauling to silo, 3 hours at $1.04	3 12
Cutting and storing in silo, 3 hours at $1.68	5 04
Kerosene and oil	0 85
Total cost per acre	$ 56 57

Yield per acre, 13·31 tons.
Cost per ton, $4.25.

COST OF GROWING ONE ACRE OF SUNFLOWERS, 1924

Rental of land	$ 3 00
Share of manure, ½ of 20 tons at $2	20 00
Use of machinery	3 00
Seed, 12 pounds at 15 cents	1 80
Ploughing, 8 hours at 48 cents	3 84
Disking and cultivating, 4 hours at 48 cents	1 92
Seeding, 1½ hours at 48 cents	0 72
Cultivating, 10 hours at 48 cents; 6 hours at 38 cents	7 08
Hoeing and thinning, 45 hours at 28 cents	12 60
Cutting, 1½ hours at 48 cents	0 72
Loading and hauling to silo, 5 hours at $1.04	5 20
Cutting and storing in silo, 5 hours at $1.68	8 40
Kerosene and oil	1 42
Total cost per acre	$ 69 70

Yield per acre, 18·13 tons.
Cost per ton, $3.84.

COST OF GROWING ONE ACRE OF TURNIPS, 1924

Rental of land	$ 3 00
Share of manure, ½ of 20 tons at $2	20 00
Use of machinery	3 00
Seed, 2 pounds at 50 cents	1 00
Ploughing, 8 hours at 48 cents	3 84
Disking and cultivating, 5 hours at 48 cents	2 40
Seeding with garden drill, 3 hours at 28 cents	0 84
Cultivating, 15 hours at 38 cents	5 70
Hoeing and thinning, 62 hours at 28 cents	17 36
Pulling and topping, 23 hours at 28 cents	6 44
Loading, hauling and storing, 12 hours at 48 cents	5 76
Total cost per acre	$ 69 34

Yield per acre, 536·4 bushels, or 13·41 tons.
Cost per bushel, 12·9 cents.
Cost per ton, $5.17.

COST OF GROWING ONE ACRE OF MANGELS, 1924

Rental of land	$ 3 00
Share of manure, ½ of 20 tons at $2	20 00
Use of machinery	3 00
Seed, 10 pounds at 29 cents	2 90
Ploughing, 8 hours at 48 cents	3 84
Disking and cultivating, 5 hours at 48 cents	2 40
Seeding, 3 hours at 28 cents	0 84
Cultivating, 15 hours at 38 cents	5 70
Hoeing and thinning, 65 hours at 28 cents	18 20
Pulling and topping, 23 hours at 28 cents	6 44
Loading, hauling and storing, 12 hours at 48 cents	5 76
Total cost per acre	$ 72 08

Yield per acre, 784·8 bushels, or 19·62 tons.
Cost per bushel, 9·1 cents.
Cost per ton, $3.67.

COST OF GROWING ONE ACRE OF OATS, PEAS AND VETCHES, 1924

Rental of land	$ 3 00
Share of manure, ½ of 20 tons at $2	20 00
Use of machinery	3 00
Seed, 2½ bushel oats at 75 cents; ½ bushel peas at $2.50; ½ bushel vetches at $3.10	4 16
Ploughing, 8 hours at 48 cents	3 84
Disking and cultivating, 3 hours at 48 cents	1 44
Seeding, 1 hour at 48 cents	0 48
Cutting, 1½ hours at 48 cents	0 72
Loading, hauling and unloading, 5 hours at 48 cents	2 40
Cutting and storing in silo, 2 hours at $1	2 00
Kerosene and oil	0 42
Total cost per acre	$ 41 46

Yield per acre, 4·95 tons.
Cost per ton, $8.37.

COST OF GROWING ONE ACRE OF OATS, 1924

(Banner Oats; second crop in three-year rotation)

Rental of land	$ 3 00
Share of manure, 30% of 16 tons at $2	9 60
Share of lime, 50% of 2 tons at $4.50	4 50
Seed, 3 bushel at $1	3 00
Use of machinery	3 00
Ploughing, 8 hours at 48 cents	3 84
Disking with tractor, 1 hour at $1	1 00
Cultivating, 1½ hours at 48 cents	0 72
Seeding and smoothing, 3 hours at 48 cents	1 44
Cutting, 1½ hours at 48 cents	0 72
Twine, 3 pounds at 16 cents	0 48
Stooking, 1½ hours at 28 cents	0 42
Loading and unloading, 2 hours at 76 cents	1 52
Threshing, 76·3 bushel at 4 cents	3 05
Total cost per acre	$ 36 29

Yield per acre, oats, 76·3 bushels.
Yield per acre, straw, 1·7 tons.
Cost of oats per bushel, deducting value of straw at $4 per ton, 38·6 cents.

COST OF GROWING ONE ACRE OF WHEAT, 1924

(Second crop in three-year rotation)

Rental of land	$ 3 00
Share of manure, 30% of 16 tons at $2	9 60
Share of limestone, 50% of 2 tons at $4.50	4 50
Seed, 2 bushels at $2	4 00
Use of machinery	3 00
Ploughing, 8 hours at 48 cents	3 84
Disking with tractor, 1 hour at $1	1 00
Cultivating, 1½ hours at 48 cents	0 72
Seeding and smoothing, 3 hours at 48 cents	1 44
Cutting, 1½ hours at 48 cents	0 72
Twine, 2½ pounds at 16 cents	0 40
Stooking, 1½ hours at 28 cents	0 42
Loading and unloading, 2 hours at 76 cents	1 52
Threshing, 29·6 bushels at 7 cents	2 07
Total cost per acre	$ 36 23

Yield per acre, wheat, 29·6 bushels.
Yield per acre, straw, ·77 tons.
Cost of wheat per bushel, after deducting value of straw at $4 per ton, $1.12.

COST OF ONE ACRE OF CLOVER HAY, 1924

Rental of land per acre	$ 3 00	
Share of manure, 20% of 20 tons at $2	8 00	
Ground limestone, ½ cost of 1923 application	2 15	
Seed, clover and timothy	3 22	
		$ 16 37
Use of machinery	$ 3 00	
Cutting, 1½ hours at 48 cents	0 72	
Raking, ¾ hours at 38 cents	0 29	
Coiling, 2¾ hours at 28 cents	0 63	
Shaking out and recoiling, 4½ hours at 28 cents	1 26	
Loading, hauling and unloading, 5 hours at $1	5 00	
		10 90
Cost per acre		$ 27 27

Yield per acre, 2·61 tons.
Cost of harvesting per ton, $4.17.
Cost per ton, $10.44.

PLOUGHING AND SEEDING MARSH

Ploughing started April 28 on the marsh land and was finished May 3. Seeding started May 5 and was completed May 6. Three and one-half bushels of Victory oats, and grass seed made up of 10 pounds of timothy, 5 pounds of red clover and 5 pounds of alsike were sown per acre. It is difficult in the spring to get marsh lands in just the right condition for satisfactory cultivation. The damper spots, owing to their clayey nature, are likely to "bake", while if the land is left until these damp spots are right the drier parts will be so hard it is next to impossible to plough. It would seem that the most satisfactory time to plough marsh lands is in the fall; the action of the frost then pulverizes the soil and a better seed-bed is secured. It will be noticed in the table below that the cost of harrowing or preparing for seeding was very high, due to portions of the land having been "baked".

No fertilizer of any kind was used on this piece of marsh, and as it was practically all underdrained no expense was incurred for opening surface drains or levelling ditch banks.

The low yield of oats is due in a large measure to the extremely dry weather during the month of May, there being a rainfall during the whole month of only 0.67 inches, as compared with a normal precipitation of about 2 inches. Grain did not start until well into June and grass-plants were barely noticeable when grain was harvested. One would naturally expect a very light yield of hay on this land in 1925.

PLOUGHING AND SEEDING MARSH
Area 10 acres

	$ cts.	$ cts.
Ploughing, 105 hours at 48 cents		50 40
Ploughing, cost per acre	5 04	
Harrowing, tractor, 32 hours at $1		32 00
Harrowing, team, 72 hours at 48 cents		34 56
Harrowing, cost per acre	6 66	
Seeding, 12 hours at 48 cents		5 76
Seeding, cost per acre	0 57	
Rolling and smoothing, 10 hours at 48 cents		4 80
Rolling and smoothing, cost per acre	0 48	
Total cost		127 52
Cost per acre	12 75	
Cost of grass seed and oats, per acre	6 81	
Total cost, seed and cultivation, per acre	19 56	
Yield per acre, oats	14·6 bushels	
Yield per acre, straw	0·67 tons	

ROTATION OF CROPS

A fairly large area was given over in the spring of 1924 to the work of determining the most profitable rotation to follow in growing farm crops. Two-, three-, four-, and five-year rotations are being tried out, and combined with these are fertilizer tests and different cultural methods. Accurate accounts are being kept of crops secured, cost of production, and value per acre, and this information is recorded on permanent cards devised for that purpose. As yet there are only the results for 1924, so that no figures are being given in the report for this year, but an accumulation of data of this nature will no doubt be of value to those interested in the economical production of farm crops.

HORTICULTURE

THE SEASON

The late autumn of 1923 was noteworthy for its high temperature combined with excessive precipitation, ploughing being possible until mid-December. The winter months of 1924 were moderate, being characterized by a higher mean temperature than usual and subnormal precipitation. Fruit trees of all kinds escaped without winter-injury, no damaging frosts having occurred.

The spring was late. April's snowfall and low mean temperature gave the season a slow start, cultivation of early orchard land not being possible until April 28. May with fine weather and low precipitation favoured all farming operations. Dormant sprays and dusts were applied from May 10 to 16, while the leaf-buds were sufficiently developed by May 21 for the first spray. The blooming periods for the various tree fruits were as follows: cherries, May 21 to June 9; plums, May 25 to June 9; apples, May 25 to June 12. Blossom Sunday fell on June 8.

June's temperature was normal, while its precipitation and hours of sunshine were considerably in excess of the ten-year average. The weather during the blossoming period was mostly fine. The average maximum, minimum, and mean daily temperatures from the 1st to the 11th of June, inclusive, were 66.18, 43.63, and 54.90 degrees, respectively. (The 1923 temperatures for the same period were: maximum, 66.27; minimum, 44.7; and mean, 55.53 degrees.) Showers of .02, .26, and .06 inches of rain fell on the 3rd, 7th, and 9th, respectively. Sunshine was recorded daily from June 1 to June 9, averaging 7.86 hours daily, although only 1.35 and 1.55 hours were recorded on the 5th and 7th, respectively. It would thus appear that conditions were ideal for pollination on June 6 and 8, and that a higher daily temperature from June 11 to 14 favoured fertilization, resulting in a good set of fruit in the varieties that bloomed.

July with its high mean temperature, low precipitation, and abundant sunshine provided essential factors that were conducive to the development of high colour in most varieties of apples.

August was noteworthy for its excessive precipitation, rain falling on eleven days, aggregating 6.36 inches. This apparently caused the destruction of the spray-protection on the leaves, and resulted in a late development and outbreak of apple scab, particularly on the late autumn and winter varieties, such as McIntosh, Wagener, etc.

September and October were normal months, without heavy gales or injurious frosts, permitting farmers to finish harvesting their crop of fruit in good condition during October. The apple crop harvested at this Station aggregated approximately 2,200 barrels. Cherries generally were only an average crop. Pears yielded heavily, with poor prices resulting. Plums were a very light crop.

FRUITS

APPLES—COST OF PRODUCTION—1924

Four acres of twenty-five year old Baldwin and Ribston trees were chosen in which to keep records of the cost of production of apples under cultural conditions generally practised in the Annapolis Valley. The trees in this orchard are set 33 feet by 33 feet, or at the rate of forty trees per acre. A belt of sod has been allowed to form about the base of these trees, while clean cultivation is practised in the strips between the trees. The 1924 crop from this orchard was the third successive one, and averaged better than 2½ barrels per tree. The fruit was clean and of good quality.

All charges in connection with the different cultural and other operations were computed at actual cost and were as follows:—

COST OF PRODUCING APPLES, 1924

	4 acres $ cts.	1 acre $ cts.
Pruning, 77½ hours at 28 cents per hour	21 70	5 43
Ploughing (tractor) 12 hours at $1 per hour	12 00	3 00
Harrowing (4 times) 16½ hours at $1 per hour	16 50	4 13
Fertilizer, 4-65-4-2%, 650 lbs. per acre at $41.54 per ton	54 00	13 50
Mixing and applying fertilizer, 5 hours at 28 cents	1 40	0 35
Dust, 950 lbs. Bordeaux at $4.25 per cwt	40 37	10 09
Time, 6 hours at $1.01 per hour	6 06	1 51
419 barrels at 43 cents	180 17	45 04
Nails, 29 cents; nailing, $11.73; hauling barrels to orchard, $4.19	16 21	4 05
Picking, 419 barrels, 217 hours at 27 cents	58 59	14 65
Hauling, 419 barrels, at 3·3 cents per barrel	13 83	3 46
Packing, 419 barrels at 25c	104 75	26 19
Total cost of 4 acres	525 58	
Total cost of 1 acre		131 40
Total cost per barrel, $1.25		

COMPARATIVE YIELDS TO DATE OF STANDARD COMMERCIAL VARIETIES OF APPLES

Varieties planted, 1912	Number of trees fruiting	Lowest yield per tree	Highest yield per tree	Total yield including 1924	Average total yield per tree since planting	
		pecks	pecks	pecks	pecks	bbls.
Baldwin	40	4½	53	779·00	19·47	1·62
Banks Gravenstein	20	0	67	653·00	32·65	2·72
Baxter	11	10	41	295·75	26·89	2·24
Ben Davis	18	29¾	76½	1,073·25	59·64	4·97
Bishop Pippin	19	4½	37½	388·50	20·46	1·705
Blenheim	38	¼	42	638·00	16·80	1·40
Cox Orange	13	8½	55½	351·50	27·00	2·25
Crimson Beauty	16	13½	42	550·75	34·42	2·87
Duchess	16	28½	64¼	736·25	46·00	3·83
Dudley	6	22¾	90	284·75	47·46	3·95
Fallawater	20	5½	53½	569·25	28·46	2·37
Fameuse	19	24¼	97¾	1,304·75	68·67	5·72
Gano	18	25½	104	975·00	57·35	4·78
Golden Russett	16	7¼	38½	347·75	21·73	1·81
Gravenstein	18	11½	109½	883·75	49·09	4·09
Greening (R.I.)	39	10½	90½	1,436·00	36·82	3·07
Hubbardston	15	24¼	74¾	657·50	43·83	3·65
King of Tompkins	29	1	43¾	550·50	18·98	1·58
McIntosh	19	20½	72¾	839·25	44·17	3·78
McMahon	6	41½	80	350·75	58·46	4·87
Milwaukee	19	53	109½	1,441·50	75·87	6·32
Nonpareil	15	7½	51½	354·00	23·60	1·97
Northern Spy	39	0	24½	217·00	5·56	0·463
Ontario	18	10	63¾	610·25	34·01	2·83
Red Astrachan	13	3¾	38½	363·75	27·95	2·49
Ribston	35	13¼	85	1,795·00	51·28	4·27
Rome Beauty	17	30	94½	937·50	55·15	4·59
Stark	18	15¾	89½	1,024·00	56·88	4·74
Tolman	26	13	55	803·00	30·89	2·57
Wagener	37	12	66½	1,435·67	38·80	3·23
Wealthy	22	33½	96¼	1,239·75	56·35	4·69
Wellington	20	18¾	80	916·50	45·82	3·82
Wolf River	10	1¼	81¾	401·75	40·18	3·35
Yellow Transparent	19	20¼	60½	655·00	34·47	2·87

SPRAYING APPLE TREES

Bordeaux mixture, lime-sulphur, and wetable sulphur sprays were compared with regard to the control of apple scab during the season of 1924. Bordeaux 4-8-40 is made up of 4 pounds of copper sulphate, 8 pounds of hydrated lime, 1 pound of arsenate of lime, and water to make 40 gallons. The excess of lime in this mixture does not affect its fungicidal value, but helps to prevent the yellowing of the foliage and in some cases the partial defoliation of the trees which accompanied the use of the original 4-4-40 Bordeaux mixture. Likewise, the hydrated lime advocated in the lime-sulphur arsenate is for the purpose of neutralizing any caustic or burning action that this spray might otherwise have upon the foliage. The lime-sulphur arsenate is made up of 1 gallon of concentrated lime-sulphur, 2 pounds of hydrated lime, 1 pound of arsenate of lime, and water to make 40 gallons. The wetable sulphur spray is one of the newer sprays. It is made up of 16 pounds of sulphur, 8 pounds of hydrated lime, and 1 pound of calcium caseinate per 100 gallons of water.

SPRAYING COSTS:—The cost of the various ingredients used in the spray mixtures was: lime-sulphur, 27½ cents per gallon; hydrated lime, $18 per ton; arsenate of lime, 16½ cents per pound; powdered bluestone, 7 cents per pound; sulphur, $64 per ton; calcium caseinate, 25 cents per pound. Using the above prices, the cost of lime-sulphur arsenate was 1.14 cents; of Bordeaux 4-8-40, 1.29 cents, and of wetable sulphur, 1.25 cents per gallon. The labour charge was $1 per hour, made up as follows: two men at 29 cents; two horses at 10 cents; power sprayer at 15.5 cents; gasoline, 6.2 cents (2 gallons at 31 cents every 10 hours).

COST OF SPRAYING

Trees Twelve Years Old

—		Lime-sulphur arsenate	Bordeaux 4-8-10 arsenate	Wetable sulphur
Number of trees		54	54	54
Spray used, 4 applications	gal.	243	243	243
Spray used per tree, 4 applications	gal.	4·5	4·5	4·5
Spray used per acre, 40 trees, 4 applications	gal.	180	180	180
Cost of spray material, 4 applications	$	2·77	3·13	3·04
Cost of spray material per tree, 4 applications	cents	5·1	5·8	5·6
Cost of spray material per acre, 40 trees, 4 applications	$	2·05	2·32	2·25
Time taken to spray 4 times	min.	189	189	189
Time taken to spray one tree 4 times	min.	3·5	3·5	3·5
Time taken to spray per acre, 40 trees, 4 times	min.	140	140	140
Cost of time applying 4 sprays	$	3·15	3·15	3·15
Cost of time applying per tree, 4 sprays	cents	5·8	5·8	5·8
Cost of time applying per acre, 40 trees, 4 sprays	$	2·33	2·33	2·33
Total cost per acre of 40 trees	$	4·38	4·65	4·58

Mature Trees

Number of trees used		25	25	25
Spray used, 4 applications	gal.	600	600	600
Spray used, per tree, 4 applications	gal.	24	24	24
Spray used per acre, 40 trees, 4 applications	gal.	960	960	960
Cost of spray material, 4 applications	$	6·84	7·74	7·50
Cost of spray material per tree, 4 applications	cents	27·3	30·9	30·0
Cost of spray material per acre, 40 trees, 4 applications	$	10·94	12·38	12·00
Time taken to spray 4 times	min.	360	360	360
Time taken to spray one tree 4 times	min.	14·4	14·4	14·4.
Time taken to spray per acre, 40 trees, 4 times	min.	576	576	576
Cost of time applying 4 sprays	$	6·00	6·00	6·00
Cost of time applying per tree, 4 sprays	cents	24	24	24
Cost of time applying per acre, 40 trees, 4 sprays	$	9·60	9·60	9·60
Total cost per acre of 40 trees	$	20·54	21·98	21·60

DUSTING, 1924

The chief factors that enter into the successful control of fungous diseases, particularly apple scab, by dusting are thoroughness of application, time of application, and effectiveness of materials used.

Thoroughness of the dust application is of chief importance in the control of both apple scab and insects, provided the time of application is correct. If the applications of dust are put on thoroughly as outlined in spray calendars for the district, satisfactory control of scab will result. Thoroughness of application provides that the entire leaf surface of the tree should be covered with a film of dust at each application. This can only be secured by enveloping the tree in a cloud of dust from all angles, care being exercised to regulate the machine so that enough dust is used but none wasted. The time of day the dust is applied is not of such great importance. Early morning and late evening when the air is calm are the most satisfactory times for thoroughness of application. Late evening when the moisture-laden air is condensing in the form of dew is probably the most satisfactory time. The air is then gradually growing cooler and heavier, resulting in the dust staying suspended about the tree longer than in the early morning air, in which the dust is wafted upward with the rising temperature.

The dusts used, sulphur arsenate and Bordeaux arsenate, are those put out commercially by local dealers. The former comes in two grades differing only in its arsenate content; viz., 85 per cent sulphur and 15 per cent arsenate of lead; and 90 per cent sulphur and 10 per cent arsenate of lead. The latter, Bordeaux

arsenate, comes in only one grade; viz., 12-8-80 (12 pounds dehydrated copper sulphate, 8 pounds arsenate of lead or lime, and 80 pounds hydrated lime). The results obtained with these materials in 1924 are tabulated.

DUSTING COSTS:—All charges in connection with dusting are at cost, as follows: sulphur dust (90-10), $5.50 per cwt.; Bordeaux dust (12-8-80), $4.25 per cwt. The labour charges per hour were: 2 men at 25 cents; team of two horses at 25 cents; dusting machine and depreciation, 20 cents; gasoline, 5 cents; making a total of $1 per hour. The results were as follows:—

COST OF DUSTING

Trees Twelve Years Old

—		Sulphur dust	Bordeaux 12-8-80 dust
Number of trees used		54	54
Dust used, 4 applications	lb.	162	148
Dust used per tree, 4 applications	lb.	3	2·75
Dust used per acre, 40 trees, 4 applications	lb.	120	110
Cost of dust, 54 trees, 4 applications	$	8·91	6·29
Cost of dust, per tree, 4 applications	cents	16·5	11·7
Cost of dust per acre, 40 trees, 4 applications	$	6·60	4·67
Time taken to dust 54 trees, 4 times	min.	54	50
Time taken to dust 1 tree 4 times	min.	1	·92
Time taken to dust 1 acre, 40 trees, 4 times	min.	40	37
Cost of time applying on 54 trees, 4 applications	cents	90	77·5
Cost of time applying per tree, 4 applications	"	1·66	1·44
Cost of time applying per acre, 40 trees, 4 applications	"	66·6	57·4
Total cost per acre, 40 trees, 4 applications	$	7·27	5·24

Mature Trees

Number of trees used		25	25
Dust used, 4 applications	lb.	172	145
Dust used per tree, 4 applications	"	6·88	5·80
Dust used per acre, 40 trees, 4 applications	"	275·2	232·0
Cost of dust, 25 trees, 4 applications	$	9·46	6·16
Cost of dust per tree, 4 applications	cents	37·8	24·6
Cost of dust per acre, 40 trees, 4 applications	$	15·14	9·86
Time taken to dust 25 trees 4 times	min.	56	50
Time taken to dust 1 tree, 4 times	"	2·24	2·00
Time taken to dust 1 acre, 40 trees, 4 times	"	89·6	80·0
Cost of time applying on 25 trees, 4 applications	cents	93·3	83·3
Cost of time applying per tree 4 applications	"	3·72	3·33
Cost of time applying per acre, 40 trees, 4 applications	$	1·49	1·33
Total cost per acre, 40 trees, 4 applications	$	16·63	11·19

Spray	Per cent clean	Per cent scab	Per cent Nos. 1 and 2	Per cent culls	Per cent bud moth	Per cent plant bug
Gravensteins						
Lime-sulphur arsenate	95·78	4·22	83·09	2·81	2·11	0·70
Bordeaux arsenate	93·94	6·06	71·21	12·12	1·51	0·00
Wetable sulphur arsenate	91·39	8·61	77·29	2·63	0·38	1·57
Bordeaux arsenate (1 and 2) wetable sulphur arsenate (3 and 4)	94·83	5·17	86·94	1·56	0·81	.0·21
McIntosh						
Lime-sulphur arsenate	51·13	48·87	38·63	1·70	2·55	0·57
Bordeaux arsenate	91·83	8·17	74·28	3·51	1·14	5·37
Wetable sulphur arsenate	9·56	90·44	2·34	28·52	0·36	6·31
Bordeaux arsenate (1 and 2) wetable sulphur arsenate (3 and 4)	68·31	31·69	38·03	8·36	3·67	4·70
Fameuse						
Lime-sulphur arsenate	61·30	38·70	41·52	5·36	6·21	3·39
Bordeaux arsenate	89·78	10·22	62·50	3·25	3·18	8·71
Wetable sulphur arsenate	44·68	55·32	21·48	6·35	1·54	4·63
Bordeaux arsenate (1 and 2) wetable sulphur arsenate (3 and 4)	62·91	37·09	34·74	3·47	2·23	9·55
Bishop Pippin						
Lime-Sulphur arsenate	98·25	1·75	71·34	14·62	0·00	0·00
Bordeaux arsenate	98·88	1·12	62·92	9·00	0·00	9·00
Wetable sulphur arsenate	69·77	30·23	49·45	2·02	2·17	4·03
Bordeaux arsenate (1 and 2) wetable sulphur arsenate (3 and 4)	96 06	3·94	75·53	6·90	1·87	3·94
Average of the four varieties						
Lime-sulphur arsenate	76·61	23·39	58·64	6·12	.....	2·72
Bordeaux arsenate	93·63	6·37	67·73	6·97	.....	1·46
Wetable sulphur arsenate	53·85	46·15	37·64	9·88	.....	1·36
Bordeaux arsenate (1 and 2) wetable sulphur arsenate (3 and 4)	80·53	19·47	38·81	5·07	.....	2·14

NOTE.—Russeting of Gravensteins from Bordeaux arsenate, 24.24%.

APPLE SCAB CONTROL, 1924—*Concluded*

Spray	Per cent clean	Per cent scab	Per cent Nos. 1 and 2	Per cent culls	Per cent bud moth	Per cent plant bug
Gravenstein						
Sulphur 90-10	89·98	10·02	77·55	1·19	1·53	0·48
Bordeaux	95·90	4·10	73·00	6·44	2·68	1·91
Bordeaux (1 and 2); sulphur (3 and 4)	98·55	1·45	72·47	1·45	1·44	5·80
McIntosh						
Sulphur 90-10	88·84	11·16	73·76	2·65	2·51	1·32
Bordeaux	68·02	31·98	42·29	9·15	2·78	5·09
Bordeaux (1 and 2); sulphur (3 and 4)	89·05	10·95	58·52	1·00	1·43	1·59
Fameuse						
Sulphur 90-10	78·77	21·23	63·39	2·69	1·58	2·06
Bordeaux	65·43	34·57	46·17	1·74	5·90	4·15
Bordeaux (1 and 2); sulphur (3 and 4)	28·47	71·53	20·13	2·08	2·08	1·89
Bishop Pippin						
Sulphur 90-10	92·11	7·89	82·52	4·60	2·63	0·00
Bordeaux	77·15	22·85	46·47	2·74	1·37	1·87
Bordeaux (1 and 2); sulphur (3 and 4)	97·17	2·83	78·54	1·62	2·02	9·71
Average of the four varieties						
Sulphur 90-10	87·42	12·58	74·30	2·78	*2·06	
Bordeaux	76·62	23·38	51·98	5·01	*3·18	
Bordeaux (1 and 2); sulphur (3 and 4)	78·31	21·69	57·51	1·54	*1·74	
Check plots, not sprayed or dusted—						
Gravensteins	63·64	36·36	33·33	3·03	3·11	6·06
McIntosh	0·00	100·00	70·00	74·66	1·33	15·33
Fameuse	40·00	60·00	3·15	25·56	5·25	6·31
Bishop Pippin	30·53	69·47	10·52	4·74	2·63	3·15
Average of the four varieties	33·54	66·46	10·75	26·99	*3·06	

*Percentage of fruit injured by both bud moth and biting insects.

SPRAYING AND DUSTING TESTS, 1920-1924.—Tests have been conducted since 1920 with sulphur and Bordeaux dusts, and Bordeaux mixture and lime-sulphur sprays, to find out the comparative value of these materials for the control of apple scab and insect pests. The results would go to show that the dusts are not quite as effective as the sprays. However, it should be pointed out that in order to give the foliage the proper protection, an additional application of dust, particularly if the season is wet, is necessary. Considerable time can be saved by dusting, but the cost of materials will be greater and usually amount to more than the value of the time saved. On the other hand, with extensive orchards dusting is preferable, as it permits accomplishing the work when it should be done. The essential factor after all is to keep the foliage and fruit covered with a fungicide so that the scab spore will be killed.

From tests conducted by the Station the following deductions can be made.

Dormant Spray.—This is applied before the leaf-bud expands. No gains have resulted from this application, and it is considered unnecessary for the control of scab.

First Application.—This should be applied when the leaves are about the size of a mouse's ear, and not later than when the leaves turn back from the buds. This application is exceedingly important, at least in three years out of five, and should be done thoroughly.

Second Application.—Applied when the blossom-buds are showing pink and before the blossoms open. A thorough application at this time is very important.

Third Application.—Immediately after the petals fall. Here again thoroughness in work pays well. The sulphur spray or dust is advisable for this, as the Bordeaux spray or dust may cause russeting.

Fourth Application.—This should be completed two weeks after the third spray.

Fifth Application.—If the foliage shows signs of apple scab development, this application is advisable, and should follow ten days to two weeks after the fourth.

It may be said that the most important sprays are the two before bloom, and our tests go to show that thoroughness in these, keeping the foliage well covered with a fungicide from the opening of the leaf buds to the blossoming period, is of prime importance.

The importance of having the equipment to overtake the work rapidly cannot be too strongly urged. A few days' delay may mean a decided loss. Here again is where dusting has the advantage over spraying, as the orchard can be protected in a shorter period of time. However, it is found that in some cases sufficient time is not taken to give an even and thorough distribution of dust, and the result is infection of foliage or fruit.

The results of tests at this Station since 1920 follow. While there is a decided improvement over the areas not sprayed, yet in some years the amount of spot has been entirely too much, this being accounted for by the fact that sprays had been too long delayed because of attention to other farm work.

SUMMARY, 1920-1924, SPRAYING AND DUSTING TESTS

Spray or dust used, year, and varieties of apples	Per cent scab	Per cent insect injury	Per cent No. 1's. and No. 2's.
Sulphur Dust (90 lb. superfine sulphur; 10 lb. arsenate of lead)—			
1920: Gravenstein	5·0	6·0	79·10
1921: Gravenstein	19·0	.....	.....
1922: Gravenstein; McIntosh	15·40	1·27	79·84
1923: Gravenstein	6·60	2·63	74·52
1924: Gravenstein; McIntosh; Fameuse; Bishop Pippin	12·58	2·06	74·30
Average	11·71	2·99	76·94
Bordeaux Dust (12 lb. dehydrated copper sulphate; 8 lb. arsenate of lime; 80 lb. hydrated lime)—			
1920: Gravenstein	15·80	1·40	65·40
1921: Gravenstein	24·00	.....	.....
1922: Gravenstein; McIntosh	9·04	1·35	85·22
1923: Gravenstein	5·52	2·95	75·78
1924: Gravenstein; McIntosh; Fameuse; Bishop Pippin	23·38	3·18	51·98
Average	15·55	2·22	69·59
Lime-sulphur Spray (1 gallon of concentrated lime sulphur; 39 gallons water)—			
1920: Gravenstein	2·79	0·70	72·50
1921: Gravenstein	3·50	.....	.....
1922: Gravenstein; McIntosh	10·12	2·04	82·88
1923: Gravenstein	0·11	0·35	98·51
1924: Gravenstein; McIntosh; Fameuse; Bishop Pippin	23·39	2·73	58·64
Average	7·98	1·45	78·13

SUMMARY, 1920-1924, SPRAYING AND DUSTING TESTS—*Concluded*

Spray or dust used, year, and varieties of apples	Per cent scab	Per cent insect injury	Per cent No. 1's. and No. 2's.
Bordeaux Spray (4 lb. copper sulphate; 8 lb. hydrated lime; 1 lb. arsenate of lime; water to make 40 gallons)—			
1920: Gravenstein	7·30	0·20	63·40
1921: Gravenstein	6·40	.....	.....
1922: Gravenstein; McIntosh	1·57	4·39	87·47
1923: Gravenstein	0·38	1·45	92·92
1924: Gravenstein; McIntosh; Fameuse; Bishop Pippin	6·39	1·46	67·73
Average	4·40	1·87	77·88
No Dust or Spray—			
1920: Gravenstein	64·60	1·10	34·20
1921: Gravenstein	29·30	.....	.....
1922: Gravenstein; McIntosh	53·41	4·10	36·39
1923: Gravenstein	26·65	5·49	54·41
1924: Gravenstein; McIntosh; Fameuse; Bishop Pippin	66·46	3·06	10·75
Average	48·08	3·44	33·94

PLUMS

The plum crop generally throughout the valley was light. Arctic, or, as it is more commonly called, Moores Arctic, bore a full crop, supplanting Burbank as holder of first place for highest yield per tree since planting. This variety is noted both for its hardiness and productiveness, but is otherwise condemned for general planting where less hardy varieties will succeed because of its small size, unattractive colour (being generally a dull greenish-blue when harvested for shipping to market) and poor quality. The varieties that are recommended for planting both for home use and local markets are: Burbank, Quackenboss, Miller Superb, Monarch, Bradshaw, Diamond, and Reine Claude, giving a fruiting season from August 28 to October 9, and including red-, yellow-, green- and purple-skinned varieties.

The following table gives the species from which each variety has originated. The European group (*Prunus domestica*) is indicated by D; the Japanese (*Prunus triflora*), by T; the Damson (*Prunus insititia*), by I; the American (*Prunus americana*), by A; and a hybrid of some of these species by an asterisk (*). The use, as for cooking (C) or dessert (D), is also given; the quality, as good (G), fair (F), and poor (P); and the size, as small (S), medium (M), and large (L).

VARIETIES OF PLUMS (PLANTED IN 1913)

Variety	Class	Dates of picking	Colour of fruit	Use	Quality	Size	Total yield, single tree, 1919–1924, inclusive
							quarts
Arctic	D	Aug. 26–Sept. 15	Bluish black	C	F	S	354·5
Burbank	T	" 28– " 18	Dark red over yellow.	C or D	G	L to VL	329·0
Sheldrake	D	Sept. 2– " 22	Purplish black	C	P	M	267·0
Hudson	D	" 5–Oct. 2	Reddish purple	C	F	M	232·0
Quackenboss	D	" 5– " 3	Dark purple	C	F	M	230·0
Newark	D	Aug. 20–Sept. 7	Dull reddish yellow	C	F	S	221·0
Earliest of All	T	" 1–Aug. 21	Pinkish red	C	P	S	193·0
Freeman	D	Sept. 2–Oct. 3	Golden yellow	D	G	M	187·5
Miller Superb	D	" 5–Sept. 24	Golden yellow	C or D	G	L	187·0
America	*	" 2– " 11	Yellowish red	C	F	M	158·0
Paul Early	D	Aug. 17– " 4	Purple	C	F	S	147·0
Freestone Damson	I	Sept. 6–Oct. 4	Dark blue	C	F	S	136·5
Gueii	D	Aug. 28–Sept. 18	Dark purple	C	F	M	133·0
Shiro	*	" 13–Aug. 25	Clear light yellow	C or D	F	L	122·0
Red June	T	" 10–Sept. 3	Garnet red	D	F	M	118·0
Voronesh	D	Sept. 2– " 18	Dark amber	C	VP	L	116·5
Agen	D	" 4–Oct. 3	Reddish purple	C	G	M	114·0
Tennant	D	" 5–Sept. 18	Dark reddish purple	D	F	L	113·0
Cling Stem	D	" 5– " 24	Reddish yellow	C	F	M to L	113·0
Hale	T	Aug. 28– " 6	Yellow tinged with red.	C	P	L	111·0
Climax	*	" 15–Aug. 28	Deep dark red	D	G	M to L	97·0
Reine Claude	D	Oct. 2–Oct. 4	Greenish yellow	C or D	G	M to L	97·0
Early Rivers	D	Aug. 22–Aug. 31	Similar to Paul Early.	C	F	S to M	96·0
Lombard	D	Sept. 21–Oct. 3	Purplish red	C	P	M	93·0
Chabot	T	" 5–Sept. 21	Dull red on green	D	G	M to L	92·0
October	T	" 11– " 21	Purplish black	C or D	F	L	88·0
Yellow Egg	D	" 9–Oct. 3	Golden yellow	C	F	VL	88·0
Middleburg	D	Oct. 2– " 4	Greenish yellow	C or D	F	M	86·5
California	A	Sept. 6– " 3	Bright red	C	F	M	84·0
Green Gage	D	" 9– " 3	Dull greenish yellow	C or D	G	M	84·0
Shipper	D	" 2–Sept. 24	Purplish black	C	P	S	83·5
Yellow Japan	T	" 21– " 25	Red	D	G	M to L	82·0
Belle de Louvain	D	Aug. 30– " 14	Purplish red	C	F	L	82·0
Hector	D	Sept. 9–Oct. 3	Reddish purple	C or D	G	L	77·0
Peters	D	" 2–Sept. 24	Dull yellow green	C or D	F	M to L	77·0
Willard	T	Aug. 16– " 12	Dark red	C	P	M	76·0
Transparent	D	Sept. 5– " 25	Reddish amber	D	G	M	74·0
Belgian Purple	D	" 5– " 22	Purple	C	P	S to M	73·0
Frost Gage	D	" 5– " 27	Dark purple	C	G	S	72·5
Abundance	T	Aug. 16–Aug. 28	Reddish yellow	D	VG	L	70·0
Duane	D	Sept. 5–Sept. 21	Purple	C	P	L	70·0
Monarch	D	" 22–Oct. 5	Dark purple	C	F	L	62·5
Drap d'Or	I	Sept. 9–Sept. 27	Golden yellow	C	F	S	60·0
Imperial Epineuse	D	" 6–Oct. 2	Reddish purple	C	G	L	60·0
Palatine	D	" 21– " 2	Green to yellow	C or D	G	M	58·0
Empire	D	" 9– " 3	Dark reddish purple	C	G	M	55·0
Bradshaw	D	" 9–Sept. 20	Reddish purple	C or D	G	L	51·0
Spaulding	D	" 5– " 18	Greenish yellow	D	G	S	49·5
York State Prune (Italian Prune).	D	Oct. 1–Oct. 3	Purple	C or D	G	L	49·5
Tatge	D	Sept. 19–Sept. 30	Similar to Lombard	C	P	M to L	49·0
Oullins	D	Aug. 28– " 2	Greenish yellow	C or D	P	M	44·0
Imperial Gage	D	Sept. 5– " 27	Greenish yellow	C or D	G	M	44·0
Wyant	A	Oct. 1–Oct. 4	Dark carmine	C	P	M	43·0
Tragedy	D	Aug. 28–Sept. 18	Dark purple	D	G	M	42·5
Shropshire Damson	I	Sept. 5–Oct. 3	Dark blue	C	F	S	42·0
Diamond	D	" 14–Sept. 27	Purplish black	C	P	L	40·5
French Damson	I	" 24–Oct. 4	Dull black	C	F	S to M	39·0
Jefferson	D	" 1–Sept. 24	Yellow	D	G	M to L	38·0
Grand Duke	D	Oct. 3–Oct. 5	Purple	C	F	L to VL	37·0
Georgeson	T	Aug. 2–Sept. 11	Yellow	C	P	M	34·0
Curlew	D	Aug. 28–Oct. 2	Purple	C	F	M	33·0
Furst	D	Sept. 5– " 2	Purplish black	C or D	G	L	31·5
Golden Drop	D	" 6– " 3	Golden yellow	C	G	L to VL	30·5
French Prune (Agen)	D	" 21– " 2	Purplish black	C	G	L	30·0
Czar	D	" 15–Sept. 25	Purplish black	C	P	M	29·0
Monroe	D	" 9–Oct. 3	Golden yellow	C or D	G	S	28·0
Washington	D	" 19– " 2	Greenish yellow	C or D	G	L	21·5
Pond Seedling	D	Oct. 2– " 4	Reddish purple	C	G	VL	21·5
St. Catherine	D	Sept. 30– " 4	Golden yellow	C	F	S	16·0
Arch Duke	D	" 5–Sept. 23	Dark purple	C or D	G	L	14·0
Giant	D	Oct. 3	Reddish purple	C	P	L	13·5
Pearl	D	Sept. 5–Sept. 19	Reddish yellow	D	G	L	12·5
Stella	A	" 7– " 19	Purplish red	C	F	L	8·0
Guthrie Late	D	Oct. 3	Greenish	C	G	M	7·5
Gold	*	Sept. 18	Yellow, crimson cheek.	C	F	M to L	3·0

CHERRIES

Undoubtedly the cherry is one of the most popular of all fruits for the garden or small orchard. It has fewer prejudices as to soil and climate than other stone fruits, is easily grown, fruits earlier after planting, ripens earlier in the season, is more regular in bearing and usually more fruitful than are most other fruits, and is the least susceptible to attacks of fungi or insect pests.

Of the forty-nine varieties or strains of cherries tested at this Station since 1913 the sour cherries *(Prunus cerasus)* are hardier, more productive and least subject to the attack of brown rot, leaf spot, and cracking of the fruit, while they are immune to bacterial gummosis and far less subject to attacks of birds, the bane of cherry growers in these districts, than are the sweet cherries *(Prunus avium)*.

Of the sour cherries the Amarelle group, distinguished by their pale red fruits more or less flattened at the ends, and colourless fruit juice, are as a class the most productive. In this group fall Montmorency, the leading and most productive cherry of the group and Early Richmond, ripening fully a week earlier than Montmorency. Dyehouse, earlier than and very similar to Early Richmond, is not so productive, produces fruit smaller in size, and is not so well suited to as wide a soil variation as is Early Richmond.

Of the Morello group, the late sour cherries with very dark-coloured fruits, spherical or cordate in shape and distinguished by their dark, wine-coloured juice, the varieties Suda Hardy and English Morello are the best. The former is more productive while the latter is slightly superior in quality. The fruits of this class are very seldom picked by birds. They are not a table fruit and can hardly be eaten out of hand, but when prepared by cooking, are very attractive with their rich, dark, wine-coloured juice and pleasant, aromatic flavour. Neither Baldwin, Ostheim, Vladimir, or Wragg, others of this group, are comparable to the other two varieties.

The sweet cherries *(Prunus avium)* are also divided into two classes, Hearts and Bigarreaus. The former are distinguished by their soft, tender, juicy fruit, and the latter by their firm, crisp, breaking fruit. Neither the colour of the fruit nor the colour of the juice is constant in the two classes.

Of the Heart cherries, Governor Wood is the most productive, but is surpassed in quality by Black Tartarian, Ida, Coe Transparent, and Elkhorn. Black Tartarian, the only deep reddish-black cherry listed, with the exception of Early Purple Guigne, which is not worthy of mention, is superior to all the others in quality of fruit, hardiness, vigour of growth, and adaptability to various soil conditions. Its low yield, as in the case of all sweet cherries, is largely accounted for by the destruction of a large percentage of the crop by birds before it is ripe enough to harvest.

Of the Bigarreau group, Florence, Rockport, and Kirtland are the earliest; Bing, Yellow Spanish, Napoleon, and Elkton, are midseason; and White Caroon, Paul, Dikeman, Mercer, and Windsor the late-maturing varieties. Napoleon, Mercer, Bing and Windsor are the four outstanding cherries in this group. Napoleon and Mercer are typically light-coloured, while Windsor and Bing are dark-coloured.

The Duke cherries, which are hybrids of the sweet and the sour cherries, are particularly recommended for home planting because of their high dessert and canning qualities and their extended period of ripening, ripe fruit being available on the trees for three or four weeks. Empress Eugenie, Royal Duke, and Nouvelle Royale are the best of this group.

The following table gives a summary of the data compiled in connection with the various varieties. Under "Class", the letters A, M, H, B, and D stand for Amarelle, Morello, Heart, Bigarreau, and Duke, respectively; under "Use",

C and D stand for Cooking and Dessert, respectively; under "Quality", P, F, and G for Poor, Fair, and Good, respectively; and under "Size", S, M, L, and VL for Small, Medium, Large, and Very Large, respectively.

VARIETIES OF CHERRIES (Planted in 1913)

Variety	Class	Extent of fruiting season	Colour	Use	Quality	Size	Total yield, single tree, 1918–24, inclusive
							quarts
Montmorency Large	A	July 20–Aug. 7	Dark red	C	F	M	305·0
Montmorency Monarch	A	" 19–July 31	Dark red	C	G	M	266·5
Montmorency	A	" 19–Aug. 3	Dark red	C	G	M	266·0
Suda Hardy	M	" 26– " 15	Purplish red	C	F	M	257·0
Montmorency Stark	A	" 21– " 7	Dark red	C	G	M	216·0
Napoleon	B	" 15–July 26	Bright red over yellow	D	G	L to VL	203·0
Timme	A	" 15– " 30	Light to dark red	C	G	S	194·5
Montmorency King	A	" 19– " 30	Dark red	C	G	M	172·5
Governor Wood	H	" 7– " 18	Yellowish crimson	D	G	L	164·0
Early Richmond	A	" 10– " 26	Light to dark red	C	F	M	161·0
Mercer	B	" 20– " 31	Dark reddish black	D	G	M to L	161·0
Florence	B	" 3– " 21	Orange over yellow	D	G	M to L	159·0
English Morello	M	" 12–Aug. 15	Dark red to black	C	G	M	153·0
Vladimir	M	" 13–July 20	Dark red to black	C	P	M to L	152·0
Downer Late Red	H	" 14– " 31	Light to dark red	D	G	S	148·0
Ida	H	" 7– " 23	Light red over amber	D	G	M to L	128·0
Ostheim	M	" 12–Aug. 7	Very dark red	C	P	S to M	128·0
Black Tartarian	H	" 25–July 31	Deep reddish black	D	G	M to L	121·0
Baldwin	M	" 10– " 26	Very dark red	C	F	M	112·0
Rockport	B	" 3– " 21	Bright red over amber	D	G	M to L	112·0
Terry	A	" 6– " 27	Deep red	C	G	S to M	106·0
Elton	H	" 6– " 23	Dark red over amber	D	G	M	102·5
Nouvelle Royale	D	" 14– " 26	Dark red	C or D	G	L	100·0
Dyehouse	A	" 7– " 24	Light opaque red	C	F	S to M	100·0
Windsor	B	" 21–Aug. 3	Dark red to black	C or D	G	M to L	96·25
Belle Magnifique	D	Aug. 9–Sept. 13	Very light red	C	F	S to M	94·25
Coe Transparent	H	July 5–July 19	Pale amber mottled red	D	G	M to L	86·0
Montmorency Sweet	A	" 19– " 24	Dark red	C	G	M	83·0
Wragg	M	Aug. 12–Sept. 13	Dark red to black	C	G	M	80·0
Dikeman	B	July 16–July 26	Deep reddish black	D	G	S	79·5
White Caroon	B	July 19–July 26	Yellowish white	D	G	M to L	74·0
Paul	B	" 19–Aug. 17	Black mottled red	D	G	M to L	74·0
Elkhorn	B	" 13– " 1	Purplish black	D	G	M to L	72·0
Late Duke	D	Aug. 12–Sept. 13	Dark red	C	F	S to M	72·0
Bing	B	July 7–July 21	Very dark red	D	G	L	70·5
May Duke	D	June 30– " 26	Light to dark red	D	G	M	68·5
Marguerite	A	Aug. 11 -Sept. 4	Light red	C	P	S	66·0
Arch Duke	D	July 13–July 26	Light to dark red	C or D	G	M to L	65·0
Yellow Spanish	B	" 12– " 26	Amber, red cheeks	D	G	M	62·0
Empress Eugenie	D	" 12–Aug. 10	Deep dark red	C or D	G	M to L	56·0
Waterloo	B	" 12–July 28	Dark purplish red	D	P	S	49·0
Olivet	D	" 18–Aug. 9	Very deep red	C	G	L	36·5
Louis Philippe	D	" 13–July 26	Very dark red	C or D	G	M to L	35·5
Kirtland	B	" 4– " 23	Red over yellow	D	G	M	35·0
Royal Duke	D	" 14– " 26	Dark red	C or D	G	M to L	25·5
Early Purple Guigne	H	June 25– " 12	Dark purplish black	D	P	S	21·0
Black Eagle	B	July 5– " 15	Dark red to black	D	G	M	6·5
Lyons	B	" 14– " 27	Very dark red	D	G	L	6·0

STRAWBERRIES

Basing conclusions upon nine years' tests with most of the varieties listed below, the following are recommended for commercial planting in the Annapolis Valley. First, Senator Dunlap. This variety is preeminent in four qualities: hardiness; ability to produce runners; adaptability to many soil conditions; productiveness. The average yield during the nine years has been 9,805 quarts per acre. Second, Desdemona, a variety originated at the Central Experimental Farm, Ottawa. This variety surpasses Senator Dunlap in colour and quality, but is not quite so productive, the average yield having been 8,171 quarts per acre. Other varieties worthy of mention, with their average yields in quarts per acre, are: President, 7,936; Pocomoke, 7,836; Sample, 7,722; Parsons Beauty, 6,857; Portia, 6,687; and Stevens Late, 5,471.

STRAWBERRIES, TEST OF VARIETIES

Variety	Size	Quality	Season (first to last picking)	Yield per acre
				qts.
Senator Dunlap	Large	Good	June 30–July 19	16,020
Rewastica	Large	Fair	July 7– " 21	13,680
Early Jersey Giant	Large	Good	June 30– " 19	13,200
Premium			" 30– " 16	12,240
Gold Mine	Large	Good	" 30– " 19	11,880
Kellogg Prize	Small	Good	" 30– " 19	10,680
Warfield	Small to medium	Good	" 30– " 16	10,140
Desdemona	Large	Excellent	" 30– " 19	9,900
Cassandra	Large	Good	" 30– " 21	9,900
Sample	Medium to large	Fair	July 7– " 21	9,840
Stevens Late	Large	Poor	" 7– " 21	9,360
Pocomoke	Medium to large	Good	" 3– " 19	9,120
Ford	Large	Fair	June 30– " 19	8,640
New Globe	Very large	Fair	July 5– " 21	8,460
McAlpine	Large	Good	" 7– " 21	8,160
Charles I	Small to medium	Poor	June 30– " 19	8,160
Magic Gem	Small to medium	Fair	July 7– " 21	8,040
Portia	Medium to large	Good	June 30– " 19	8,040
Dr. Burrill	Medium to large	Good	" 30– " 19	7,980
Glen Mary	Medium	Good	July 7– " 21	7,920
Cordelia	Medium	Fair	June 30– " 21	7,800
President	Very large	Fair	July 3– " 21	7,800
Prize	Large	Good	" 7– " 21	7,800
Three W's	Large	Poor	" 3– " 16	7,140
Orem	Medium to small	Poor	June 30– " 19	7,080
Buster	Large	Poor	July 3– " 21	7,020
Arnout	Large	Good	" 3– " 21	6,912
Jessie	Large	Fair to good	" 3– " 21	6,600
Greenville	Very large	Poor	June 30– " 19	6,600
Paul Jones	Medium	Fair	" 30– " 16	6,440
Mariana	Large	Very good	" 30– " 19	6,300
Parson Beauty	Medium	Fair	" 30– " 19	6,120
Williams	Medium to large	Good	" 30– " 19	6,000
Premier	Medium to large	Very poor	" 30– " 21	6,000
Corsican	Small	Fair	" 30– " 19	5,940
Wm. Belt	Large	Good	July 3– " 19	5,460
Maggie	Small to medium	Fair	June 30– " 19	5,400
Lavinia	Large	Very good	July 3– " 19	5,280
Brandywine	Large	Good	" 3 " 19	4,980
Bisel	Medium to large	Fair	June 30– " 19	4,800
Armanda	Large	Good	July 3– " 21	4,620
Ophelia	Large	Good	" 3– " 19	4,440
Dornan	Large	Very good	" 3– " 19	4,020
$100	Large	Good	" 3– " 19	3,480
Beder Wood	Medium	Fair	" 3– " 19	2,880
Early Giant	Medium to large	Good	" 3– " 16	2,340
Grand Prize	Large	Fair	" 3– " 19	900
Newer Varieties				
Cassandra			June 30–July 15	11,330
Lavinia			July 3– " 19	8,140
Hermia			June 30– " 19	5,830
Portia			" 30– " 19	3,850

VEGETABLES

BEANS

VARIETY TEST.—Tests were made with the varieties of string beans listed. Seeding was done May 22. The plots were single rows 33 feet long. The rows were 2¾ feet apart. A duplicate plot was allowed to ripen and the yield of ripe beans was obtained. Hodson Long Pod is the best yellow bean for canning purposes, and Refugee or 1,000 to 1 is the best of the green-pod sorts. The results obtained are tabulated.

VARIETY TEST-BEANS

Source	Variety	First ready for use	Yield of green pods to July 26th		Total yield of green pods		Per cent anthracnose in green pods	Yield of seed		Per cent anthracnose in seed
			lb.	oz.	lb.	oz.	%	lb.	oz.	%
0-1631	Refugee or 1000 to 1	Aug. 2	.....		26	9	20	3	9	9
0-2748	Hodson Long Pod	" 3	.....		26	6	0	4	5	7
D. & F.	Bountiful Green Bush	July 21	6	9	23	6	5	3	10	3
0-2825	Bountiful Green Bush	" 21	10	8	21	12	5	3	11	3
0-2746	Masterpiece	" 21	8	8	21	10	0	3	12	4
0-2772	Davis White Wax	" 21	7	12	21	0	40	3	10	20
McD.	Round Pod Kidney	" 24	5	10	20	14	75	2	15	28
0-2824	Plentiful French	" 21	8	4	19	12	3	3	10	2
Burpee	Giant Stringless Green Pod	" 22	7	1	19	10	100	2	9	20
Rennie	Hodson Long Pod	Aug. 3	.....		19	0	0	3	13	9
0-2821	Yellow Eye (Yellow pod)	July 24	3	5	18	12	0	2	6	0
Graham	Wardwell Kidney Wax	" 21	6	6	18	12	60	3	1	8
Burpee	Fordhook Favourite	" 26	2	0	15	10	5	2	9	20
S. B.	Refugee or 1000 to 1	Aug. 2	.....		15	7	0	3	10	21
0-5232	Round Pod Kidney	July 24	4	12	13	2	60	2	12	14
0-2823	Wardwell Kidney Wax	" 21	5	2	12	12	10	2	8	12
0-1479	Extra Early Valentine	" 26	1	13	12	7	40	1	15	4
0-2747	Stringless Green Pod	" 21	4	6	12	10	30	1	4	7
0-592	Challenge Black Wax	" 19	6	10	12	0	100	2	7	11

SEEDED AT DIFFERENT DISTANCES APART—Tests of plantings made by spacing the seed 2, 4, and 6 inches apart at seeding time, and also of rows where more thickly seeded plants were thinned to 2, 4, and 6 inches apart were made. It will be noticed that the thinned rows gave the greater yield, due largely to a loss of plants in the rows where the seeds were spaced a definite distance apart when planting. The following yields were obtained.

BEANS—PLANTING DISTANCES

Variety	Distance between plants	Yield where seed was spaced				Yield where plants were thinned			
		To July 26		Total		To July 26		Total	
	inch.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.
Round Pod Kidney	2	4	0	12	8	4	8	15	14
Round Pod Kidney	4	3	8	9	12	3	8	16	11
Round Pod Kidney	6	3	14	12	11	2	12	17	5
Stringless Green Pod	2	6	4	12	7	7	0	16	0
Stringless Green Pod	4	5	3	10	8	5	8	14	9
Stringless Green Pod	6	3	14	8	4	5	0	14	2

BEETS

VARIETY TEST.—Tests made with different varieties of beets would indicate that the Detroit Dark Red is one of the best varieties to plant. Seeding was done on May 9. The plots were single rows 16½ feet long. The results were as follows:—

BEETS—VARIETY TEST

Variety	First ready for use	Number of marketable roots	Weight of roots	Quality
			lb.	
Early Wonder	July 26	38	21	Fair
Cardinal Globe	" 26	42	18½	"
Eclipse	" 28	36	14	"
Crosby Egyptian	" 30	40	12½	"
Detroit Dark Red	" 30	36	15½	Good
Early Model	" 30	34	15½	Fair
Black Red Ball	Aug. 2	38	11	"

SEEDED AT DIFFERENT DATES.—Tests were made with the Detroit Dark Red Beet sown on five different dates. The roots from seed sown before the middle of June were too large for market purposes. For winter use seeding after June 15 is advised. The results of this test were as follows:—

BEETS—SOWING DATES

—	Sown	Ready for use	Number of marketable bunches of five roots	Weight of six roots October 20
				lb.
Detroit Dark Red	May 9	July 29	7	10
Detroit Dark Red	" 19	Aug. 6	6	11
Detroit Dark Red	June 4	" 19	5	8½
Detroit Dark Red	" 19	" 25	.....	5
Detroit Dark Red	" 30	" 30	.....	5

CABBAGE

VARIETY AND PLANTING TESTS.—Tests were made with several varieties of cabbage. The variety Golden Acre which was this year on trial for the first time, is the earliest maturing of any so far tested. The head is not large, but is very firm. It will be noticed that it is earlier than Copenhagen Market, which variety grows somewhat larger.

CABBAGE—SEED SOWN MARCH 29, AND PLANTS SET TO OPEN MAY 8

Source	Variety	First fit for use	Average weight of head	Number of plants	Per cent ready July 25	Per cent ready August 22
			lb. oz.			
Harris	Golden Acre	July 8	2 0	25	100	.....
D. & F.	Copenhagen Market	" 12	2 6	86	50	.....
D. & F.	Jersey Wakefield	" 12	1 4	80	71	.....
D. & F.	Enkhuizen Glory	" 12	4 10	50	.....	86
McDonald	Dala	Aug. 5	3 12	25	.....	92
Harris	Summer Ballhead	" 12	3 10	18	.....	95
Ewing	Succession	" 20	2 3	25	.....	76
S.B.	Winnigstadt	" 22	2 3	25	.....	60
Harris	Danish Ballhead	" 22	4 10	20	.....	15

CABBAGE—SEED SOWN OUTSIDE MAY 10 AND PLANTS SET JUNE 20

—	First ready for use	Average weight of head Sept. 3	Heads cut and ready August 22
		lb. oz.	
Golden Acre	Aug. 16	2 4	22
Copenhagen Market	" 22	4 5	9
Jersey Wakefield	" 22	2 2	7
			Sept. 3
Enkhuizen Glory	Sept. 3	3 8	9
Dala	" 3	3 6	11
Summer Ballhead	" 3	4 0	6
Succession	" 3	4 5	5
Winnigstadt	" 3	3 3	14
		Oct. 15	Oct. 26
Danish Ballhead	Oct. 15	7 3	24
Danish Roundhead	" 15	6 5	22
Danish Ballhead (Emperor)	" 15	6 0	13
Danish Ballhead (Short Stem)	" 15	7 10	22
Danish Ballhead (Intermediate)	" 15	6 10	20
Danish Stonehead	" 15	6 0	22
Danish Delicatesse	" 15	5 0	13

SUCCESSIONAL PLANTING.—Seed of Copenhagen Market was sown on eight different dates, and four seedings of Danish Ballhead were made. The records show that seeding of Copenhagen Market after June 1 is not advisable, and that the Danish Ballhead should be seeded very early in May.

—	When seeded	First ready for use	Matured heads from 20 plants set
Copenhagen Market	Mar. 15	July 12	20
" "	" 29	" 12	20
" "	May 10	Aug. 22	20
" "	" 23	Sept. 20	20
" "	June 4	Oct. 15	7
" "	" 12	" 20	5
" "	" 19	" 25	10
" "	" 28	" 25	6
Danish Ballhead	Mar. 29	Aug. 30	20
" "	May 10	Oct. 15	15
" "	" 23	" 15	15
" "	June 4	" 26	1

KEEPING QUALITIES.—Four varieties from seed sown May 10 were stored in a cellar, which lacked good ventilation, one lot on shelves and one lot hung to the ceiling. These were gone over early in March, and the records obtained indicate that the Danish Ballhead is the most satisfactory for storage purposes.

STORING CABBAGE

Variety	How stored	Number heads stored	Number of heads		
			Spoiled	Fair	Good
Danish Ballhead	Shelves	20	2	6	12
Danish Ballhead	Hung up	18	..	..	18
Red Delicatesse	Shelves	12	6	2	4
Red Delicatesse	Hung up	16	16	..	..
Copenhagen Market	Shelves	6	4	2	..
Copenhagen Market	Hung up	7	4	3	..
Drumhead Savoy	Shelves	9	9	..	..
Drumhead Savoy	Hung up	8	8	..	..

CORN

VARIETY TEST.—The following varieties of corn were seeded May 22 in rows 66 feet long, and the plants thinned to 6 inches apart in the row:—

CORN—VARIETY TEST

Source	Variety	First fit for use	Number of marketable ears, August 28	Total marketable ears	Total ears
O—2567	Pickaninny	Aug. 12	53	80	163
O—1445	Sweet Squaw	" 22	40	103	144
O—860	Early Malcolm	" 25	36	92	127
McD	Early Mayflower	" 25	25	76	124
Graham	Extra Early Cory	" 26	9	41	113
Moore	Golden Bantam	" 28	6	102	139
Harris	Buttercup	Sept. 3	.....	94	125
McD	Golden Bantam	" 3	.....	71	95
Burpee	Seymour Sweet Orange	" 6	.....	59	124
Rennie	New Golden Giant	" 6	.....	35	86
Burpee	Early Catawba	" 9	.....	109	134
Graham	Stowell Evergreen	" 16	.....	24	71
Graham	Evergreen Bantam	Oct. 3	.....	17	37
Burpee	White Evergreen	" 11	.....	5	45

REMOVAL OF SUCKERS.—Tests were made to determine whether the removal of the suckering growth at the base of the corn plant would influence the date of maturity and the yield of marketable ears. The plants were seeded May 22 in hills 3 feet apart and thinned to three plants to a hill. There were twenty hills to a plot, a total of sixty plants. Ears were first fit to use from the Early Malcolm on August 22, and from the Golden Bantam, September 3. The results indicate earlier maturity where the suckers were removed, but the total yield of marketable ears was greater where the suckers were not removed.

CORN—REMOVING SUCKERS

Variety	How treated	Marketable ears	Total ears	Number of ears matured by Sept. 6
Early Malcolm	Suckers not removed	71	91	46
Early Malcolm	Suckers removed	68	81	63
Golden Bantam	Suckers not removed	55	78	14
Golden Bantam	Suckers removed	49	71	16

SEEDED IN POTS AND TRANSPLANTED.—Tests were made with corn started in the greenhouse in 4-inch pots on May 5, and planted to the open field May 22. Four plants were allowed to grow in each pot. The hills were 3 feet apart, and a comparison was made with twenty hills seeded in the field May 22. The plants were set by removing them from the pot without disturbing the roots and planting the contents of one pot to a hill. These tests indicate that by starting seeds in pots corn may be matured considerably earlier than by seeding directly to the ground.

METHOD OF SEEDING

Variety	Method of seeding	Marketable ears	Total ears	Total plants	Number of ears matured
Early Malcolm	Seeded in ground	71	91	60	Aug. 22, 14
Early Malcolm	Seeded in pot	88	112	72	" 16, 64
Golden Bantam	Seeded in ground	55	78	60	Sept. 6, 14
Golden Bantam	Seeded in pot	78	82	82	Aug. 28, 66

CUCUMBER

The cucumbers tested were seeded May 30. The ground had been manured and thoroughly worked. Two furrows were then thrown out and in this trench manure was scattered and covered. These manured rows were 8 feet apart. The seed was planted along this row, and the plants were thinned to one foot apart. There were twelve plants to a plot. The following table shows the varieties tested and the yields:—

Source	Variety	First ready for use	Yield to August 23	Total yield	Length of fruit
			lb. oz.	lb. oz.	inch.
Livingstone	Extra Early White Spine	Aug. 11	15 12	91 4	6 to 8
Graham	Davis Perfect	" 11	6 2	61 10	8 to 10
McD	Improved Long Green	" 11	6 4	60 4	7 to 9
Harris	Early White Spine	" 11	8 14	58 4	6 to 8
Bruce	Arlington White Spine	" 11	6 14	50 10	6 to 8
O—5621	Davis Perfect	" 12	3 10	48 8	8 to 10
Rennie	XXX Table	" 16	3 6	48 0	8 to 10

EGG PLANTS

VARIETY TEST.—Three varieties were planted on March 15, and transplanted to flats, 3 inches apart, April 11. These were set out June 7, in rows 2 feet apart, and 1½ feet apart in the rows. Thirty-six plants of each variety were set. Because of the low summer temperature the egg plant does not set fruit readily. The Early Dwarf has small fruit but is the earliest maturing. The following records were obtained:—

Variety	Set of fruit July 30	Set of fruit August 19	Ready for use	Size of fruit
Early Dwarf	30	43	Aug. 15	Medium
New York Purple	0	6	Sept. 28	Large
Black Beauty	0	2	" 28	Large

ONIONS

VARIETY TEST.—In order to be sure of a well-ripened onion crop it is necessary to seed onions in shallow boxes of soil about the middle of March and transplant the small plants to the ground early in May. The following tests were made with different varieties seeded March 19 and transplanted May 9. The plants should have eight weeks' growth and be well hardened off in a cold-frame before planting out. If handled in this way the crop is well matured early in September, and by the end of September may all be cured and stored. The plants were set in rows 12 inches apart, and 3½ inches apart in the row. The plots from which these yields were taken were single rows 16½ feet long.

Variety	Number of marketable bulbs	Weight of bulbs	Yield per acre
		lb.	tons
Prizetaker	56	20	26·4
Giant Prizetaker	45	20	26·4
Southport Red Globe	51	20	26·4
Cranston Excelsior	48	19	25·0
Red Globe	50	19	25·0
Yellow Globe Danvers	45	19	25·0
Large Red Wethersfield	45	18½	24·4
Extra Select Large Red Wethersfield	45	18	23·7

TRANSPLANTED BEFORE SETTING TO THE FIELD.—Tests were made with onions once transplanted before setting to the field to compare with those seeded at the same time but not removed from the seed-flat until transplanted to the field. The transplanted plants were set in shallow flats March 15 one inch apart. The seed was sown February 15. The plants were set to the field May 9. The results show considerable gain from transplanting, due, no doubt, to the transplanted plants having a better chance for development because of more room for growth. Well-developed plants will stand transplanting better and come on more rapidly than small ones, and for that reason it is better not to seed too thickly in the flats. If the seed is scattered to get eight to ten plants to the square inch there is likely to be little advantage in transplanting to another flat before setting to the open. The yield as harvested September 9 from one row 16½ feet long was as follows:—

Variety	Transplanted twice, marketable bulbs		Transplanted once, marketable bulbs	
	Number	Weight	Number	Weight
		lb.		lb.
Red Wethersfield	48	32	45	18
Red Globe	56	20	53	18
Prizetaker	48	32	56	20
Denia	48	34	51	21

STORAGE.—Onions for storage should be well ripened. The following test was made with well-matured bulbs. They were stored at a medium temperature, ranging from 45° when stored October 16 to 35° during the winter. They were placed on shallow shelves, with good circulation, in a cool but dry air. The percentage of marketable bulbs recorded on March 17 was: Danvers Yellow Globe, 100 per cent; Red Globe, 92 per cent; Red Wethersfield, 72 per cent; Prizetaker, 72 per cent; Excelsior, 36 per cent; and Denia, 16 per cent.

PARSNIPS

Tests were made with parsnips planted in rows 24 inches apart, and the plants thinned to 4 inches apart in the row. The yields are from single rows 33 feet long. The seed was sown May 9.

Source of seed	Variety	Number of roots		Marketable yield from plot
		Marketable	Unmarketable	
				lb.
O—3421	Hollow Crown	78	12	44
Graham	Elcombes Hollow Crown	87	14	42½
McK	Hollow Crown	74	13	38
Ew	Dobbie Exhibition	76	16	36
D. & F	Hollow Crown	71	18	28

PEAS

VARIETY TEST.—A number of varieties of garden peas were seeded in rows 3 feet apart on May 9. The plants were not staked but were allowed to fall over on the ground. The yield recorded is from one row 33 feet long. Seedling No. 3, it will be noticed, has a tall-growing vine, and the pods average 4½ inches, with eight to nine large peas to a pod. Records taken were as follows: —

PEAS, VARIETY TEST

Source	Variety	Height	First fit to use July	Yield to July 18		Total yield		Yield of seed		Per cent pea moth injury
		inches		lb.	oz.	lb.	oz.	lb.	oz.	
Greg.	Gregory Surprise	24	10	6	2	6	10	1	4	14
McDonald	Thomas Laxton	30	12	10	4	10	9	2	1	12
O-2347	English Wonder	15	14	8	6	12	8	..	..	..
Graham	Laxtonian	15	14	4	4	6	5	1	13	25
O-2334	Laxton Progress	12	15	3	10	9	4	4	14	16
Rennie	Prosperity	33	16	7	2	14	0	2	9	21
O-3332	American Wonder	20	16	4	3	14	10	2	13	11
O-2336	Advancer x Surprise	30	16	3	14	15	2	2	13	21
O-2344	Surprise x Eng. Wonder	36	16	6	14	17	4	3	4	20
O-2348	Gradus	36	16	3	4	20	4	1	0	13
Greg.	Pioneer	24	17	4	4	12	8	3	14	23
O-2379	Gradus x Amer. Wonder	33	18	1	4	13	2	2	12	15
O-1068-9	Advancer	33	18	1	6	14	4	3	6	18
Inver	Seedling No. 2	28	18	5	4	19	10	4	8	21
Inver	Seedling No. 3	45	18	3	12	19	8	4	13	23
Inver	Seedling No. 6	41	18	3	2	15	6	2	14	22
Inver	Seedling No. 8	33	20	..	..	16	6	4	3	27
Inver	Lincoln	24	21	..	..	14	10	2	4	9
Graham	Blue Bantam	20	21	..	..	13	10	2	9	23
Liv	McLean Advancer	26	21	..	..	13	0	2	0	25
Morse	Lincoln	24	21	..	..	20	6	3	5	20
Inver	Seedling No. 1	36	23	..	..	18	0	4	8	21
McDonald	Quite Content	36	23	..	..	8	0	3	0	28
Graham	Stratagem	36	24	..	..	13	2	..	..	
O-5146	Danby Stratagem	36	24	..	..	13	0	..	..	

THINNING TO DIFFERENT DISTANCES APART IN THE ROW.—Three varieties were seeded heavily and thinned to one, two and three inches between the plants. The results were:—

Distance apart	Thomas Laxton Yield in pods				English Wonder Yield in pods				Stratagem Total yield of pods	
	July 18		Total		July 18		Total			
	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.	lb.	oz.
1 inch	12	14	14	4	9	14	13	10	16	4
2 inch	10	2	11	4	9	8	13	2	10	8
3 inch	8	2	9	6	8	8	13	10	14	13

PEAS, STAKED VS. NOT STAKED.—The Gradus variety was used. One lot was staked, and a similar lot allowed to fall on the ground. It was found that the staked peas had much less pea-moth injury, this being but 9 per cent, while the plants not staked had 20 per cent of this injury. Judging from this test it would seem there is apparently no other advantage in staking, or putting up of small birch branches for the vines to cling to.

—	—	Yield to July 24		Total yield	
		lb.	oz.	lb.	oz.
Gradus	Staked	5	10	8	5
Gradus	Not staked	5	14	10	2

PEPPERS

VARIETY TEST.—Six varieties of peppers were seeded March 15, and transplanted to flats, 3 inches apart, April 19. These were set to the field June 7, in rows 2½ feet apart and 1½ feet apart in the rows. These tests show Harris Earliest to be the earliest variety tested.

Variety	Development of fruit		Number of fruits per plant, August 19	Size of fruit
	July 19	July 30		
Harris Earliest	Good size	Showing colour	6 to 8	Medium
Neapolitan	Just forming	Showing colour	9 to 10	Large
Bell or Bullnose	Just forming	Good size	4 to 5	Large
Squash or Tomato	Just forming	Heavy	9 to 10	Medium
Large Red Cayenne	No fruit set	Heavy	8 to 9	Long, small
Red Chili	No fruit set	Just forming	Many	Very small

POTATOES

DUG AT DIFFERENT DATES.—Irish Cobbler potatoes were planted April 28 and May 5. These were dug at different dates, and yielded as indicated in the table following:—

When planted	When dug	Yield per acre		Per cent scab
		Marketable tubers	Unmarketable tubers	
		bush.	bush.	
April 28	July 23	92	36	2
April 28	July 30	144	72	4
April 28	Aug. 5	200	64	5
April 28	Aug. 15	272	72	3
April 28	Aug. 22	264	72	6
May 5	July 26	72	64	6
May 5	Aug. 2	88	60	10
May 5	Aug. 8	160	44	14
May 5	Aug. 18	192	56	16
May 5	Aug. 25	304	56	26

RHUBARB

Rhubarb was seeded in boxes in the greenhouse April 21 and transplanted outside on June 8, and a similar lot was seeded outside on May 10. Plots from these were permanently planted on September 6. These seedlings show a marked variation in vigour of growth. Some of the best roots were used for forcing but the results show that from small roots good yields are not possible. The roots should be allowed to grow into vigorous clumps for forcing.

Source of seed	Sown	Number of plants obtained of various grades				Total plants
		1st	2nd	3rd	4th	
O-45 Plant 1	April 21	3	5	4	6	18
O-45 Plant 2	April 21	7	1	10	7	25
O-45 Plant 1	May 10	3	0	11	7	21
O-45 Plant 2	May 10	12	8	15	36	71
Lethbridge Victoria	May 10	6	4	2	8	20

FORCING IN GREENHOUSE.—Rhubarb was placed under a bench in the greenhouse at different dates, for forcing, and the yield as given in the table following is from four roots of each used. The roots were dug in the fall before the ground froze, piled outside and allowed to freeze, and brought in when wanted for forcing. In forcing, the roots are placed close together and the space around the roots filled in with sand, which is kept moist during the forcing period. Curtains are placed along the edge of the bench to exclude the light.

When set in greenhouse	First ready for use	Date of heaviest harvest	Total yield	
			lb.	oz.
December 16	Jan. 31	Jan. 31	5	12
January 2	Feb. 7	Feb. 14	16	2
February 14	Mar. 14	Mar. 21	19	12
March 12	Mar. 28	April 4	15	12

The Ruby variety of rhubarb was started at different dates and three roots of each lot were used on January 2, 1925, for forcing in the greenhouse. The results were as follows:—

Plant	Date seeded 1923	Date replanted 1923	Date of first harvest	Date of heaviest harvest	Total yield	
					lb.	oz.
1	April 21	Sept. 6	Feb. 7	Feb. 7	6	12
2	April 21	Sept. 6	Feb. 7	Feb. 7	7	10
1	May 10	Sept. 6	Feb. 7	Feb. 14	8	0
2	May 10	Sept. 6	Feb. 7	Feb. 14	7	4

SPINACH

VARIETY TEST.—Five varieties of spinach were seeded on May 9. These were thinned June 4 to 3 inches apart in the row. On June 21 every other plant was removed, and the balance were cut on the 28th of June. The plots from which the records were taken were single rows 16.5 feet long. Bloomsdale was the most satisfactory, followed by King of Denmark.

Variety	Yield from 16½ foot row						Number of plants starting to seed June 28
	June 21		June 28		Total		
	lb.	oz.	lb.	oz.	lb.	oz.	
Bloomsdale	2	2	7	4	9	6	13
King of Denmark	1	3	5	0	6	3	25
Viroflay	1	0	4	0	5	0	28
Long Standing	1	0	3	12	4	12	32
Victoria	0	14	3	0	3	14	11

SQUASH

VARIETY TEST.—Squash seed was planted in hills 10 by 12 feet apart, on May 30. The yield from nine plants of each variety was as follows:—

Source	Variety	August 25		Average weight of fruit Sept. 8	
		Total fruits	Number ripe		
				lb.	oz.
McDonald	Golden Hubbard	22	8	8	1
Harris	Golden Hubbard	21	5	11	5
Graham	Green Hubbard	20	.....	15	5
O-5546	Golden Hubbard	16	1	8	3
Wedge	Kitchenette	11	7	8	3
Buckbee	New Acorn	6	.....	2	8

PUMPKIN

VARIETY TEST.—Pumpkins were planted similarly to squash. The following yields are from nine plants of each variety.

Source	Variety	Number of fruits Aug. 25	Fruits ripe Sept. 5	Average weight of fruit	
				lb.	oz.
Graham	Small Sugar	22	7	7	5
O–5548	Small Sugar	22	5	8	3
McDonald	Connecticut Field	15	10	17	10

TOMATOES

VARIETY TESTS.—Tests were carried on with thirty-five varieties of tomatoes. These were seeded in boxes in the greenhouse on April 1 and later transplanted to other shallow boxes, being spaced 4 inches apart, where they remained until planted in the field May 29. The plants were set 4 by 4 feet apart, six plants of each variety. Before setting in the field the plants were gradually hardened off in the hotbed. The following table gives the yield of the earliest maturing sorts. Danish Export is a strong-growing variety producing small, round, firm fruit. The Bonny Best has smooth, round fruit, and John Baer and Chalk Early Jewel are somewhat similar. The other varieties conform to the Earliana type.

TOMATOES, VARIETY TEST

Source of Seed	Variety	Date first ripe	Weight of of ripe fruit to August 29		Total weight from six plants			
					Ripe fruit		Green fruit	
			lb.	oz.	lb.	oz.	lb.	oz.
Wiboltt	Danish Export	August 9	30	12	86	2	38	0
Vaughan	Anon	" 15	25	0	91	10	20	0
Bruce	Burbank	" 15	21	2	101	14	21	8
Ferry	Earliana	" 14	19	12	89	4	10	12
Stokes	Bonny Best	" 11	18		61	14	7	6
Burpee	Sparks Earliana	" 18	15	2	101	4	12	8
Graham	Early Mascot	" 16	15	0	104	2	29	8
Keith	Bonny Best	" 18	14	2	82	8	..	..
Ewing	Sparks Earliana	" 23	13	14	79	10	..	..
Buckbee	Earliest Market	" 15	13	12	102	6	35	8
O–5467	Alacrity	" 12	13	6	63	6	18	0
O–3040	Alacrity x Hipper	" 16	13	6	52	6	18	0
Buckbee	Fifty Day	" 20	13	2	98	4	19	8
McKenzie	First of All	" 17	12	8	89	14	21	8
Moore	Select Earliana	" 16	12	6	72	8	18	0
O–3039	Pink (1)	" 20	11	4	75	0	41	0
Patmore	Prosperity	" 16	11	2	57	10	12	8
O–3035	Alacrity x Earlibell	" 20	9	10	60	12	28	8
Steele, Briggs	Earliest of All	" 23	8	12	90	10	19	0
Steele, Briggs	John Baer	" 19	7	6	54	12	29	0
Steele, Briggs	Chalk Early Jewel	" 23	7	2	69	6	26	0
Ferry	Gulf State Market	" 26	7	0	88	12	42	0

TRAINING TO SINGLE STEMS AND STAKED.—Tests were made with tomatoes planted in rows two feet apart and one foot apart in the rows, tied to stakes and all laterals kept removed. The plants were topped above the second, third, and fourth trusses. The first truss usually produces little fruit, and so is eliminated. Twenty-five plants were included in each test. Owing to weather conditions an unusual number of the fruit cracked when about to ripen, and a

record was made of the cracked fruit. It will be observed that the loss of foliage-area by removal of the top increased this trouble. The crop yields are greater per square foot when plants are grown to single stems, than when planted 4 by 4 feet without staking. The removal of laterals and tying to stakes takes considerable time, and it is doubtful if in commercial work the practice would be profitable. In small garden areas where space is a consideration the practice is advisable. The results were as follows:—

PRUNING AND STAKING

Single stem of	Date first fruit ripe	Ripe fruit to August 29		Total ripe fruit		Number of fruit	
						Cracked	Not cracked
		lb.	oz.	lb.	oz.		
Alacrity—							
One truss	Aug. 10	36	8	49	6	137	15
Two trusses	" 11	15	8	33	8	151	18
Three trusses	" 13	17	0	35	0	146	21
Full grown	" 13	17	6	36	8	133	34
Bonny Best—							
One truss	" 11	35	10	49	6	137	15
Two trusses	" 12	36	12	47	10	103	24
Three trusses	" 12	32	4	44	8	84	43
Full grown	" 11	25	0	42	0	58	62

SOIL-COVERING TO PROMOTE EARLY MATURITY.—In order to determine the value, if any, of placing tar-paper on the soil around tomato plants to draw and retain the heat, as an aid to early maturity of the crop, a test was made by surrounding three plants with tar-paper spread on the soil; around similar plants bags were used; and three plants were left without any soil-covering. The test would indicate some value from the use of tar-paper for this purpose. The covering was placed July 14. The yield of ripe fruit is that collected to September 2.

Soil-covering used	Ripe fruit to Sept. 2	
	Earliana	Bonny Best
	lb.	lb.
Tar paper	53	56
Bags	18	49
No covering	27	47

TURNIPS

TEST OF VARIETIES.—Tests were made with ten varieties of turnips obtained from Sutton's. These were grown in rows two feet apart, and the plants thinned to three inches apart. The seed was sown May 12. The date these were ready for bunching is given below. Six average roots of each were weighed July 18. Early Red Milan is an exceptionally good variety. Snowball and Early Six Weeks are apparently the same. Green Top White and Chirk Castle are rather rough and not very desirable. Golden Ball and Orange Jelly are similar, and have yellow flesh of excellent quality. A second sowing was made June 30. The dates these crops were fit to use are given in the table following:—

—	First seeding ready for use	Weight of six roots July 18	Second seeding fit to use
		lb. oz.	
Early White Milan	July 3	2 14	Aug. 5
Early Red Milan	" 5	3 2	" 6
White Gem	" 10	4 4	" 6
Early Six Weeks	" 12	3 2	" 8
Early Snowball	" 12	2 14	" 10
Red Globe	" 12	3 8	" 18
Golden Ball	" 16	5 0	" 22
Green Top White	" 18	4 10	" 22
Orange Jelly	" 18	4 4	" 22
Chirk Castle	" 18	4 4	" 22

CEREALS

The weather during the spring was normal. The cereal plots were sown May 12. The mean temperature during May was about two degrees above normal, but the rainfall was light, being only 0·67 inches, as compared with an average of 1·98 inches over the previous ten-year period. The temperature during June was normal, but the rainfall was nearly double the average of the previous ten years. The average temperature during July was two degrees below normal, and the precipitation just one-third of the average of the previous ten-year period. Rainfall during August was more than double the average, being 6·36 inches, as compared with 3·04 inches, the average rainfall for the previous ten years. The period from seeding to maturity was about normal.

The table following gives the mean temperature and precipitation during the growing season.

Some Meteorological Records, 1924

Month	Mean temperature.		Precipitation	
	1924	Average of 9 years, 1914–1923	1924	Average of 9 years, 1914-23
	deg. F.	deg. F.	in.	in.
May	51·00	49·38	0·67	1·98
June	58·76	58·80	4·44	2·87
July	67·45	65·29	0·99	2·97
August	64·90	64·18	6·36	3·04
September	55·81	57·46	2·02	3·26

The variety plots of wheat, oats, and barley were seeded May 12. The land had been in mangels and turnips in 1923, and was in a fair state of fertility. Oats were seeded at the rate of 2½ bushels; wheat, 2 bushels, and barley, 2 bushels (except Duckbill, 2¼ bushels) per acre. All seed-oats were dusted with copper carbonate dust, using from three to four ounces per bushel, and no smut was noticed on any of the varieties tested. All plots were of uniform size. The table following shows the yields of grain and straw per acre.

CEREALS, TEST OF VARIETIES

Variety	Number of days to mature	Height	Per cent stand	Yield per acre	Yield per acre	Yield per acre
		in.		lb.	bush.	tons
Oats—						
Victory	105	44	99	2,727·8	80·2	1·32
Banner, Kent	105	44	98	2,594·4	76·3	1·73
Banner, T.S.W. 10307	105	42	98	2,216·6	65·2	0·96
Liberty—Ottawa 480	100	37	98	1,781·4	52·4	1·12
Wheat—						
Marquis—0·15	103	41	98	1,780·2	29·6	0·77
Red Fife—0·17	109	42	96	1,462·8	24·4	0·92
Charlottetown No. 123	110	41	99	1,458·2	24·3	0·92
Huron—Reg	106	42	98	1,159·2	19·3	0·75
Barley—						
Chinese—0·60	102	37	97	1,858·4	38·7	1·09
Duckbill—0·57	105	38	95	1,803·2	37·6	1·38
Charlottetown No. 80	102	39	98	1,789·4	37·3	0·89

AVERAGE YIELDS OF CEREAL CROPS

The following table gives the average yield of the cereal crops at this Station, tested for the number of years indicated in the table.

AVERAGE YIELD OF CEREAL CROPS

Variety	Number of years tested	Yield per acre	
		Pounds	Bushels
Oats—			
Banner, Ottawa 49	9	2,106·9	61·9
Victory	10	2,246·4	66·07
Hulless oats—			
Liberty, Ottawa 480	7	1,504·2	44·2
Barley—			
Charlottetown No. 80	9	1,793·5	37·3
Duckbill, Ottawa 57	6	1,377·2	28·7
Chinese, Ottawa 60	3	1,448·8	30·2
Wheat—			
Huron, Ottawa 3	6	1,088·0	18·1
Red Fife, Ottawa 17	11	959·3	15·9
Marquis, Ottawa 15	11	1,130·0	18·8
Charlottetown No. 123	1	1,458·2	24·3
Peas—			
Arthur, Ottawa 18	8	649·0	10·8
McKay	2	729·0	12·1
Rye—			
O.A.C. No. 61	4	1,143·0	20·4

ROD-ROW PLOTS OF CEREALS

Twenty-nine varieties of oats, seventeen of barley, and eighteen of wheat were tested in rod-row plots, single rows each one rod long, the object being to determine by numerous trials the best variety of each cereal for the district. The land used had been in corn in 1923, and was fairly uniform. No fertilizers were applied in 1924.

Alaska oats has given a good yield at this Station, and is very early. This is an advantage to the orchardist, enabling him to have his oats harvest out of the way before apple-picking. Charlottetown No. 80 barley is a medium early variety, yields well in this district and is probably to be preferred to any other variety thus far tested. Huron, Ottawa 3 wheat has been very satisfactory here. It is not so early as Garnet or Prelude.

The table following gives the yield of the ten highest-yielding varieties of oats, barley and wheat tested in 1924.

ROD-ROW PLOTS OF CEREALS, THE TEN HIGHEST-YIELDING VARIETIES

Variety	Yield per acre
	bush.
Oats—	
Sawler	66·1
Legacy-Ottawa 678	50·2
O.A.C. No. 3	48·5
Banner, Cap Rouge	48·5
Alaska	43·2
Lincoln	41·9
Victory, S.W.	40·4
O.A.C. No. 72	38·3
Irish Victor, Ottawa Selected	37·8
Danish Island, S.W.	36·8
Barley—	
Chinese—Ottawa 60	29·9
Charlottetown No. 80	24·1
Early Chevalier—Ottawa 51	23·8
Hannchen—S. 229	23·4
Beaver—Ottawa 475	23·3
Manchurian—Cap Rouge	23·3
Manchurian—Ottawa 50	21·8
Gold Swedish	21·5
O.A.C. No. 21	21·02
French Chevalier	19·04
Wheat—	
Huron—Ottawa 3	21·3
Pioneer—Ottawa 195	19·6
Early Red Fife—Ottawa 16	18·4
Early Russian—Ottawa 40	17·8
Whitehead, Charlottetown No. 123	17·8
Bishop—Ottawa 8	17·5
Red Fife—Ottawa 17	17·4
Garnet—Ottawa 652	17·4
White Russian—Ottawa Selected	16·3
Early Triumph—Wheeler	16·3

FORAGE PLANTS

CORN FOR ENSILAGE, VARIETY TEST

Twenty-four varieties and strains of corn were tested on land that had grown a crop of potatoes in 1923. Manure was applied at the rate of 16 tons per acre, the land was then ploughed, disked and cultivated, 150 pounds of nitrate of soda and 300 pounds of acid phosphate per acre were then applied, and the ground levelled with the smoothing harrow. Seed was sown with the grain drill May 22, and all varieties were harvested September 26. The yield per acre (average of triplicate plots) of the ten highest-yielding varieties, together with the stage of maturity, is given in the table following:—

CORN FOR ENSILAGE, VARIETY TEST

Variety	Average height		Stage of maturity	Average yield per acre
	ft.	in.		tons
Burr Leaming	8	0	Early silk	23·02
Longfellow—Disco	7	9	Late milk	21·04
Compton's Early	6	10	Silk	20·90
Wisconsin No. 7	7	0	Silk	20·70
Bailey	6	0	Early milk	19·90
Hybrid-Wimple	7	0	Silk to early milk	19·20
Disco Pride Yellow Dent	5	4	Silk to early milk	18·70
Disco-Ninety-Day White Dent	7	3	Silk to early milk	18·10
Amber Flint-Wimple	5	6	Silk	17·90
Golden Glow	7	3	Silk	17·40

SUNFLOWERS FOR ENSILAGE, TEST OF VARIETIES OR STRAINS

The land where these were grown was manured at the rate of 16 tons per acre. No commercial fertilizers were used. The land was ploughed, disked and cultivated, and the seed sown with the grain drill May 22. The crop was harvested September 6. The average height, stage of maturity, and yield of each variety are given in the table below.

SUNFLOWERS FOR ENSILAGE, TEST OF VARIETIES OR STRAINS

Variety and source	Average height	Stage of maturity	Yield per acre
	ft.		tons
Mammoth Russian—K. McD	6½	10% in bloom	16·25
Black—C.P.R	4	Seed, late dough	13·21
Mammoth Russian—U.F. Cos	7½	40% in bloom	13·09
Manteca	4	Seed, late dough	11·81
Manchurian	3½	Seed, late milk	11·68
Mammoth Russian—C.P.R	5½	Some in bloom; others, seed in dough stage	11·10
Mixed—C.P.R	4½	Seed, late dough	10·49
Mennonite	3	Seed ripe	7·31

SOY BEANS

The land planted to soy beans was manured at the rate of 15 tons per acre, ploughed, disked, cultivated, smoothed and seed sown with garden drill. Seed sown May 28, and crop harvested September 27. The previous crop was hemp. Duplicate plots, 1/220-acre. All varieties except Ito San were badly affected with what was thought to be thrip. The foliage of Ito San was practically free from attack.

Variety	Stage of maturity	Average yield per acre
		tons
Ito San	Pods formed; heavy foliage	12·48
Summerland	Pods formed	10·67
Hollybrook	Just out of blossom	9·90
Black Eyebrow	Seeds forming	7·97
Macheco	Seeds in dough	4·56

SUGAR BEETS

Land for tests with sugar beets was manured at the rate of 16 tons per acre, ploughed, disked, cultivated, 150 pounds of nitrate of soda and 300 pounds of acid phosphate applied per acre, smoothed and the seed sown with a garden drill on May 20. The crop was harvested on October 7. The previous crop was potatoes.

Name	Source	Average yield per acre
		tons
Horning	Dominion Sugar Co	12·27
Hemming and Harving	" "	12·14
Dr. Burgmar	" "	11·22
Dieppe	" "	11·10
Vilmorin Improved	Vilmorin	10·99
Shriber & Son	Dominion Sugar Co	9·71
Kitchener	" "	8·79
Sluice Bros	" "	6·50

The very low yield of Sluice Bros. and Kitchener varieties may be attributed to poor germination; only 49 per cent of a stand was secured in the case of Sluice Bros., and 73 per cent with Kitchener.

CARROTS, VARIETY TEST

This land was manured at the rate of 16 tons per acre, and after ploughing, disking and cultivating, 150 pounds of nitrate of soda and 300 pounds of acid phosphate were applied per acre. The land was again cultivated and smoothed, and the seed sown on the level ground May 21. The crop was harvested October 21. The yields of the ten highest-yielding varieties tested are given in the table following:—

CARROTS, VARIETY TEST

Variety and source	Average yield per acre	
	tons	bush.
White Belgian—Graham	15·70	628·0
Improved Intermediate White—Ewing	15·70	628·0
White Belgian—No. 1207	14·94	597·6
Champion—G.S.S. Co	15·18	607·2
Half Long White—G.S.S. Co	15·57	622·8
Improved White Vosges	15·04	601·6
Danish Champion—C.E.F	14·65	586·0
Large White Belgian—Rennie	13·41	536·4
Mammoth White Intermediate	13·33	533·2
White Belgian—H.S. Co	13·20	528·0

MANGELS, VARIETY TEST

This test, with 31 varieties and strains, was carried out on land that had been in potatoes in 1923. Manure was applied at the rate of 16 tons per acre. the land was ploughed, disked and cultivated, 150 pounds of nitrate of soda and 300 pounds of acid phosphate were applied per acre, and the land then smoothed. The seed was sown with the garden drill May 20, and the crop harvested October 6. The average yield per acre (average of triplicate plots) of the ten highest yielding sorts is given in the table following:—

MANGELS, VARIETY TEST

Variety and source	Average yield per acre	
	tons	bush.
Champion or Gate Post—H.S. Co	22·92	916·8
Golden Tankard—H.S. Co	22·47	898·8
Barres Stryno—Hj. H. & Co	22·13	885·2
Barres Oval—G.S.S. Co	20·85	834·0
Eckendorfer Yellow—Hj. H. & Co	20·36	814·4
Barres Sludstrup—G.S.S. Co	20·10	804·0
Yellow Intermediate—C.E.F	19·62	784·8
Giant Yellow Half Long Intermediate—Rennie	19·50	780·0
Sludstrup Barres—Hj. H. & Co	19·50	780·0
Avalof Red—G.S.S. Co	18·70	748·0

TURNIPS, VARIETY TEST

The land on which the turnips were grown was in potatoes in 1923. Sixteen tons of manure, 150 pounds of nitrate of soda and 300 pounds of acid phosphate were applied per acre. The manure was spread first, the ground was then ploughed, disked and cultivated, the nitrate of soda and acid phosphate applied next, and the smoothing harrow used for levelling. Rows were then run with the horse hoe and the seed sown May 21 with the garden drill after the rows had been rolled down with the land roller. The crop was harvested October 21.

All except the fall varieties suffered considerable injury from the green worm, which in many cases practically defoliated the plants. The white, fall varieties are apparently immune to the attacks of this insect.

Yields of the ten heaviest producing varieties are given in the table following, together with the yield of four fall varieties. The latter showed a high percentage of rotten roots at harvest time.

TURNIPS, VARIETY TEST

Variety	Average yield per acre	
	tons	bush.
Hall's Westbury	23·57	942·8
Shepherds Swede	19·78	791·2
Best of All	19·43	777·2
Olsgaard Bangholm Swede	19·03	761·2
Canadian Gem Purple Top	18·74	749·6
Bangholm Purple Top	18·68	747·2
Elephant or Jumbo	18·57	742·8
Hartley's Bronze Top	17·94	717·6
Kangaroo	17·25	690·0
Improved Elephant or Jumbo	17·02	680·8
Fall Varieties		
Yellow Tankard	27·71	1,108·4
Fynen Bortfeld	23·10	924·0
Fynsk Bortfelder Parti 2660	13·91	556·4
Dalis	17·59	703·6

TURNIP SEED GROWING

Production of a small quantity of the club-root-resistant strain of Bangholm swede was again undertaken. Stecklings were stored in crates in a storage cellar under one of the stables. Owing to poor ventilation, the roots to be planted were not in first-class condition in the spring of 1924. A large percentage had made too much growth and were weakened, and others had rotted at the crown and were useless for seed production.

Roots were carefully selected and planted April 29 and 30 in rows 4 feet apart, being placed 2 feet apart in the rows. One hundred and eighty-six pounds of seed of the Bangholm strain and a small quantity of the Wilhelmsburger were harvested. The latter, having proved very resistant and a good yielder, will be again tested in 1925, and if found satisfactory will be grown in some quantity for seed.

STRAINS OF SWEDES RESISTANT TO CLUB-ROOT

As previously reported, a sample of seed of a club-root-resistant selection of Bangholm was sown at this Station in 1921 on land purposely infected with the club-root organism. Its resistance to this disease proved to be almost perfect. A quantity of this seed has been grown each year and its resistance to club-root is as marked as ever. Since 1921 several strains of Bangholm seed have been put on the market, of which a number have been tested here on infected soil. Results would indicate that the majority of Bangholm strains of seed are not resistant.

The land was ploughed June 15, fertilized with 500 pounds of slag and 200 pounds of sulphate of ammonia per acre, cultivated, levelled and run into rows 2½ feet apart. Seed was sown June 16, cultivation was given when necessary, plants were thinned to 10 inches apart, and the crop harvested November 5.

The tables following give the percentage of club-root from the different varieties as noted in the 1924 test.

STRAINS OF SWEDES RESISTANT TO CLUB-ROOT

Variety	Yield per acre	Per cent club-root
	lb.	
Bangholm, Nappan	22,239·8	0·0
Herming Strain Bangholm	20,086·0	0·0
Dalis	14,182·0	0·0
Fynsk Bortfelder 2660	10,260·8	0·0
Studgaard Bangholm	22,264·0	0·9
Bangholm, Kentville	22,052·4	1·5
May Turnip Marienlyst	21,717·8	2·0
Bangholm, H.S. Co	25,022·8	4·8
Bangholm, Rennie	20,372·4	6·2
Ditmars	17,311·7	7·6
Bangholm Gen., S.S. Co	17,843·4	8·0
Olsgaard Bangholm	20,795·8	13·1
Bangholm, A. E. MacKenzie	18,513·0	17·0
Hall's Westbury	23,667·6	19·3
Bangholm Trifolium	18,972·8	24·5
Bangholm 116 Trifolium	15,262·1	27·2

CLUB-ROOT CONTROL

The tables following give in detail the results of the application of quicklime and ground limestone for the control of club-root. After the land had been infected in 1916 by an application of manure from cattle fed club-root-infected turnips, an experiment for the control of this organism by the use of lime was taken up. Lime was applied in 1916, some plots were again limed in 1918, and others were again treated in 1921.

This has been a severe test, as turnips have been grown continuously on this land since 1916, with the exception of 1918 and 1919, making seven crops of turnips in nine years. Good farm-practice would not follow this course but it has been done here in order to gain as much information as possible as to the value of lime, and also of the resistant strains of swede turnips, in as short a time as possible.

The same commercial variety has been grown each year and compared with the Bangholm resistant strain which was first sown here in 1921.

It would appear from the results in 1924 that the continued application of lime is having some effect on the control of the club-root organism.

On the other hand, it would seem that it has been possible to secure strains of swede turnips that are resistant to this disease, and that more progress will be made if resistant strains of seed are developed.

EFFECT OF LIMING ON CLUB-ROOT

Number of rows	Variety	Yield per acre	Per cent severe club-root
		lb.	
	Limed 1916 only		
1	Bangholm, Nappan	26,716·8	0·0
1	Herning Strain Bangholm	20,086·0	0·0
1	Studgaard Bangholm	22,264·0	0·9
1	May Turnip Marienlyst	21,117·8	2·0
6	Bengholm, Kentville	22,683·5	2·7
1	Bangholm, H.S. Co	25,168·0	9·7
1	Bangholm, Rennie	23,861·2	10·4
3	Ditmars	13,051·7	21·3
3	Hall's Westbury	23,958·0	37·8
1	Bangholm Gen., S.S. Co	8,034·4	48·2
1	Bangholm, McKenzie	8,857·2	55·7
1	Bangholm, Trifolium	16,359·2	56·2
2	Bangholm, 116 Trifolium	13,261·6	61·9
1	Olsgaard Bangholm	9,680·0	79·0
	Limed 1916 and 1918		
4	Bangholm, Kentville	21,979·1	0·0
2	Hall's Westbury	20,324·8	0·0
1	Bangholm, Nappan	17,758·8	0·0
1	Dalis	14,181·2	0·0
1	Fynsk Bortfelder 2660	10,260·8	0·0
1	Bangholm, Rennie	16,891·6	0·3
2	Bangholm Gen. S.S. Co	22,748·0	1·0
2	Ditmars	22,385·0	1·0
2	Bangholm, Olsgaard Hj. H	21,509·8	1·2
	Limed 1916, 1918 and 1921		
1	Bangholm, H. S. Co	24,877·6	0·0
1	Bangholm, Trifolium	21,586·4	0·2
2	Bangholm, Kentville	20,182·8	1·1
1	Ditmars	19,940·8	2·5
1	Bangholm, McKenzie	28,388·8	4·8
1	Bangholm, 1116 Trifolium	19,262·3	6·5
1	Hall's Westbury	29, 82·0	9·1

ALFALFA

Only one cutting of alfalfa was taken this year from any of the seedings. That seeded in 1921 on fairly heavy soil gave a good second growth, but it was thought better to leave it for winter protection. The 1920-seeded had become badly mixed with various grasses. This area was ploughed in the fall of 1924 and limed at the rate of three tons of ground limestone per acre, and will be reseeded to alfalfa in the spring of 1925. The crop was cut July 18. The 1921-seeded yielded 9.23 tons, green weight, per acre. The yields of the different seedings are given in the following tables:—

ALFALFA YIELDS

Year seeded	Yield of cured hay per acre
	tons
1920	2·2
1921	2·72
1922	2·93
1923	1·48

ALFALFA FROM DIFFERENT SOURCES, SEEDED 1923

Source	Green weight per acre	Cured weight per acre
	tons	tons
Grimm	7·04	3·20
Ontario	7·20	3·20
Falmouth—W.G.L.	8·32	3·18

NITRO-CULTURE FOR ALFALFA

The value of the artificial inoculation of alfalfa seed with bacterial cultures has not been particularly marked at this Station, but results as a whole would indicate some advantage from this treatment.

Cultures for this purpose sufficient for sixty pounds of seed may be obtained free of charge from the Division of Bacteriology, Central Experimental Farm, Ottawa.

NITRO-CULTURE FOR ALFALFA

Variety	How treated	Average yield of cured hay per acre
		tons
Grimm	No nurse crop, broadcast, inoculated	1·5
Grimm	No nurse crop, broadcast, not inoculated	1·2
Ontario	No nurse crop, broadcast, inoculated	1·16
Grimm	No nurse crop, 12-in. rows, inoculated	1·44
Grimm	No nurse crop, 12-in. rows, not inoculated	1·02
Grimm	With nurse crop, broadcast, inoculated	1·28
Grimm	With nurse crop, 12-in. rows, inoculated	1·24

RED CLOVER

Twenty lots of red clover from different sections of Canada and Europe were seeded in trial plots in 1923 to test their hardiness in this climate. There is apparently considerable variation in this respect, from 5 to 100 per cent of various plots being winter-killed. Seed was sown in rows one foot apart with a garden-drill. The yields per acre in 1924 together with notes on the hardiness and the earliness of the different lots are given in the table following.

RED CLOVER SEEDED 1923

Name or Source	Per cent winter-killed	Per cent in bloom July 2	Weight per acre	Size of leaf	Notes on aftergrowth
			tons		
Altaswede	None	1	4·32	Medium	Good growth; 6 inches
Swedish Early	None	1	4·16	Medium	Good growth; 5 inches
Swedish Late	None	3	3·84	Medium	Poor growth; 2½ inches
Early Sweden	None	0	3·52	Medium	Fair growth; 4 inches
Late Sweden	None	0	3·31	Medium	Fair growth; 3½ inches
Oxdrift—Ont	10	10	3·31	Medium	Fair growth; 3½ inches
Kenora—Ont	5	10	3·20	Medium	Very poor growth.
France—533	None	60	3·04	Medium	Good growth; 5½ inches
France—535	None	65	3·04	Medium	Good growth; 6 inches
St. Casimir, Que	17	85	2·88	Large	Only fair growth; 3½ inches.
France—510	20	75	2·56	Medium	Fair growth; 4 inches
Ottawa—O.S. 1921	5	90	2·24	Large	Good growth; 5 inches
St. Clet, Que	None	95	2·24	Medium to large	Good growth; 5 inches
Common—Kentville	None	95	2·24	Large	Fair growth; 3½ inches
Swedish Medium Late	50	25	1·76	Medium	Fair growth; 4 inches
Ottawa 1917—20	None	40	1·60	Large	Good growth; 6 inches
North Italy	All				
Italy—536	All				
Northern Central Italy	All				
Ottawa 1916—20	None	85	1·28	Medium	Good growth; 5 inches

SWEET CLOVER

Areas were seeded to sweet clover in 1923. These were seeded without a nurse-crop of grain. The growth was fair. The difficulty experienced with sweet clover at this Station on account of the plants being forced out of the ground by the alternate thawing and freezing of the soil in spring was noticeable, the crowns of the plants being two to three inches above the ground level in spring. This delayed the start of the plants in the spring; in fact, they never recovered sufficiently to make a good growth. Harvesting was done July 14, when the plants had nicely come into bloom. The finest quality of hay was obtained from the yellow-blossom. The following yields were obtained:—

SWEET CLOVER YIELDS

Variety	Average green weight per acre	Average cured weight per acre
	tons	tons
Yellow Blossom	5·86	2·1
White Blossom	6·80	2·5

HUBAM CLOVER

This is an annual white blossom sweet clover, which was seeded on May 20. The yield was at the rate of 3.76 tons of cured hay per acre this year, and 3.91 tons in 1923.

WHITE CLOVER

Seven lots of white clover were tested for general suitability. One cutting only was taken from each of the clover plots. None of the plants were winter-killed.

The variety Ladino is probably the latest in coming into blossom and Danish Morso the earliest. The English and Scottish Wild are spreading, have a small fine leaf, and would make a good white clover for pasture seeding.

The yield of cured hay per acre is given in the following table.

WHITE CLOVER VARIETY TEST

Name or Source	Per cent winter-killed	Per cent in bloom July 2	Weight per acre	Size of leaf	Remarks
			tons		
Ladino	None	2	2·08	Medium	Tall, but not matted.
Commercial	None	90	1·84	Medium	Tall; not much matted.
Scottish Wild	None	70	1·76	Small	Short; thickly matted.
Kentish	None	60	1·68	Small	Short; matted growth.
Danish Stryno	None	60	1·68	Large	Matted; 8 to 10 in. tall; good.
Danish Morso	None	95	1·52	Medium	Medium; grows well.
English Wild White, D Farm.	None	70	1·36	Small	Short; thickly matted; very spreading.

TIMOTHY

Nine strains of timothy were seeded in 1922, and the yields reported in 1923. Seven of these strains were seeded again in 1923, with five others. The yields during 1924 of the 1922 and the 1923 seedings are given in the tables following:—

TIMOTHY, SEEDED 1922

Name or Source	Stand	Average height	Average length of head	Average yield per acre	
				Green weight	Cured weight
		ft.	in.	tons	tons
Huron—Ohio	Good	2¾	3	3·33	1·95
Ohio—9335	Good	2¾	2¾	3·18	1·95
Ottawa—1921—Bulk	Good	2¾	2¾	2·51	1·72
Quebec	Good	3	3½	2·62	1·42
Ohio—6779	Good	2	2½	1·91	1·38
Ohio—9352	Good	2½	2¾	2·73	1·27
United Fruit Co	Good	2½	2	2·25	1·05
Lamont & Steadman	Good	2½	2½	2·40	0·97
Commercial Ohio	Good	2	2¼	1·80	0·97

TIMOTHY, SEEDED 1923

Variety or Source	Stand	Average height	Average length of head	Average yield per acre	
				Green weight	Cured weight
		ft.	in.	tons	tons
Boon—C.E.F.	Good	2½	2½	4·32	2·80
Ohio—9352	Good	2¾	3	4·48	2·48
Quebec	Medium	3½	4½	4·64	2·40
Primus—Sweden	Fair	2¼	2½	3·64	2·36
Ohio—9225	Good	3	3	4·80	2·32
Ottawa—1921—Bulk	Good	3	3	4·32	2·24
Beaver	Good	2¾	2½	4·08	2·24
Ohio—6779	Good	2½	2½	4·72	2·16
Timothy—Kentville	Fair	3	3	3·68	2·08
Ohio Commercial	Good	2½	2½	5·12	1·88
Ohio—3937	Fair	3	3	4·20	1·76
Commercial	Good	2¾	3	3·72	1·76

WESTERN RYE GRASS

Fifteen strains of this grass were seeded in 1922, and again in 1923. The average yields per acre in 1924 from the two seedings are given in tables to follow. It will be noticed that no one strain appears outstanding.

WESTERN RYE GRASS, SEEDED 1922

Western Rye	Average height	Colour, shade of green	Stand	Average yield per acre	
				Green weight	Cured weight
No.	ft.			tons	tons
4	2	Bluish	Good	1·87	0·99
5	2	Bluish	Good	1·69	0·88
6	2	Dark	Good	1·51	0·93
10	1½	Bluish	Good	1·61	0·90
11	2	Bluish	Good	1·38	0·75
15	2	Dark	Good	2·25	1·35
16	1½	Bluish	Good	1·76	0·93
17	1½	Bluish	Good	1·57	0·93
18	2½	Bluish	Good	1·72	1·01
19	2½	Dark	Good	1·76	0·97
20	2	Bluish	Good	1·68	1·01
78	1½	Bluish	Good	1·83	1·06
81	1½	Light	Fair	1·87	0·82
98	2¾	Bluish	Good	1·85	1·21
118	2½	Bluish	Fair	1·05	0·58

WESTERN RYE GRASS, SEEDED 1923

Western Rye	Average height	Colour, shade of green	Stand	Average yield per acre	
				Green weight	Cured weight
No.	ft			tons	tons
4	2¾	Bluish	Good	5·28	2·68
5	2½	Bluish	Good	4·68	2·52
6	2¼	Dark	Good	5·12	2·80
10	2	Bluish	Good	4·68	2·32
11	2¾	Bluish	Good	5·60	2·56
15	2¼	Dark	Good	5·80	2·84
16	2	Bluish	Good	3·84	2·00
17	2½	Bluish	Good	5·04	2·60
18	3	Bluish	Good	4·56	2·48
19	3¼	Dark	Good	5·88	2·80
20	2¾	Bluish	Good	5·40	3·04
78	2	Bluish	Good	4·56	2·28
81	2	Light	Good	5·80	2·60
98	3	Light	Good	4·80	2·40
118	2¾	Bluish	Fair	4·64	2·40

GRASS MIXTURES FOR HAY, SEEDED 1922

The table following shows the yields per acre where the different mixtures tabulated were used when seeding to grass in 1922. These results would indicate some increase in yield from the addition of meadow fescue to the mixture.

GRASS MIXTURES FOR HAY, SEEDED 1922

Plot	How seeded, pounds per acre				Yield per acre 1923	Yield per acre 1924	Average yield per acre for the two years
	Red clover	Timothy	Alsike	Meadow fescue			
					tons	tons	tons
1	8	8	2	.....	2·24	2·44	2·34
2	8	7	2	2	2·22	3·29	2·75
3	8	7	2	4	2·34	3·37	2·85
4	8	7	2	6	2·40	3·40	2·90
5	8	6	2	2	1·96	3·32	2·64
6	8	6	2	4	1·82	3·37	2·59
7	8	6	2	6	1·60	3·17	2·38

DIFFERENT GRASS MIXTURES, SEEDED 1923

Twenty-three different mixtures were seeded in the spring of 1923 in one-fortieth-acre plots to secure some data as to the most profitable mixture to use in seeding down for the production of hay. The tables following give the average yields per acre of duplicate plots in 1924. The plots are to be allowed to stand for 1925 and the results recorded for the two seasons. The results for 1924 would indicate the advisability of using a generous amount of red clover when seeding down.

DIFFERENT GRASS MIXTURES, SEEDED 1923

Plot	How seeded, per acre	Yield per acre
		tons
IX–1	Early red clover, 10 lb.; timothy, 8 lb	2·13
IX–2	Early red clover, 10 lb.; meadow fescue, 15 lb	2·03
IX–3	Late red clover, 10 lb.; timothy, 8 lb	2·58
IX–4	Late red clover, 10 lb.; fescue, 15 lb	2·14
IX–5	Early red clover, 10 lb.; red top, 8 lb	2·14
IX–6	Late red clover, 10 lb.; red top, 8 lb	2·41
X–10	Red clover, 8 lb.; alsike, 2 lb.; red top, 6 lb.; timothy, 6 lb	2·00
X–9	Red clover, 8 lb.; alsike, 2 lb.; red top, 4 lb.; timothy, 6 lb	1·82
XIV–6	Timothy, 8 lb.; red clover, 6 lb.; alsike, 2 lb	1·88
XIV–7	Timothy, 8 lb.; red clover, 2 lb.; alsike, 5 lb	2·21
X–1	Red clover, 8 lb.; alsike, 2 lb.; timothy, 8 lb	1·34
X–2	Red clover, 8 lb.; alsike, 2 lb.; timothy, 7 lb.; fescue, 2 lb	1·50
X–3	Red clover, 8 lb.; alsike, 2 lb.; timothy, 7 lb.; fescue, 4 lb	1·82
X–4	Red clover, 8 lb.; alsike, 2 lb.; timothy, 7 lb.; fescue, 6 lb	1·74
X–5	Red clover, 8 lb.; alsike, 2 lb.; timothy, 6 lb.; fescue, 2 lb	1·43
X–6	Red clover, 8 lb.; alsike, 2 lb.; timothy, 6 lb.; fescue, 4 lb	1·98
X–7	Red clover, 8 lb.; alsike, 2 lb.; timothy, 6 lb.; fescue, 6 lb	1·78
X–8	Red clover, 8 lb.; alsike, 2 lb.; timothy, 6 lb.; red top, 2 lb	2·01
XIV–1	Timothy, 8 lb.; red clover, 10 lb	1·33
XIV–2	Timothy, 8 lb.; red clover, 8 lb.; alsike, 2 lb	1·64
XIV–3	Timothy, 8 lb.; red clover, 4 lb.; alsike, 6 lbs	2·35
XIV–4	Timothy, 8 lb.; alsike, 6 lb	2·12
XIV–5	Timothy, 8 lb.; alsike, 5 lb.; red clover, 5 lb	1·71

OTHER GRASSES, SEEDED 1923

Several grasses were seeded separately in 1923. These gave yields in 1924 as follows:—

OTHER GRASSES, SEEDED 1923

Grass	Stand	Average height	Average yield per acre	
			Green weight	Cured weight
		feet	tons	tons
Red Top	Good	2¼	4·72	2·80
Meadow Fescue	Good	3	5·12	2·56
European Brome	Fair	2	3·84	2·32
Kentucky Blue	Good	2½	1·68	0·64

TIMOTHY AND CLOVER VS. MEADOW FESCUE AND CLOVER FOR HAY

Two plots were seeded with early red clover in 1922, at the rate of 10 pounds per acre. On one, timothy was seeded with the clover at the rate of 8 pounds per acre, and on the other meadow fescue at the rate of 15 pounds per acre. This same test was made with late red clover. Another plot was seeded with mammoth red clover and timothy. The table following gives the average yields per acre for 1923 and 1924.

TIMOTHY VS. MEADOW FESCUE, WITH CLOVER, FOR HAY

How seeded in 1922, pounds per acre	Average yield of cured hay per acre			
	1923		1924	Total yield, 1923 and 1924
	First cutting	Second cutting	One cutting only	
	tons	tons	tons	tons
Early red clover, 10; timothy, 8	2·08	0·72	2·40	5·20
Early red clover, 10; meadow fescue, 15	3·37	0·38	1·96	5·71
Late red clover, 10; timothy, 8	3·27	0·24	1·92	5·43
Late red clover, 10; meadow fescue, 15	3·03	0·60	1·92	5·55
Mammoth red clover, 10; timothy, 8	3·13	0·26	2·28	5·67

FERTILIZER EXPERIMENTS

FERTILIZERS AND GROUND LIMESTONE EXPERIMENT

This test was started in 1914, and has as its object a determination of the most profitable sources of nitrogen and phosphorus, and the ascertaining of the value of ground limestone when used alone and in conjunction with chemical fertilizers. The area was apparently uniform at the start of this experiment, but owing to its being in a low state of fertility and deficient in humus, each plot was manured in the spring of 1917 at the rate of 15 tons of stable manure per acre. The rotation has been potatoes, grain, and clover. The fertilizers were applied once in three years to the potato crop, at the rates stated in the following table. Duplicate series of these plots were limed, and similar adjoining plots have never been limed.

Limestone has been applied in 1914, 1917, 1920, and 1924. It is evident that the application of ground limestone has materially influenced the clover and grain yields. Limestone adversely affects the potato crop, the product on the areas where limestone has been used being largely unmarketable because of potato-scab. It would seem advisable not to use frequent applications of ground limestone on land where potatoes are to be grown.

The results given are the average of duplicate plots of one-twentieth-acre each.

FERTILIZERS AND GROUND LIMESTONE EXPERIMENT

Fertilizers applied, 1914, 1917, 1920, 1923

Plot	Nitrate of soda (15% N)	Sulphate of ammonia (20% N)	Acid phosphate (15% P_2O_5)	Basic slag (16% P_2O_5)	Bone meal (2·5% N; 22% P_2O_5)	Muriate of potash (50% K_2O)
	lb.	lb.	lb.	lb.	lb.	lb.
1	140	.....	150	150	.....	101·2
2	.....	105	150	150	.....	101·2
3	70	52½	300	.....	.....	101·2
4	70	52½	.....	300	.....	101·2
5	50	37½	.....	.....	240	101·2
6	No fertilizer.					

FERTILIZERS AND GROUND LIMESTONE EXPERIMENT

Yields, 1914–1924

Plot	Oats 1924		Potatoes 1914–17–20–23 Total yield	Hay 1916–19–22 Total yield	Wheat 1918–21 Total yield		Oats 1915–24 Total yield	
	Grain	Straw			Grain	Straw	Grain	Straw
	bush.	lb.	bush.	lb.	bush.	lb.	bush.	lb.
1 Limed	41·00	1,440	791·2	9,640	44·4	4,920	78·90	3,640
Not limed	33·04	1,020	725·8	4,630	34·5	3,430	65·64	2,990
Gain	7·96	420	65·4	5,010	9·9	1,490	13·26	650
2 Limed	40·1	1,420	743·1	9,000	44·3	4,700	78·60	3,670
Not limed	26·15	1,140	690·7	4,290	31·5	2,810	55·25	2,730
Gain	13·95	280	52·4	4,710	12·8	1,890	23·35	940
3 Limed	37·18	1,280	788·5	9,270	45·2	4,640	74·08	3,395
Not limed	26·60	1,160	734·0	4,520	31·6	3,110	58·40	2,945
Gain	10·58	120	54·5	4,750	13·6	1,530	15·68	450
4 Limed	39·80	1,340	819·4	10,450	48·5	4,520	80·20	3,745
Not limed	28·60	1,080	738·3	4,840	34·4	3,530	59·7	2,980
Gain	11·20	260	81·1	5,610	14·1	990	20·5	765
5 Limed	42·15	1,400	792·1	9,360	45·2	4,910	80·35	3,420
Not limed	32·15	1,000	702·1	4,590	35·3	3,750	65·75	2,845
Gain	10·00	400	90·0	4,770	9·9	1,160	14·60	575
6 Limed	33·50	1,160	652·4	7,300	41·9	3,950	66·20	2,735
Not limed	26·72	1,060	557·4	4,020	28·3	3,270	57·12	2,675
Gain	6·78	100	95·0	3,280	13·6	680	9·08	60

FERTILIZER AND GROUND LIMESTONE EXPERIMENT

Victory Oats, 1924

Plot	How fertilized; pounds per acre	Grain, average bushels per acre	Straw average tons per acre
1 B	N. of S. 140; A.P. 150; slag 150; M. of P. 101·2 and limestone	41·0	0·72
1 A	Same as above without limestone	33·04	0·51
	Increase	7·96	0·21
2 B	Sul. of Am. 105; A.P., 150; slag, 150; M. of P., 101·2 and limestone	40·1	0·71
2 A	Same as above without limestone	26·15	0·57
	Increase	13·95	0·14
3 B	N. of S. 70; Sul. of Am., 52·5; A.P., 300; M. of P. 101·2 and limestone	37·18	0·64
3 A	Same as above without limestone	26·6	0·58
	Increase	10·58	0·06
4 B	N. of S., 70; Sul. of Am., 52·5; slag, 300; M. of P., 101·2 and limestone	39·8	0·67
4 A	Same as above without limestone	28·6	0·54
	Increase	11·2	0·13
5 B	N. of S., 50; Sul. of Am., 37·5; bone, 240; M. of P. 101·2 and limestone	42·15	0·70
5 A	Same as above without limestone	32·15	0·50
	Increase	10·0	0·20
6 A	Check	26·72	0·53
6 B	Limestone, 2 tons	33·5	0·58
	Increase	6·78	0·05

ORCHARD FERTILIZER EXPERIMENT, INTERMEDIATE CROPS

This experiment was started to gain information as to the fertilizers likely to give the best results for apple-production. The test was begun when the trees were planted, and the ground not occupied by the growing trees has been in rotation with potatoes, grain and hay. A record has been kept of the product from each area, but as the trees are just commencing to bear, information on this point is not yet of value. The results, consequently, indicate only the profits that may be possible from the land not occupied by the trees during their early growth. The first twenty-four plots were started in 1913, and the others in 1916. The table following gives the yields of hay from the various plots in 1924. The total yield of potatoes, and their value over the plots not fertilized were published in the report of this station for the year 1923. The succeeding table gives the yield and value of the grain and hay produced, with their gain over the check plots. The value of the crop is calculated on the basis of 60 cents per bushel for potatoes, $1 for wheat, 60 cents for oats, $7 per ton for straw, and $12 per ton for hay (except 1924, when hay was valued at $10).

ORCHARD FERTILIZER EXPERIMENT, INTERVAL CROP, HAY, 1924

Plot	How fertilized per acre	Green weight per acre	Cured weight per acre	Stand of clover
		tons	tons	
1	Nitrate of soda, 150 lb.; acid phosphate, 350 lb.; muriate of potash, 150 lb.	3·14	1·32	Good
2	Nitrate of soda, 150 lb.; slag, 500 lb.; muriate of potash, 150 lb.	2·20	0·96	Fair
3	Nitrate of soda, 150 lb.; muriate of potash, 150 lb.; bonemeal, 500 lb.	3·76	1·37	Good
4	Acid phosphate, 350 lb.; muriate of potash, 150 lb.; sulphate of ammonia, 150 lb.	2·29	0·89	Fair
5	Nitrate of soda, 150 lb.; acid phosphate, 350 lb.; muriate of potash, 100 lb.	4·02	1·73	Good
6	Check	0·94	0·37	Poor
7	Nitrate of soda, 92·3 lb.; muriate of potash, 92·3 lb.; acid phosphate, 215·4 lb.	3·88	1·32	Good
8	Nitrate of soda, 138·5 lb.; muriate of potash, 138·5 lb.; acid phosphate, 323 lb.	3·20	1·17	Good
9	Nitrate of soda, 150 lb.; acid phosphate, 350 lb.; muriate of potash, 60 lb.	3·90	1·66	Good
10	Nitrate of soda, 150 lb.	1·00	0·38	Poor
11	Check	1·23	0·48	Poor
12	Nitrate of soda, 184·6 lb.; muriate of potash, 184·6 lb.; acid phosphate, 430·8 lb.	4·67	1·70	Very good
13	Nitrate of soda, 150 lb.; acid phosphate, 350 lb.; muriate of potash, 30 lb.	3·23	1·39	Fair
14	Check	0·84	0·34	Poor
15	Muriate of potash, 150 lb.	1·44	0·53	Poor
16	Nitrate of soda, 150 lb.; acid phosphate, 350 lb.; muriate of potash, 150 lb.	4·14	1·58	Good
17	Acid phosphate, 350 lb.	2·64	1·14	Fair
18	Bonemeal, 500 lb.	2·36	0·97	Fair
19	Check	1·69	0·58	Poor
20	Acid phosphate, 350 lb.; muriate of potash, 150 lb.	4·51	1·60	Good
21	Basic slag, 500 lb.	2·29	1·04	Poor
22	Nitrate of soda, 150 lb.; basic slag, 500 lb.	2·00	0·81	Poor
23	Nitrate of soda, 150 lb.; muriate of potash, 150 lb.	1·49	0·57	Poor
24	Nitrate of soda, 150 lb.; acid phosphate, 350 lb.	1·48	0·63	Poor
25	Manure 15 tons	1·81	0·86	Light
26	Check	0·51	0·25	None
27	Acid phosphate, 250 lb.; basic slag, 250 lb.; manure, 15 tons	3·96	1·63	Fair
28	Basic slag, 500 lb.; manure, 15 tons; limestone, 4,000 lb.	4·69	1·93	Good
29	Acid phosphate, 250 lb.; basic slag, 250 lb.; manure, 15 tons; limestone, 4,000 lbs.	4·68	1·90	Good
30	Basic slag, 500 lb.; manure, 15 tons	3·39	1·39	Fair
31	Acid phosphate, 500 lb.; manure, 15 tons	2·79	1·17	Fair
32	Manure, 15 tons; limestone, 4,000 lb.	5·06	1·92	Good
33	Acid phosphate, 500 lb.; manure, 15 tons; limestone, 4,000 lb.	4·74	1·95	Good
34	Check	0·63	0·30	None
35	Basic slag, 500 lb.; manure, 15 tons	3·25	1·34	Fair
36	Nitrate of soda, 150 lb.; basic slag, 500 lb.; limestone, 4,000 lb.	1·84	0·72	Light

ORCHARD FERTILIZER EXPERIMENT, INTERVAL CROP, HAY, 1924—*Continued*

Plot	How fertilized per acre	Green weight per acre	Cured weight per acre	Stand of clover
		tons	tons	
37	Nitrate of soda, 150 lb.; acid phosphate, 250 lb.; slag, 250 lb.; limestone, 4,000 lb	2·35	0·92	Light
38	Basic slag, 500 lb.; limestone, 4,000 lb	1·95	0·73	Light
39	Nitrate of soda, 150 lb.; basic slag, 500 lb.; muriate of potash, 150 lb.; limestone, 4,000 lb	3·12	1·17	Fair
40	Check	0·39	0·17	None
41	Nitrate of soda, 150 lb.; acid phosphate, 500 lb.; limestone, 4,000 lb	1·67	0·86	Fair
42	Nitrate of soda, 150 lb.; limestone, 4,000 lb	2·10	0·93	Light
43	Acid phosphate, 500 lb.; limestone, 4,000 lb	1·71	0·84	Light
44	Check	0·39	0·26	None
45	Nitrate of soda, 150 lb.; basic slag, 500 lb	1·55	0·68	Fair
46	Check	0·56	0·19	None
47	Nitrate of soda, 150 lb.; acid phosphate, 500 lb.; muriate of potash, 150 lb	1·90	0·69	Fair to good
48	Limestone, 4,000 lb	2·29	0·88	Fair
49	Nitrate of soda, 150 lb.; acid phosphate, 500 lb	0·85	0·34	Poor
50	Nitrate of soda, 150 lb.; basic slag, 500 lb.; muriate of potash, 150 lb	2·43	1·00	Good
51	Acid phosphate, 500 lb	1·61	0·69	Fair

INTERMEDIATE CROP SUMMARY, ORCHARD FERTILIZER EXPERIMENT

Yields of Grain and Hay, 1917–1924

Plot	Oats, 1923, per acre	Total wheat, 1917–20 per acre	Total straw, 1917–20–23, per acre	Total hay, 1918–21–24, per acre	Total value of crops, except potatoes	Gain in value over check plot
	bush.	bush.	tons	tons	$	$
6, 11, 14, 19 (Check plots)	30·9	18·3	1·36	1·28	60 84	.....
1, 16	65·78	38·6	1·93	2·95	124 07	63 23
2	65·0	40·6	4·02	2·34	133 90	73 06
3	57·2	46·8	3·77	2·49	134 65	73 81
4	65·2	31·0	3·03	1·52	107 79	46 95
5	56·42	34·0	3·71	3·21	128 88	68 04
7	50·4	30·8	2·52	2·20	102 44	41 60
8	61·1	38·3	3·21	2·24	121 97	61 13
9	58·76	34·0	3·8	3·13	130 09	69 25
10	54·6	21·8	1·99	1·30	83 33	22 49
12	70·7	48·6	4·52	3·08	156 22	95 38
13	60·58	38·8	3·63	3·16	135 69	74 85
15	23·4	18·3	1·03	1·23	53 25	−7 59
17	38·22	27·0	1·94	2·55	91 83	30 99
18	53·56	35·1	2·39	2·70	114 42	53 58
20	39·0	23·8	1·91	2·68	89 53	28 69
21	51·4	36·6	2·18	3·61	123 94	63 10
22	69·16	49·1	3·84	4·07	164 69	103 85
23	57·2	33·5	2·53	1·69	104 67	43 83
24	53·82	35·6	3·0	2·28	114 99	54 15
26, 34, 40, 44, 46 (Check plots)	29·85	22·12	1·02	1·11	60 09	.....
25	54·34	31·5	2·19	2·33	105 67	45 58
27	65·7	42·3	3·42	4·50	156 40	96 31
28	74·36	54·0	4·83	6·46	206 08	145 99
29	78·0	60·5	5·02	6·76	219 76	159 67
30	62·4	40·2	2·55	3·71	137 23	77 14
31	55·6	34·0	2·21	3·07	117 33	57 24
32	68·3	50·0	3·43	5·58	178 11	118 02
33	74·88	48·9	4·20	6·44	196 60	136 51
35	66·8	44·5	3·05	3·66	147 17	87 08
36	57·72	50·0	3·54	2·81	141 69	81 60
37	63·44	48·6	4·26	4·45	168 04	107 95
38	58·76	39·3	2·80	3·73	137 45	77 36
39	66·82	49·8	4·87	4·38	174 20	114 11
41	60·32	47·3	3·44	3·13	143 41	83 32
42	65·0	39·0	3·42	3·50	142 08	81 99
43	49·4	33·0	2·16	3·58	119 04	58 95
45	42·64	46·3	3·27	2·31	121 13	61 04
47	53·82	41·8	4·26	2·99	138 45	78 36
48	43·42	33·1	1·99	3·31	111 04	50 95
49	44·2	52·2	3·32	2·33	129 24	69 15
50	57·2	46·1	4·37	4·02	157 25	97 16

MALAGASH SALT

Tests were carried out with this material, using it in the growing of oats, mangels and turnips. Plots were replicated four times and the following tables show the average yields obtained. This experiment will be continued through the rotation, and yields of hay and grain will be recorded in 1925.

Malagash Salt—Crop, Oats

Previous crop, turnips; manured at the rate of 15 tons per acre. Land limed, 1924; 2 tons ground limestone per acre.

Plot	How treated per acre	Yield per acre	
		Oats	Straw
		bush.	tons
1	Malagash salt, 100 lb	56·4	1·13
2	Malagash salt, 200 lb	64·2	1·05
3	Malagash salt, 300 lb	61·88	0·917
4	Malagash salt, 400 lb	63·9	1·02
5	Malagash salt, 500 lb	70·3	1·28
6	Malagash salt, 600 lb	58·3	0·97
7	Check	52·9	0·94
8	Common salt, 100 lb	56·9	0·84
9	Common salt, 200 lb	67·5	1·04
10	Common salt, 400 lb	67·7	1·08
11	Check	61·1	1·02
12	Malagash salt, 100 lb.; nitrate of soda, 100 lb	70·3	1·27
13	Malagash salt, 200 lb.; nitrate of soda, 100 lb	73·1	1·25
14	Malagash salt, 400 lb.; nitrate of soda, 100 lb	74·3	1·17
15	Check	64·9	1·05
16	Malgash salt, 100 lb.; nitrate of soda, 100 lb.; acid phosphate, 300 lb.	80·0	1·47
17	Malagash salt, 200 lb.; nitrate of soda, 100 lb.; acid phosphate, 300 lb.	75·9	1·30
18	Malagash salt, 400 lb.; nitrate of soda, 100 lb.; acid phosphate, 300 lb.	80·0	1·31
19	Check	57·1	0·93
20	Muriate of potash, 100 lb	58·0	0·88
21	Muriate of potash, 200 lb	61·6	0·95
22	Muriate of potash, 300 lb	62·8	1·00
23	Muriate of potash, 400 lb	68·4	1·04
24	Muriate of potash, 500 lb	65·1	0·99
25	Check	65·8	1·01
	Average of 20 check plots	60·4	0·99

Malagash Salt—Crop, Mangels and Turnips

Land manured, 1924; 15 tons per acre. Previous crop corn; manured 15 tons per acre.

Plot	How treated per acre	Yield per acre	
		Mangels	Turnips
		bush.	bush.
1	Malagash salt, 200 lb	592·0	736·0
2	Malagash salt, 400 lb	678·4	672·0
3	Malagash salt, 600 lb	710·4	780·8
4	Check	521·6	627·2
5	Common salt, 200 lb	496·0	684·8
6	Common salt, 400 lb	624·0	716·8
7	Common salt, 600 lb	649·6	732·8
8	Check	518·4	681·6
9	Muriate of potash, 200 lb	524·8	675·2
10	Muriate of potash, 400 lb	617·6	745·6
11	Check	521·6	678·4
12	Malagash salt, 200 lb.; nitrate of soda, 200 lb	528·0	710·4
13	Malagash salt, 400 lb.; nitrate of soda, 200 lb	729·6	790·4
14	Malagash salt, 600 lb.; nitrate of soda, 200 lb	742·4	828·1
15	Check	496·0	665·6
16	Malagash salt, 200 lb.; nitrate of soda, 200 lb.; acid phosphate, 500 lb.	780·8	808·9
17	Malagash salt, 400 lb.; nitrate of soda, 200 lb.; acid phosphate, 500 lb.	770·5	747·7
18	Malagash salt, 600 lb.; nitrate of soda, 200 lb.; acid phosphate, 500 lb.	783·3	761·6
	Average of 16 check plots	514·2	663·2

GYPSUM AND SULPHUR EXPERIMENT

This experiment was undertaken (1) to ascertain the effect of gypsum and sulphur on crop yields: (2) to ascertain the effect of gypsum, sulphur and superphosphate on the suppression of potato scab. There are approximately 100 pounds of sulphur in 550 pounds of gypsum or in 890 pounds of superphosphate. In addition to the gypsum, sulphur and superphosphate plots, other plots of similar size were treated with ground natural rock phosphate, ground limestone and manure, for purposes of comparison. All these materials were applied before the potatoes were planted and were well worked into the soil. The Irish Cobbler potato was planted May 22 and a uniform stand was obtained. The crop was harvested September 15.

The plots used were 1/320 acre each, and were in quadruplicate. The previous crop on this land was potatoes, and the land had previously been handled in a uniform way. The rotation to be followed in this experiment is potatoes, oats, clover hay, and timothy hay.

The following table shows the materials applied, the yield, and the amount of scab for each plot:—

GYPSUM AND SULPHUR EXPERIMENT

Plot	How treated per acre	Average yield of potatoes per acre			Average per cent of scab
		Marketable	Unmarketable	Total	
		bush.	bush.	bush.	
1	Gypsum, 550 lb.	141·9	11·9	153·8	6·2
2	Gypsum, 1,100 lb.	134·0	10·6	144·6	6·7
3	Gypsum, 2,200 lb.	169·9	10·02	179·9	9·2
4	Check	115·3	15·3	130·6	7·0
5	Sulphur, 100 lb.	145·9	13·9	159·8	16·7
6	Sulphur, 200 lb.	163·3	8·6	171·9	9·7
7	Sulphur, 400 lb.	153·9	10·6	164·5	10·5
8	Superphosphate, 890 lb.	157·3	14·6	171·9	3·2
9	Superphosphate, 1,780 lb.	153·9	15·3	169·2	12·2
10	Check	130·6	13·9	144·5	3·7
11	Ground natural rock phosphate, 500 lb.	169·9	13·3	183·2	7·5
12	Ground limestone, 4,000 lb.	141·3	11·3	152·6	9·5
13	Sulphur, 200 lb.; ground limestone, 4,000 lb.	132·6	14·6	147·2	6·7
14	Check	150·6	13·3	163·9	12·7
15	Gypsum, 500 lb.; manure, 10 tons	186·6	11·9	198·5	9·5
16	Manure, 10 tons	162·5	13·9	176·4	6·5
17	Check	133·3	15·9	149·2	3·2
18	Check	89·9	17·3	107·2	5·7

BASIC SLAG

(Experiment begun in 1923)

This experiment was undertaken to ascertain the relative values of fortified slag, non-fortified slag, and ground rock phosphate as sources of phosphoric acid. Three grades of fortified slag, 14 per cent, 17 per cent, and 20 per cent (Plots 1, 2, and 3); basic Bessemer slag, 16 per cent-17 per cent, from three sources (Plots 4, 5, and 9); open-hearth slag, 10 per cent-11 per cent (not fortified) (Plot 6); ground natural rock phosphate, 28 per cent-30 per cent (Plot 7), and superphosphate, 16 per cent (Plot 8), were applied so as to have the total phosphoric acid content the same in all "A" plots, (140 pounds of phosphoric acid per acre), and half that quantity (70 pounds of phosphoric acid per acre) in all "B" plots. On plot 7C the equivalent of 280 pounds of phosphoric acid was applied in ground natural rock phosphate, and on plot 8C two tons of limestone was applied in addition to the equivalent of 70 pounds

of phosphoric acid per acre. An application of 100 pounds of nitrate of soda and 50 pounds of muriate of potash per acre, was made throughout the entire area, including check plots. The plots used were 1/20 acre each, and the results that follow are the average of duplicate plots.

BASIC SLAG

(Experiment begun 1923)

Plot	How fertilized per acre, 1923	Average yield of oats per acre, 1923		Weight of oats per bushel	Average yield of hay per acre, 1924
		Grain	Straw		
		bush.	tons	lbs.	tons
1A	14% XX Sydney, 1,000 lb.	62·18	1·77	37·5	1·69
1B	14% XX Sydney, 500 lb.	63·3	1·57	37·7	1·89
2A	17% XXX Sydney, 825 lb.	56·1	1·66	38·2	2·17
2B	17% XXX Sydney, 412 lb.	62·0	1·46	38·5	1·90
3A	20% Sydney, 700 lb.	63·3	1·77	37·7	1·89
3B	20% Sydney, 350 lb.	55·6	1·55	37·0	1·66
4A	16% St. John, 875 lb.	60·4	1·54	37·0	1·98
4B	16% St. John, 437 lb.	63·3	1·84	36·0	2·02
5A	17% Halifax, 875 lb.	59·3	1·74	38·0	2·25
5B	17% Halifax, 437 lb.	62·0	1·79	37·2	2·12
6A	Open Hearth 10%-11%, 1,270 lb.	66·17	2·025	35·4	2·54
6B	Open Hearth 10%-11%, 635 lb.	66·27	1·90	36·5	2·35
	Check	60·3	1·59	37·0	2·005
7A	Ground natural rock phosphate, 28%-30%, 500 lb.	62·25	1·97	37·0	1·91
7B	Ground natural rock phosphate, 28%-30%, 250 lb.	60·1	1·47	38·5	2·24
7C	Ground natural rock phosphate, 28%-30%, 1,000 lb.	63·5	1·56	37·0	2·30
8A	Superphosphate, 16%, 875 lb.	57·9	1·76	39·0	1·96
8B	Superphosphate 16%, 437 lb.	60·1	1·47	38·0	2·37
8C	Superphosphate 16%, 437 lb.; limestone, 2 tons.	60·3	1·89	37·5	2·55
9A	Belgian Basic Thomas phosphate, 16·45%, 875 lb.	67·6	1·94	38·5	2·54
9B	Belgian Basic Thomas phosphate, 16·45%, 437 lb.	70·7	2·29	39·5	2·33

BASIC SLAG EXPERIMENT, 1924

The area used for this test had been in corn in 1923, having been manured for this crop at the rate of 15 tons per acre. Two tons of ground limestone per acre had also been applied. The land was uniform and had been previously cropped and fertilized in a uniform manner. The plots were 1/320 acre each, and were replicated four times. On May 12 the land was seeded to Victory oats, and to timothy, 10 pounds; red clover, 8 pounds; and alsike clover, 2 pounds per acre. The oats crop was harvested by hand August 20, and threshed by hand. The experiment will cover a period of three years and the increase due to the fertilizers used will be recorded in the hay yields during the following two years.

It will be noted that the slag was applied in each series of plots in quantities to give the same amount of phosphoric acid to each plot in the series. In one series of plots phosphoric acid was applied at the rate of 140 pounds per acre, and in another at the rate of 70 pounds per acre. On duplicates of these two series, 100 pounds of nitrate of soda and 50 pounds of muriate of potash were applied per acre, including the check plots. In order to determine the value of Florida rock phosphate, which is often used to fortify slag low in phosphoric acid content, this material was used on a series of plots for comparison with slag. The results from this test were as follows:—

BASIC SLAG EXPERIMENT, 1924

Plot	How fertilized per acre	Yield of oats per acre	
		Grain	Straw
		bush.	tons
1	Sydney slag, 14%, 1,000 lb	73·6	1·13
2	Sydney slag, 17%, 824 lb	67·0	1·15
3	Florida rock phosphate, 29%, 483 lb	78·3	1·16
4	Bessemer slag, 16%, 875 lb	86·8	1·43
5	Check	66·8	1·40
6	Sydney slag, 14%, 500 lb	60·2	0·81
7	Sydney slag, 17%, 412 lb	60·7	0·83
8	Florida rock phosphate, 29%, 241·5 lb	58·2	0·99
9	Bessemer slag, 16%, 437·5 lb	69·4	1·07
10	Check	64·7	1·05
	Nitrate of soda, 100 lbs., and muriate of potash, 50 lbs. to each of the following plots		
11	Sydney slag, 14%, 1,000 lb	72·9	1·19
12	Sydney slag, 17%, 824 lb	67·5	1·20
13	Florida rock phosphate, 29%, 483 lb	64·6	1·18
14	Bessemer slag, 16%, 875 lb	75·5	1·27
15	Check	53·4	0·90
16	Sydney slag, 14%, 500 lb	70·6	1·36
17	Sydney slag, 17%, 412 lb	64·6	1·21
18	Florida rock phosphate, 29%, 241·5 lb	66·3	1·09
19	Bessemer slag, 16%, 437·5 lb	67·7	1·15
20	Check	62·06	0·996

FERTILIZER EXPERIMENT E-21

This experiment was started in 1921, and embraces 62 plots in duplicate and sixteen check plots, all of $\frac{1}{20}$ acre each. The rotation followed is potatoes, oats, and hay. The object of the experiment is to obtain data relative to the application of various ingredients of a fertilizer mixture, and to the effect of applying nitrate of soda at different times during the rotation.

In the first section the A, B and C plots of each series receive the same quantities of the fertilizer material, plot A receiving all the nitrate of soda the first year, plot B receiving one-half the nitrate of soda the first year, and one-half the second year, and plot C one-third of the nitrate of soda each year of the rotation. It will be noted that the total quantity of nitrate of soda is compared in two rates per acre, 200 and 400 pounds, distributed as mentioned above.

Sulphate of ammonia is compared with nitrate of soda, the distribution being the same as in the first section.

Various sources of phosphoric acid; viz., acid phosphate, slag, tankage, and dried blood, are compared, these also being used in two rates per acre.

In another series manure has been added to the commercial fertilizers, the nitrate of soda being distributed over the three-year period.

On certain plots (22 to 31) one-third of the total fertilizer has been applied during each year of the rotation for comparison with the plots of the first section where the total fertilizer is applied the first year of the rotation.

In the second section, nitrate of soda was applied to all the fertilized plots in 1923, as well as to the two plots previously unfertilized, for the purpose of ascertaining whether the influence of the earlier fertilizing, apart from that of the nitrate of soda, will appear in the third year.

A summary of results from this work for the years 1921, 1922, and 1923, this being the first rotation, is attached. The experiment is being continued through another rotation period.

SUMMARY OF RESULTS, EXPERIMENT E-21, FOR THE FIRST ROTATION PERIOD, 1921 TO 1923, INCLUSIVE

Plot	How fertilized, pounds per acre			Average yield per acre			
	1921	1922	1923	Potatoes — 1921	Oats — 1922	Straw — 1922	Hay — 1923
				bush.	bush.	tons	tons
1A	Nitrate of soda, 400; acid phosphate, 500; muriate of potash, 120.	.....	.....	199·3	64·2	1·5	2·9
1B	Nitrate of soda, 266; acid phosphate, 500; muriate of potash, 120.	Nitrate of soda, 133.....	.....	196·5	68·9	1·7	2·9
1C	Nitrate of soda, 133; acid phosphate, 500; muriate of potash, 120.	Nitrate of soda, 133.....	Nitrate of soda, 133...	180·6	65·7	1·5	2·8
2A	Nitrate of soda, 200; acid phosphate, 500; muriate of potash, 120.	.....	.....	190·6	63·0	1·07	3·3
2B	Nitrate of soda, 133; acid phosphate, 500; muriate of potash, 120.	Nitrate of soda, 67.....	.....	197·0	70·4	1·2	3·1
2C	Nitrate of soda, 67; acid phosphate, 500; muriate of potash, 120.	Nitrate of soda, 67.....	Nitrate of soda, 67....	197·3	67·7	1·2	3·3
3A	Nitrate of soda, 400; acid phosphate, 250; muriate of potash, 120.	.....	.....	183·0	57·7	1·02	3·1
3B	Nitrate of soda, 266; acid phosphate, 250; muriate of potash, 120.	Nitrate of soda, 133.....	.....	194·8	69·9	1·3	3·08
3C	Nitrate of soda, 133; acid phosphate, 250; muriate of potash, 120.	Nitrate of soda, 133.....	Nitrate of soda, 133...	209·3	72·5	1·5	3·6
4A	Nitrate of soda, 200; acid phosphate, 250; muriate of potash, 120.	.....	.....	180·3	62·6	1·1	3·3
4B	Nitrate of soda, 133; acid phosphate, 250; muriate of potash, 120.	Nitrate of soda, 67.....	.....	211·1	70·4	1·4	2·9
4C	Nitrate of soda, 67; acid phosphate, 250; muriate of potash, 120.	Nitrate of soda, 67.....	Nitrate of soda, 67....	183·5	66·6	1·2	2·8
5A	Nitrate of soda, 400; acid phosphate, 500; muriate of potash, 60.	.....	.....	179·5	63·8	1·2	3·4
5B	Nitrate of soda, 266; acid phosphate, 500; muriate of potash, 60.	Nitrate of soda, 133.....	.....	211·3	63·8	1·5	3·4
5C	Nitrate of soda, 133; acid phosphate, 500; muriate of potash, 60.	Nitrate of soda, 133.....	Nitrate of soda, 133...	183·8	69·4	1·3	3·2
6A	Sulphate of ammonia, 300; acid phosphate, 500; muriate of potash, 120.	.....	.....	202·6	66·9	1·5	2·7
6B	Sulphate of ammonia, 200; acid phosphate, 500; muriate of potash, 120.	Sulphate of ammonia, 100.	.....	209·1	70·8	1·7	2·72
6C	Sulphate of ammonia, 100; muriate of potash, 120; acid phosphate, 500.	Sulphate of ammonia, 100.	Sulphate of ammonia, 100.	180·0	69·3	1·5	2·74
7A	Nitrate of soda, 400; slag, 11%, 714; muriate of potash, 120.	.....	.....	193·8	70·5	1·6	3·1
7B	Nitrate of soda, 266; slag, 714; muriate of potash, 120.	Nitrate of soda, 133.....	.....	200·8	70·7	1·4	3·4
7C	Nitrate of soda, 133; slag, 714; muriate of potash, 120.	Nitrate of soda, 133.....	Nitrate of soda, 133...	171·3	71·7	1·4	3·05
8A	Sulphate of ammonia, 300; slag, 714; muriate of potash, 120.	.....	.....	203·8	69·5	1·5	2·9
8B	Sulphate of ammonia, 200; slag, 714; muriate of potash, 120.	Sulphate of ammonia, 100.	.....	183·8	78·6	1·5	2·4
8C	Sulphate of ammonia, 100; slag, 714; muriate of potash, 120.	Sulphate of ammonia, 100.	Sulphate of ammonia, 100.	192·3	77·7	1·4	2·7
9A	Manure (10 tons); nitrate of soda, 200; acid phosphate, 500; muriate of potash, 120.	.....	.....	197·5	70·8	1·8	3·18
9B	Manure (10 tons); nitrate of soda, 133; acid phosphate, 500; muriate of potash, 120.	Nitrate of soda, 67.....	.....	165·8	72·9	1·6	2·7

SUMMARY OF RESULTS, EXPERIMENT E-21, FOR THE FIRST ROTATION PERIOD, 1921 TO 1923, INCLUSIVE—*Continued*

Plot	How fertilized, pounds per acre			Average yield per acre			
	1921	1922	1923	Potatoes — 1921	Oats — 1922	Straw — 1922	Hay — 1923
				bush.	bush.	tons	tons
9C	Manure (10 tons); nitrate of soda, 67; acid phosphate, 500; muriate of potash, 120.	Nitrate of soda, 67.....	Nitrate of soda, 67....	195·1	73·5	1·7	2·9
10A	Manure (10 tons); nitrate of soda, 200; acid phosphate, 250; muriate of potash, 120.	.....	.....	208·5	73·8	1·7	3·1
10B	Manure (10 tons); nitrate of soda, 133; acid phosphate, 250; muriate of potash, 120.	Nitrate of soda, 67.....	.....	188·5	69·8	1·4	2·8
10C	Manure (10 tons); nitrate of soda, 67; acid phosphate, 250; muriate of potash, 120.	Nitrate of soda, 67.....	Nitrate of soda, 67....	196·1	76·6	1·6	2·9
11A	Nitrate of soda, 200; acid phosphate, 500; muriate of potash, 120.	.....	Nitrate of soda, 133...	195·1	66·0	1·5	2·4
11B	Nitrate of soda, 100; acid phosphate, 250; muriate of potash, 60.	.....	Nitrate of soda, 133...	173·3	59·1	1·2	2·0
12A	Nitrate of soda, 200; slag, 714; muriate of potash, 120.	.....	Nitrate of soda, 133...	187·0	73·3	1·4	2·9
12B	Nitrate of soda, 100; slag, 357; muriate of potash, 60.	.....	Nitrate of soda, 133...	179·6	63·2	1·02	2·5
13A	Dried blood, 260; acid phosphate, 500; muriate of potash, 120.	.....	Nitrate of soda, 133..	178·8	60·7	1·3	2·7
13B	Dried blood, 130; acid phosphate, 250; muriate of potash, 60.	.....	Nitrate of soda, 133...	149·0	52·5	1·1	2·0
14A	Dried blood, 133; bonemeal, 444; muriate of potash, 120.	.....	Nitrate of soda, 133...	173·0	60·5	1·1	2·4
14B	Dried blood, 62·5; bonemeal, 222; muriate of potash, 60.	.....	Nitrate of soda, 133...	147·3	55·1	0·9	2·0
15A	Nitrate of soda, 100; bonemeal, 444; muriate of potash, 120.	.....	Nitrate of soda, 133...	179·6	63·3	1·2	3·5
15B	Nitrate of soda, 50; bonemeal, 222; muriate of potash, 60.	.....	Nitrate of soda, 133...	154·3	54·5	0·9	2·2
16A	Nitrate of soda, 100; tankage, 150; acid phosphate, 425; muriate of potash, 120.	.....	Nitrate of soda, 133...	174·1	62·7	1·2	2·1
16B	Nitrate of soda, 50; tankage, 75; acid phosphate, 212·5; muriate of potash, 60.	.....	Nitrate of soda, 133...	161·1	56·7	0·84	1·9
17A	Tankage, 300; acid phosphate, 350; muriate of potash, 120.	.....	Nitrate of soda, 133...	181·0	65·7	1·3	2·5
17B	Tankage, 150; acid phosphate, 175; muriate of potash, 60.	.....	Nitrate of soda, 133...	171·3	61·6	1·3	2·1
18A	Manure (10 tons); nitrate of soda, 200; acid phosphate, 500; muriate of potash, 120.	.....	Nitrate of soda, 133...	202·8	73·9	1·8	3·4
18B	Manure (10 tons); nitrate of soda, 100; acid phosphate, 250; muriate of potash, 60.	.....	Nitrate of soda, 133...	200·1	69·1	1·3	3·0
19A	Manure (10 tons); nitrate of soda, 200; slag, 714; muriate of potash, 120.	.....	Nitrate of soda, 133...	210·5	72·5	1·2	4·1
19B	Manure (10 tons); nitrate of soda, 100; slag, 357; muriate of potash, 60.	.....	Nitrate of soda, 133...	189·6	66·3	1·5	3·1
20A	Manure (10 tons).....	.....	.....	189·3	60·2	1·4	2·64
20B	Manure (20 tons).....	.....	.....	189·1	62·5	1·3	2·67
21A	.....	.....	Nitrate of soda, 133...	196·1	53·2	1·04	2·1
21B	.....	.....	Nitrate of soda, 133...	171·1	50·1	1·02	2·05
22	Nitrate of soda, 200; acid phosphate, 250; muriate of potash, 60.	Nitrate of soda, 100; acid phosphate, 125; muriate of potash, 30.	Nitrate of soda, 100; acid phosphate, 125; muriate of potash, 30.	193·5	62·2	1·04	2·7

SUMMARY OF RESULTS, EXPERIMENT E-21, FOR THE FIRST ROTATION PERIOD, 1921 TO 1923, INCLUSIVE—*Concluded*

Plot	How fertilized, pounds per acre			Average yield per acre			
	1921	1922	1923	Potatoes — 1921	Oats — 1922	Straw — 1922	Hay — 1923
				bush.	bush.	tons	tons
23	Nitrate of soda, 100; acid phosphate, 250; muriate of potash, 60.	Nitrate of soda, 50; acid phosphate, 125; muriate of potash, 30.	Nitrate of soda, 50; acid phosphate, 125; muriate of potash, 30.	183·1	56·4	0·9	2·1
24	Nitrate of soda, 200; acid phosphate, 125; muriate of potash, 60.	Nitrate of soda, 100; acid phosphate, 62·5; muriate of potash, 30.	Nitrate of soda, 100; acid phosphate, 62·5; muriate of potash, 30.	172·6	62·6	1·1	2·09
25	Nitrate of soda, 100; acid phosphate, 125; muriate of potash, 60.	Nitrate of soda, 50; acid phosphate, 62·5; muriate of potash, 30.	Nitrate of soda, 50; acid phosphate, 62·5; muriate of potash, 30.	169·3	50·5	0·89	1·9
6	Nitrate of soda, 200; acid phosphate, 250; muriate of potash, 30.	Nitrate of soda, 100; acid phosphate, 125; muriate of potash, 15.	Nitrate of soda, 100; acid phosphate, 125; muriate of potash, 15.	185·5	62·5	1·4	2·6
27	Sulphate of ammonia, 150; acid phosphate, 250; muriate of potash, 60.	Sulphate of ammonia; 75; acid phosphate, 125; muriate of potash, 30.	Sulphate of ammonia; 75; acid phosphate, 125; muriate of potash, 30.	177·3	51·9	0·96	2·3
28	Nitrate of soda, 200; slag, 357; muriate of potash, 60.	Nitrate of soda, 100; slag, 178·5; muriate of potash, 30.	Nitrate of soda, 100; slag, 178·5; muriate of potash, 30.	182·3	53·82	0·9	2·5
29	Sulphate of ammonia, 150; slag, 357; muriate of potash, 60.	Sulphate of ammonia, 75; slag, 178·5; muriate of potash, 30.	Sulphate of ammonia, 75; slag, 178·5; muriate of potash, 30.	181·1	60·1	1·2	2·3
30	Manure (10 tons); nitrate of soda, 100; acid phosphate, 250; muriate of potash, 60.	Nitrate of soda, 50; acid phosphate, 125; muriate of potash, 30.	Nitrate of soda, 50; acid phosphate, 125; muriate of potash, 30.	210·0	71·7	1·5	2·8
31	Manure (10 tons); nitrate of soda, 100; acid phosphate, 125; muriate of potash, 60.	Nitrate of soda, 50; acid phosphate, 62·5; muriate of potash, 30.	Nitrate of soda, 50; acid phosphate, 62·5; muriate of potash, 30.	200·8	66·6	1·2	2·5

Plot	Average yield per acre			
	Potatoes — 1921	Oats — 1922	Straw — 1922	Hay — 1923
Check plots	bush.	bush.	tons	tons
1, 2, 3, 4, No fertilizer, no manure	169·8	61·55	1·44	2·647
5, 6, 7, Manure, 10 tons	178·0	63·14	·91	2·880
8, 9, 10, 11, 12, No fertilizer, no manure	164·3	60·77	1·33	1·752
13, 14, 15, Manure, 10 tons	192·3	66·27	1·37	2·890
16, Manure, 20 tons	194·2	67·06	1·57	3·200

POULTRY

Barred Plymouth Rocks, White Leghorns, and White Wyandottes are kept at this Station. All hens are trap-nested, and those with the best records, usually over 200 eggs, are kept as breeders. The average production of the flock has been raised very considerably by this method, so that for the current year 23 per cent of the Barred Rock pullets averaged over 220 eggs; a further 22 per cent averaged 185 eggs; a further 17 per cent averaged 160 eggs, and the production of the whole flock averaged over 150 eggs. The records of the White Leghorns and White Wyandottes are not so good as these, as the number of birds and the time they have been trap-nested have been less in both cases, but a decided increase in average production has been made with both of these flocks. A number of the best cockerels of each of the three breeds are sold each year, providing a means whereby the production of farm flocks can be materially increased at small cost.

ADVANTAGE OF PULLETS OVER HENS FOR EGG-PRODUCTION

The following table of the production from hens carried over for breeding purposes indicates the advantage of pullets over hens for egg-production:—

Number of hens	Breed	Average Production		
		First year	Second year	Third year
(1922)				
13	Barred Plymouth Rocks	222·4	125·3	84·9
5	White Wyandottes	234·0	128·4	74·0
8	Barred Plymouth Rocks	210·6	134·0	
(1923)				
1	Barred Plymouth Rocks	278·0	134·0	59·0
10	Barred Plymouth Rocks	218·3	125·4	
(1924)				
5	Barred Plymouth Rocks	218·0	124·6	93·2
11	White Wyandottes	189·6	112·4	
26	Barred Plymouth Rocks	202·0	109·9	

FEEDING

A grain ration of two parts of oats, and three parts each of wheat and corn, at the rate of one pint of the mixture per four birds per day, is scattered in the litter twice daily, morning and afternoon, the bigger feed being in the afternoon. The two feedings promote activity throughout the day and make for a full crop at night. A wet mash composed of 200 pounds each of oats and cornmeal, 100 pounds each of bran and middlings, and 25 pounds each of linseed oil meal and beef scrap, is fed at noon at the rate of 6 pounds of dry mash per 100 hens. The mash ration seems more acceptable wet than dry, and is now fed wet only. Grit and charcoal are available at all times in hoppers. Mangels or sprouted oats are given as green feed during the winter.

COST OF RAISING CHICKENS

A record was kept of the amount of feed required to raise a flock of 215 chickens from hatching, the 15th day of April to October 31, and is as follows:—

COST OF RAISING CHICKENS TO OCTOBER 31

300 pounds Blatchford's Milk Mash at $4.50	$ 13 50
300 pounds Baby Chick Scratch at $5	15 00
40 pounds stale bread at 5 cents	2 00
150 pounds rolled oats at $4.50	6 75
1,775 pounds cracked corn at $3	53 25
1,000 pounds wheat at $3	30 00
586 pounds mash at $2.50	14 65
100 pounds mash at $2.60	2 60
42 pounds beef scrap at $6	2 52
7 pounds grit at $1.50	0 11
Cost for 215 chickens	$ 140 38

Cost per chick, 65·3 cents.

EGG-LAYING CONTEST

The Nova Scotia Southern Egg-laying Contest opened its initial year on November 1, 1924, at this Station. Twenty pens of ten birds each were entered, embracing Barred Plymouth Rocks, White Leghorns, White Wyandottes, and Rhode Island Reds.

A new building, 140 feet by 16 feet, having ten pens on each side of a central feed- and management-room, was built during the summer, south of the Station poultry-yards. The building has a concrete floor and a peak-roof, with straw-loft above a slatted ceiling, and is proving very satisfactory.

APIARY

During the winter of 1923-24 fifty-two colonies were wintered in quadruple cases at the Experimental Station, Kentville, N.S., and one colony in a single case. Four of the fifty-three were double colonies, in that they contained two queens separated by a tight-fitting division board.

On examining the colonies in the spring two were found to have drone-laying queens, one had a queen that had not started to lay, and one queen had died during the winter. These four colonies, being strong in bees, were given queens from the four double colonies. The average number of combs covered May 14 was 4.7.

The eight colonies wintered at Bridgetown in quadruple cases came through the winter in good condition. The average number of combs covered on May 29 was 12.4. Two of the eight colonies at the out-apiary at Kennetcook did not survive the winter. One died of starvation; the other became queenless during late fall or winter. The average number of combs covered May 27 was 9.5. On May 27 the six colonies at Kennetcook were moved to Brooklyn, Hants county.

QUEEN-REARING

Queen-rearing was continued this season. Practically all the queens reared were from larvæ of a selected, tested Italian queen procured in the spring of 1924.

Of the seventy-three colonies in the three apiaries, fifty-seven have Italian queens, one colony is headed by a Carniolan queen, and the remainder have either black or hybrid queens.

INCREASE

On July 9 three nuclei were made up by taking for each nucleus two frames of emerging brood with adhering bees and one comb of honey from over-wintered colonies. A young Italian queen was introduced to each nucleus, and the entrances were then reduced to two inches. As the season advanced, empty drawn combs were given the nuclei as required.

On July 15 a colony swarmed and was hived on a new stand.

After the queen-rearing season was over in September, three double colonies were made up by transferring bees, queen and brood from the mating-boxes into three ten-frame hives, each with a solid division-board down the centre.

SWARM-CONTROL

Dequeening and destroying the queen cells, and in nine days again destroying the queen-cells and requeening the colonies with young queens, proved to be the most satisfactory method of swarm-control at the Kentville apiary.

Swarming was controlled in a group of twelve hives by the following method. In the spring when the bees covered ten frames in the standard hive, twelve colonies were given a super of empty drawn-combs, which provided the queen with ample room for brood-rearing. A week before the honey flow all sealed and emerging brood was placed in the upper story and the queen and unsealed brood in the lower chamber with a queen excluder between. As the brood hatched out in the upper story, the bees stored honey in the cells left vacant. Before the bees became crowded for room, another story or super was added.

SWARM-DETECTION

SHALLOW SUPER METHOD.—In the two out-apiaries consisting of sixteen colonies, a shallow super is left on each colony the entire year. In the winter and spring these serve the purpose of a food-chamber, in the active season as a brood-chamber. Additional supers given these colonies during the season were placed over a queen-excluder. Of the fourteen over-wintered colonies in the two out-apiaries only two developed queen-cells, all of which were along the bottom bars of the frames in the shallow supers. Neither of the two colonies at the Kentville apiary that were given a shallow super developed queen-cells.

This method does away with the need of going through a colony and examining every comb for queen-cells, as any queen-cells that may be present can be detected by tipping one end of the shallow super and looking along the bottom bars of the shallow frames.

PRODUCTION BY COLONIES ALLOWED TO SWARM AND BY COLONIES WHERE SWARMING IS CONTROLLED

This experiment to determine the average profit of colonies that were increased through division, as compared with those that were not divided or did not swarm, was continued this year. In the table following honey is valued at fifteen cents a pound and a colony of bees at $7.

Number of Colonies	Number of increase	Average pounds of honey produced	Average value of honey and increase
			$
3	3	50·7	14 60
41	.....	60·3	9 04

POISONING OF BEES BY ARSENICAL DUST

During the summer of 1924 the bees at this Station were not affected by the arsenical dust, probably due to the fact that very little bloom was under the trees at the time of dusting.

The use of arsenical dust having been practically discontinued in the vicinity of the out-apiary at Bridgetown, no ill effects from dusting were observed there.

The only orchard where dusting is practised is about a mile from the apiary. The out-apiary at Brooklyn, not being in the fruit area, is not affected.

Various beekeepers throughout the valley report ill effects from dusting, making it necessary in some cases to move the bees away from the area during the period of dusting.

JUMBO VS. STANDARD TEN-FRAME HIVES

Of the two types of hives, the standard ten-frame hive had given the best results previous to 1924. The highest production of honey for the summer of 1924 was from a colony of bees in a Jumbo hive. The weight of honey from the best Jumbo hive was practically double that from the best standard hive. A larger yield was obtained from standard hives at both out-apiaries, where only this type of hive is in use and conditions are more favourable for honey production.

OUT-APIARIES

Two out-apiaries were established in the spring of 1923, one at Bridgetown, Annapolis county, and one at Kennetcook, Hants county.

In the spring of 1924 the apiary at Kennetcook was moved to Brooklyn, Hants county.

Records of the amount of honey gathered since these apiaries have been established are given in the table following.

PRODUCTION IN OUT-APIARIES

Year	Out-apiary at	Number of colonies in spring	Honey produced	Number of colonies in fall	Average production per colony, spring count
			lb.		lb.
1923	Kennetcook	4	370	8	92·5
1923	Bridgetown	4	336	8	84·0
1924	Brooklyn	6	885	8	147·5
1924	Bridgetown	8	973	8	121·6

PRODUCTION

Although the bees came through the winter in good condition they did not build up rapidly in the spring; consequently they were not strong enough to take full advantage of the fruit-bloom. The honey from this source was not of sufficient quantity to make it worth while extracting, although ample nectar was gathered to stimulate brood-rearing, which brought the colonies up to strength by the time the clover secreted nectar.

Conditions during the earlier part of the clover-flow were most favourable for gathering honey; however, the period of flow was shorter than usual, due to dry weather.

The flow from goldenrod and aster was not as heavy as usual, except at Bridgetown, where each colony stored a super of honey.

The production from all sources for the season was 4,354.5 pounds. The table following gives the production of the Kentville apiary for the last six years.

Year	Number of colonies in spring	Number of colonies in fall	Pounds of honey produced	Average production per colony, spring count
			lb.	lb.
1919	21	36	2,577½	122·7
1920	32	56	1,168	36·5
1921	43	60	1,681½	39·1
1922	41	69	1,685½	41·1
1923	36	61	1,836½	51·0
1924	41	57	2,472½	60·3

Nine over-wintered colonies are not included in the spring count, as these colonies were divided to make up mating-boxes for queen-rearing. Three of these produced a total of 24 pounds of honey.

CONDITION OF COLONIES IN THE AUTUMN

Conditions being favourable during the latter part of the summer and fall, nuclei built up rapidly. Most of the over-wintered colonies were re-queened during the months of July and August with young, prolific queens; consequently they were strong in young bees late in the fall. The average number of combs covered on October 13 was 8.6.

Bees and brood in mating-boxes that were not used in the fall for increase after queen-rearing was finished were united to the weaker colonies.

TWO-QUEEN SYSTEM OF WINTERING

After the queen-rearing season was over mating-boxes that were strong in bees, covering four to five frames, were transferred to ten-frame hives. Two of these nuclei were placed in one hive that had a solid division-board down the centre to prevent the bees from intermingling. A special portico was placed at the entrance of the hive to provide two openings. Eight nuclei, or four double colonies, are being wintered in this manner in the ordinary wintering-case. During the winter of 1923-1924 the same number were wintered successfully.

Two extra queens so wintered were given to two single colonies that had drone-laying queens, one to a colony that had lost its queen during the winter, and the other to a colony where laying had not started. The bees belonging to these queens were united to weak colonies. The remaining four nuclei were carried through the summer as single colonies. Two of these produced an average of 57 pounds of honey. One was sold May 27, and at that time was a good, average colony. The fourth colony was used for making up mating-boxes.

WINTER STORES, 1924-25

Thirty-one of the fifty-seven colonies at the Kentville apiary are being wintered on clover honey. This was given to them late in the fall, in most cases in full-depth supers over the brood-chambers. The number of combs given was from three to five, depending upon the weight of the colony before feeding commenced. The remaining space in the supers was filled with empty drawn combs. Two colonies were given a shallow super of honey each, one containing goldenrod and the other clover honey. Four single colonies and half of one of the double colonies are being wintered on fermented goldenrod honey and sugar syrup in equal proportions. Fifteen single and half a double colony are being wintered on natural stores (consisting of clover and goldenrod honey) in addition to sugar syrup. Four colonies are being wintered on sugar syrup only.

The sixteen colonies in the two out-apiaries have each a shallow super of clover honey in addition to the honey they have in the brood-chamber.

FIBRE PLANTS

FLAX FOR FIBRE

The land on which the different tests with flax were carried on was in corn in 1923, and had been manured for that crop at the rate of 20 tons per acre. This was ploughed shortly after the corn crop had been harvested, and was later harrowed. It was well worked up with the disk harrow and cultivator in the spring of 1924, and levelled with the smoothing harrow. Seed at the rate of 85 pounds per acre was sown by hand, and covered with the harrow. All the first seedings were made May 10. The experiments included growing one acre in a commercial way, testing different varieties, seeding at different dates, seeding at different rates per acre, and harvesting at different dates. The tests were conducted on one-fortieth acre areas. No chemical fertilizers were used. The whole area was seeded to grass with a mixture made up of 8 pounds of red clover, 8 pounds of timothy, and 2 pounds of alsike clover per acre. A good stand of grass was secured, and the field after the flax was pulled had every appearance of yielding a good crop of hay in 1925. The tables following show the results of the various tests. Reports as to the quality of the fibre are very favourable, and with a little experience this industry might be a profitable line of endeavour in some parts of Nova Scotia.

FLAX, VARIETY TESTS, 1924

Variety	Seed per acre	Deseeded straw per acre	Retted straw per acre	Fibre per acre	Tow per acre	Pounds of fibre in 100 lbs. straw		Pounds of tow in 100 lbs. straw	
						Deseeded straw	Retted straw	Deseeded straw	Retted straw
	bush.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
Riga Blue, H. G.	10·8	3,258·0	2,532·0	650·4	270	19·9	25·6	8·2	10·6
Riga Blue, Imp...	9·8	2,640·0	2,065·0	420·6	258	15·9	20·3	9·7	12·4
Riga Blue, H.G...	10·3	2,958·0	2,370·0	514·2	258	17·3	21·6	8·7	10·8
Dutch Blue, C....	9·6	2,418·0	1,984·0	431·2	264	17·8	21·7	10·9	13·3
Dutch Blue, Imp.	10·2	2,556·0	2,169·0	523·1	300	20·4	24·1	11·7	13·8
Dutch Blue, C....	10·5	2,580·0	2,022·0	405·6	276	15·7	20·06	10·7	13·6
Pure Line No. 5...	11·1	2,838·0	2,298·0	502·5	310	17·7	21·8	10·9	13·5
Saginaw.....	9·8	3,300·0	2,530·0	500·6	405	15·1	19·8	12·27	16·07
No. 829 C.....	8·5	3,336·0	2,778·0	642·5	276	19·2	23·1	8·2	9·9
No. 770 B.....	10·9	2,538·0	2,082·0	386·9	195	15·2	18·5	7·6	9·3
Japan No. 3.....	10·9	2,736·0	2,209·0	481·2	225	17·5	21·3	8·2	10·1
Dutch White.....	10·6	2,700·0	2,289·0	455·6	300	16·8	19·9	11·1	13·1
Longstem.....	9·4	3,060·0	2,322·0	440·0	330	14·3	18·9	10·7	14·2
Averages.....	10·1	2,839·8	2,280·7	488·8	282	17·1	21·2	9·9	12·3

FLAX HARVESTED AT DIFFERENT DATES, 1924

(Variety, Riga Blue. Seeded May 10, 1924)

When pulled	Seed per acre	Deseeded straw per acre	Retted straw per acre	Fibre per acre	Tow per acre	Pounds of fibre in 100 lbs. straw		Pounds of tow in 100 lbs. straw	
						Deseeded straw	Retted straw	Deseeded straw	Retted straw
	bush.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
Aug. 1.....	7·7	2,400	2,169	503·8	300·0	20·9	23·2	12·5	13·8
" 8.....	8·8	2,538	2,194	533·6	307·8	21·0	24·3	12·1	14·02
" 15.....	9·1	2,538	2,070	509·2	304·8	20·06	24·6	12·0	14·7
" 22.....	9·9	2,976	2,316	533·6	334·8	17·9	23·04	11·2	14·4

FLAX, DIFFERENT RATES OF SEEDING, 1924

(Variety, Riga Blue)

Pounds seeded per acre	Seed per acre	Deseeded straw per acre	Retted straw per acre	Fibre per acre	Tow per acre	Pounds of fibre in 100 lbs. straw		Pounds of tow in 100 lbs. straw	
						Deseeded straw	Retted straw	Deseeded straw	Retted straw
	bush.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
80	9·9	2,520	2,238	460·0	300·0	18·2	20·5	11·9	13·4
90	9·9	2,676	2,286	548·8	300·0	20·5	24·0	11·2	13·1
100	9·3	2,478	2,142	508·0	246·0	20·5	23·7	9·9	11·4
110	9·6	2,400	2,178	466·2	342·0	19·4	21·4	14·2	15·7
120	9·3	2,658	2,175	588·0	304·8	22·1	27·0	11·0	14·0

FLAX SEEDED AT DIFFERENT DATES, 1924

(Variety, Riga Blue)

Date of seeding	Date harvested	Seed per acre	Deseeded straw per acre	Retted straw per acre	Fibre per acre	Tow per acre	Pounds of fibre in 100 pounds of straw		Pounds of tow in 100 pounds of straw	
							Deseeded straw	Retted straw	Deseeded straw	Retted straw
		bush.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
May 10	Aug. 2	9·9	2,400	2,088	417·4	307·8	17·4	20·0	12·8	14·7
" 17	" 6	8·4	2,076	1,722	355·6	229·8	17·1	20·6	11·07	13·3
" 24	" 11	9·9	2,340	2,010	430·2	304·8	18·3	21·4	13·02	15·1
" 31	" 16	10·0	2,598	2,142	388·0	274·8	14·9	18·1	10·5	12·8

FLAX, DEW-RETTED VS. WATER-RETTED, 1924

(Variety, Riga Blue)

—	Seed per acre	Deseeded straw per acre	Retted straw per acre	Fibre per acre	Tow per acre	Pounds of fibre in 100 lbs. straw		Pounds of tow in 100 lbs. straw	
						Deseeded straw	Retted straw	Deseeded straw	Retted straw
	bush.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
Dew-retted	10·8	3,258	2,532	650·4	270	19·9	25·6	8·2	10·6
Water-retted	10·3	3,156	2,358	421·8	282	13·3	17·8	8·9	11·9

COST OF GROWING FLAX, KENTVILLE, N.S., 1924

Two acres, Pure Line Number 5

Ploughing in fall, 12 hours at 50 cents	$ 6 00	
Disking with tractor, 2 hours at $1	2 00	
Cultivating, 2 hours at 50 cents	1 00	
Seeding by hand, 2 hours at 30 cents	0 60	
Covering and smoothing, 2 hours at 50 cents	1 00	
		$10 60
Seed, 3 bushels at $3		9 00
Pulling, 93 hours at 25 cents		23 25
Tying and stooking, 18 hours at 25 cents	4 50	
Lifting and hauling for de-seeding, 3 hours at 75 cents	2 25	
De-seeding, 7 hours at 30 cents	2 10	
Hauling to field for spreading, 2 hours at 75 cents	1 50	
		10 35
Spreading for retting, 53 hours at 25 cents	13 25	
Lifting, tying and storing, 45 hours at 25 cents	11 25	
		24 50
Breaking, 62 hours at 25 cents	15 50	
Scutching, 108 hours at 30 cents	32 40	
		47 90
Engine on machine work, 112 hours at 20 cents		22 40
Cost for 2 acres		$148 00
Cost for 1 acre		74 00

	Two acres		One acre	
Weight before de-seeding	4,907	pounds	2,453·5	pounds
" of seed	980	"	490·0	"
" of chaff	503	"	251·5	"
" of straw after de-seeding	3,424	"	1,712·0	"
" of straw after retting	2,779	"	1,389·5	"
" of tow	218	"	109·0	"
" of fibre	497	"	248·5	"

Fibre in 100 lb. de-seeded straw	14·5 lbs.
Fibre in 100 lb. retted straw	17·8 "
Tow in 100 lb. de-seeded straw	6·3 "
Tow in 100 lb. retted straw	7·8 "
Loss in 100 lb. between de-seeding and retting	18·8 "

HEMP

The tests with hemp were made on land which had grown potatoes in 1923, and had been manured for that crop at the rate of sixteen tons per acre, 600 pounds per acre of chemical fertilizer also being used. The land was ploughed in the fall, well worked up in the spring with disk harrow and cultivator, and all the first seedings were made May 21, using 55 pounds of seed per acre. The tests were as follows: growing one acre in a commercial way; seeding at different dates; seeding broad-cast and in rows; harvesting at different dates; and fertilizing with various chemical fertilizers, used alone and in combination.

The results of the work are shown in the tables following. The reports from manufacturers are very favourable as to the quality of the fibre and would indicate a profitable line of undertaking. Further work is contemplated for 1925.

HEMP—AVERAGE OF 4 PLOTS OF $\frac{1}{80}$ ACRE EACH

Plot	Fertilizer used	Average height	Yield per acre in pounds				Pounds of tow in 100 lb.		Pounds of fibre in 100 lb.	
			Before breaking	After breaking	Tow	Fibre	Before breaking	After breaking	Before breaking	After breaking
		feet								
1	Nitrate of soda, 200 lb	5½	4,280	2,776	640·0	583·2	14·9	23·0	13·6	21·0
2	Acid phosphate, 500 lb	4½	3,856	2,400	715·2	522·4	18·5	29·8	13·5	21·7
3	Muriate of potash, 100 lb	3¼	3,400	2,656	589·6	408·0	17·3	22·2	12·0	15·3
4	Not fertilized	3½	3,320	2,360	689·6	319·2	20·7	29·2	9·6	13·5
5	Nitrate of soda, 200 lb.; acid phosphate, 500 lb	5½	5,376	3,136	789·6	791·2	14·6	25·1	14·7	25·2
6	Nitrate of soda, 200 lb.; acid phosphate, 500 lb., muriate of potash, 100 lb	5½	4,656	3,136	875·2	684·0	18·8	27·9	14·7	21·8
7	Not fertilized	3¼	3,520	2,256	620·0	372·8	17·6	27·4	10·5	16·5
8	Nitrate of soda, 100 lb	4½	3,720	2,640	709·6	445·6	19·1	26·8	11·9	16·8
9	Nitrate of soda, 300 lb	5	4,584	2,960	664·0	696·0	14·5	22·4	15·2	23·5
10	Nitrate of soda, 400 lb	5½	4,776	2,816	689·6	608·0	14·4	24·4	12·7	21·6

HEMP—AVERAGE OF 2 PLOTS OF $\frac{1}{66}$ ACRE EACH

Seeded at different dates

Date of seeding	Yield per acre in pounds				Pounds of tow in 100 lb.		Pounds of fibre in 100 lbs.	
	Before breaking	After breaking	Tow	Fibre	Before breaking	After breaking	Before breaking	After breaking
May 21	5,400	2,700	660·0	922·2	12·2	24·4	17·07	34·14
May 28	3,990	2,460	720·0	622·8	18·04	29·2	15·6	25·3
June 4	3,660	2,430	645·0	384·0	17·6	26·5	10·5	15·8
June 11	4,620	2,520	450·0	783·0	9·7	17·8	16·9	31·07
June 18	4,638	2,298	480·0	793·8	10·3	20·8	17·1	34·5
Seeded in different ways								
Broadcast, average of two plots	5,370	3,090	570·0	892·8	10·6	18·4	16·6	28·8
In rows, average of three plots	5,418	2,796	585·0	925·2	10·7	20·8	17·07	33·08
Varieties, average of three plots—								
Chington	5,796	2,940	558·0	1,019·4	9·6	19·0	17·5	34·6
Minnesota No. 8	5,298	2,718	634·8	820·2	11·9	23·3	15·4	30·1
Different dates of harvest								
September 25, average of 5 plots	4,548	2,532	660·0	637·2	14·5	25·4	14·01	24·5
October 7, average of 3 plots	4,578	3,198	1,116·0	587·4	24·3	34·8	12·8	18·3
October 15, average of three plots	3,720	2,280	978·0	414·6	26·2	42·9	11·1	18·1

COST OF GROWING ONE ACRE OF HEMP, KENTVILLE, 1924

Ploughing in fall, 6 hours at 50 cents	$ 3 00	
Disking with tractor, 1 hour at $1	1 00	
Cultivating, 1 hour at 50 cents	0 50	
Seeding, 1 hour at 30 cents	0 30	
Covering and smoothing, 1 hour at 50 cents	0 50	
		$ 5 30
Seed, 55 pounds at 6 cents		3 30
Cutting with binder, 2 hours at 50 cents		1 00
Spreading, 20 hours at 25 cents	5 00	
Lifting and tying, 18 hours at 25 cents	4 50	
Hauling and storing, 2 hours at 75 cents	1 50	
		11 00
Breaking, 47 hours at 25 cents	11 75	
Scutching, 51 hours at 30 cents	15 30	
Engine on machine work, 51 hours at 20 cents	10 20	
		37 25
		$57 85

Product from one acre:—

Weight when retted	2,653	pounds	
" when broken	1,646	"	
" of tow	400	"	at 8c. per lb.
" of fibre	762	"	at 17c. per lb.

HEMP, FERTILIZER TESTS.—Some tests were carried out in the fertilizing of hemp to gain information as to the requirements of this plant. All plots are replicated four times. The fertilizers applied and the average yields of the different plots are given blow.

HEMP—FERTILIZER TESTS

Plot	Fertilizer used	Average height	Yield per acre				Pounds of tow in 100 lb. of dried straw		Pounds of fibre in 100 lb. of dried straw	
			Before breaking	After breaking	Tow	Fibre	Before breaking	After breaking	Before breaking	After breaking
		feet	lb.	lb.	lb.	lb.				
1	Nitrate of soda, 200 lb.	5½	4,280	2,776	640·0	583·2	14·9	23·0	13·6	21·0
2	Acid phosphate, 500 lb.	4½	3,856	2,400	715·2	522·4	18·5	29·8	13·5	21·7
3	Muriate of potash, 100 lb.	3½	3,400	2,656	589·6	408·0	17·3	22·2	12·0	15·3
4	Not fertilized	3½	3,320	2,360	689·6	319·2	20·7	29·2	9·6	13·5
5	Nitrate of soda, 200 lb.; acid phosphate, 500 lb.	5½	5,376	3,136	789·6	791·2	14·6	25·1	14·7	25·2
6	Nitrate of soda, 200 lb.; acid phosphate, 500 lb.; muriate of potash, 100 lb.	5½	4,656	3,136	875·2	684·0	18·8	27·9	14·7	21·8
7	Not fertilized	3½	3,520	2,256	620·0	372·8	17·6	27·4	10·5	16·5
8	Nitrate of soda 100 lb.	4½	3,720	2,640	709·6	445·6	19·1	26·8	11·9	16·8
9	Nitrate of soda, 300 lb.	5	4,584	2,960	664·0	696·0	14·5	22·4	15·2	23·5
10	Nitrate of soda, 400 lb.	5½	4,776	2,816	689·6	608·0	14·4	24·4	12·7	21·6

OTTAWA
F. A. ACLAND
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1926