Ketterings, Q.M., H. Krol, W.S. Reid and P. Barney (2003). St Lawrence Soil Sample Survey 1995-2001. CSS Extension Bulletin E03-3. 37 pages.

Soil Sample Survey

St Lawrence Co.

Samples analyzed by CNAL in 1995-2001

Corn and grassland in St Lawrence County. November 2002.

Summary compiled by

Quirine M. Ketterings, Hettie Krol, W. Shaw Reid and Pete Barney

Nutrient Management Spear Program: http://nmsp.css.cornell.edu/

Soil Sample Survey

St Lawrence Co.

Samples analyzed by CNAL in 1995-2001

Summary compiled by

Quirine Ketterings and Hettie Krol
Nutrient Management Spear Program
Department of Crop and Soil Sciences
817 Bradfield Hall, Cornell University
Ithaca NY 14853

W. Shaw Reid
Professor Emeritus
Department of Crop and Soil Sciences

Pete Barney
Field Crops Educator
Cornell Cooperative Extension of St Lawrence County

March 8, 2003

Correct Citation:

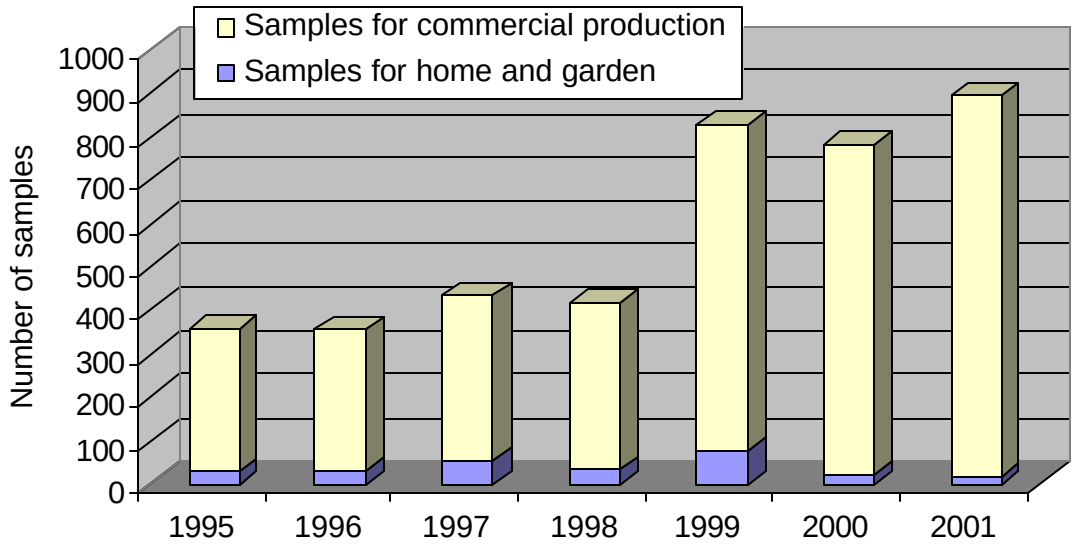
Ketterings, Q.M., H. Krol. W.S. Reid, and P. Barney (2003). Soil samples survey of St. Lawrence County. Samples analyzed by the Cornell Nutrient Analysis Laboratory in 1995-2001. CSS Extension Bulletin E03-3. 37 pages.

Table of Content

1. General Survey Summary....4
2. Cropping Systems....9
2.1 Samples for Home and Garden....9
2.2 Samples for Commercial Production....10
3. Soil Types....12
3.1 Samples for Home and Garden....12
3.2 Samples for Commercial Production....13
4. Organic Matter....15
4.1 Samples for Home and Garden....15
4.2 Samples for Commercial Production....16
5. pH....17
5.1 Samples for Home and Garden....17
5.2 Samples for Commercial Production....18
6. Phosphorus....19
6.1 Samples for Home and Garden....19
6.2 Samples for Commercial Production....20
7. Potassium....21
7.1 Samples for Home and Garden....21
7.2 Samples for Commercial Production....24
8. Magnesium....27
8.1 Samples for Home and Garden....27
8.2 Samples for Commercial Production....28
9. Iron....29
9.1 Samples for Home and Garden....29
9.2 Samples for Commercial Production....30
10. Manganese....31
10.1 Samples for Home and Garden....31
10.2 Samples for Commercial Production....32
11. Zinc....33
11.1 Samples for Home and Garden....33
11.2 Samples for Commercial Production....34
Appendix: Cornell Crop Codes....35

1. General Survey Summary

This survey summarizes the soil test results of samples submitted for commercial production and samples for home and garden (soil samples for home lawns, gardens and house plants) submitted to the Cornell Nutrient Analysis Laboratory (CNAL) during 1995-2001. The total number of samples analyzed in these years amounted to 4071. Of these 3804 samples (93%) were submitted by commercial growers while 267 samples (7%) were submitted by homeowners. The number of samples more that doubled in 1999 as compared to the years 1995-1998 and stayed fairly constant from 1999 to 2001.



Home and Garden		Commercial Production		Total
1995	30	1995	330	360
1996	34	1996	323	357
1997	55	1997	378	433
1998	35	1998	383	418
1999	75	1999	752	827
2000	22	2000	759	781
2001	16	2001	879	895
Total	267	Total	3804	4071

The majority (65%) of the homeowners that submitted soil samples to the Cornell Nutrient Analysis Laboratory during 1995-2001 requested fertilizer recommendations for lawns or for home garden vegetable production. Commercial growers submitted samples to grow alfalfa or alfalfa/grass mixes (22%), corn silage or grain (40%), and grass hay production (22%) while a few growers were planning on growing other crops including barley, clover, oats and soybeans or grass for pasture. Of the samples submitted for forages as the next crop 38 percent were for establishment whereas 62 percent was for topdressing of established stands.

Most of the soils tested for St Lawrence County were classified as belonging to soil management group 3 (moderately coarse textured glacial outwash and recent alluvium soils and medium textured acid soils developed from glacial till) and soil management group 4 (coarse- to medium-textured soils formed from glacial till or glacial outwash).

Soil management groups for New York.

1	Fine-textured soils developed from clayey lake sediments and medium- to fine-textured soils developed from lake sediments.
2	Medium- to fine-textured soils developed from calcareous glacial till and medium-textured to moderately fine-textured soils developed from slightly calcareous glacial till mixed with shale and medium-textured soils developed in recent alluvium.
3	Moderately coarse textured soil developed from glacial outwash and recent alluvium and medium-textured acid soil developed on glacial till.
4	Coarse- to medium-textured soils formed from glacial till or glacial outwash.
5	Coarse- to very coarse-textured soils formed from gravelly or sandy glacial outwash or glacial lake beach ridges or deltas.
6	Organic or muck soils with more than 80% organic matter.

Of the samples submitted by commercial growers, the majority (59%) belonged to soil management group 4. A total of 10% was group 1 (fine-textured soils developed from clayey lake sediments and medium to fine-textured soils developed from lake sediments). Only 5% belonged to group 2 (medium- to fine-textured soils developed from calcareous glacial till and medium-textured to moderately fine-textured soils developed from slightly calcareous glacial till mixed with shale and medium-textured soils developed from recent alluvium). Group 5 (coarse- to very coarse-textured soils formed from gravelly or sandy glacial outwash or glacial lake beach ridges or deltas) was represented by 7% of the samples while less than 1% was classified as an organic soil. Hogansburg was the most common soil series (18% of all samples).

Organic matter levels, as measured by loss on ignition, ranged from less than 1% to over 10%. For homeowners most samples had between 2 and 5% (71% of all samples) with 33% testing between 3 and 4% organic matter. Of the samples submitted by commercial growers, 44% contained between 3 and 4% organic matter. In total, 86% of the samples had organic matter levels between 2 and 5%.

Soil pH in water (1:1 extraction ratio) varied from less than 4.5 to over 8.5. Of the samples for home and garden, 77% tested between 6.0 and 7.4 for pH. For the samples submitted for commercial production, this was 80%.

Extractable nutrients such as phosphorus (P), potassium (K), magnesium (Mg), calcium (Ca), iron (Fe), manganese (Mn), and zinc (Zn) were measured using the Morgan solution and extraction method (Morgan, 1941). This solution contains sodium acetate buffered at a pH of 4.8.

Soil test P levels of <1 lbs P/acre are classified as very low. Between 1-3 lbs P/acre is low. Medium is between 4-8 lbs P/acre. High testing soils have P levels between 9 and 39 lbs P/acre and anything higher is classified as very high. Of the samples submitted for home and garden, 18% tested low for phosphorus, 19% tested medium, 32% tested high and 32% tested very high. This meant that 64% tested high or very high in P. Phosphorus levels in samples submitted for commercial production were lower in P than the state average (50% tested high or very high in P); however, only 4% tested very high. Thirty-two percent was low in P, 30% tested medium for P while 33% of the submitted samples were classified as high in soil test P. This means that 37% tested high or very high in P.

Thus 95% of the soils would have had a fertilizer P recommendation for corn. There were no clear trends for changes in P levels over the 6 years.

Classifications for potassium depend on soil management group. The fine textured (clayey) soils in soil management group 1 have a greater K supplying capacity than the coarse textured sandy soils (soil management group 5). Classification for each of the management groups in the above table represent very low, low, medium, high and very high. So for example for soil management group 5 and 6, <60 lbs K/acre means the soil is very low in K, between 60 and 114 lbs K/acre is medium, 115-164 lbs K/acre is medium, 165-269 lbs K/acre is high and >269 lbs K/acre is classified as very high (see the table below).

Soil Management Group	Potassium Soil Test Value (Morgan extraction in lbs K/acre)				
	Very low	Low	Medium	High	Very High
1	<35	35-64	65-94	95-149	>149
2	<40	40-69	70-99	100-164	>164
3	<45	45-79	80-119	120-199	>199
4	<55	55-99	100-149	150-239	>239
5 and 6	<60	60-114	115-164	165-269	>269

Potassium classifications for St. Lawrence soils varied from very low (6% of the samples for home and garden and 10% of the samples for commercial production) to very high (36% of the home and garden samples and 14% of the samples submitted for commercial production). Of the home and garden samples. 19% tested low in K, 19% tested medium, and 21% tested high for potassium. Of all samples for commercial production, 31% tested low, 23% tested medium and 21% tested high in potassium.

Soils test very low for magnesium if Morgan extractable Mg is less than 20 lbs Mg/acre. Low testing soils have 20-65 lbs Morgan Mg per acre. Soils with 66-100 lbs Mg/acre test medium for magnesium. High testing soils have 101-199 lbs Mg/acre while soils with more than 200 lbs Mg/acre in the Morgan extraction are classified as very high in Mg.

Magnesium levels ranged from a little over 20 to over 2600 lbs Mg/acre (Morgan extraction). There were no soils that tested very low for Mg. Most soils tested very high for Mg (88% of the home and garden soils and 93% of the soils for commercial production). Less than 5% of the home and garden soils and less than 3% of the soil for commercial production tested low or medium in Mg. Thus, magnesium deficiency is not likely to occur in St Lawrence County provided the soil pH is maintained in the desirable range.

Soils with more than 50 lbs Morgan extractable Fe per acre test excessive for Fe. Anything lower than 50 lbs Fe/acre is considered normal. Iron levels for 95-97% of the soils were in the normal range with only 5% of the home and garden samples and 3% of the samples submitted for commercial production testing excessive for Fe. Similarly, most soils (99%) for both groups tested normal for manganese. Soils with more than 100 lbs Morgan extractable Mn per acre are classified as excessive in Mn usually the result of a low soil pH. Anything less than 100 lbs Mn per acre is classified as normal. Zinc levels were much higher. Soils with less than 0.5 lbs zinc per acre in the Morgan extraction are classified as low in Zn. Medium testing soils have between 0.5 and 1 lbs of Morgan extractable Zn per acre. If more than 1 lbs of Zn/acre is extracted with the Morgan solution, the soil tests high in Zn. Of the home and garden samples, 93% tested high for zinc while 7% tested medium. Of the samples submitted for commercial production, 4% tested low in zinc, 21% tested medium while 76% was high in zinc.

In the following sections, the summary tables for each of the soil fertility indicators described above are given. The appendix contains the crop codes used in section 2.

Reference

- Morgan, M.F. 1941. Chemical soil diagnosis by the universal soil testing system. Connecticut Agricultural Experimental Station. Bulletin 450.

2. Cropping Systems

2.1 Samples for Home and Garden

Crops for which recommendations are requested by homeowners:

Crop	1995	1996	1997	1998	1999	2000	2001	Total	%
ALG	0	0	0	0	1	0	0	1	0
ATF	0	0	1	3	5	2	0	11	4
BLU	0	0	0	1	1	0	0	2	1
CEM	0	1	0	3	0	0	0	4	1
FAR	0	1	0	1	0	0	0	2	1
FLA	0	0	1	1	0	0	0	2	1
GAR	0	0	0	1	0	0	0	1	0
GEN	0	0	19	1	0	0	0	20	7
HRB	0	2	0	0	0	1	0	3	1
IDL	0	0	4	0	0	0	0	4	1
LAW	10	8	4	0	17	5	1	45	17
MVG	14	18	18	21	40	8	9	128	48
OTH	0	0	0	0	5	0	0	5	2
PER	2	0	2	0	1	3	0	8	3
PRK	0	0	1	0	0	0	0	1	0
PTO	0	0	0	0	1	0	0	1	0
ROD	0	0	0	0	1	0	0	1	0
ROS	0	0	1	0	0	0	0	1	0
RSP	0	0	1	0	1	0	1	3	1
SAG	3	3	3	2	0	1	2	14	5
STR	0	0	0	0	1	0	0	1	0
SUN	0	0	0	0	0	1	0	1	0
TRF	1	1	0	1	1	1	1	6	2
Unknown	0	0	0	0	0	0	2	2	1
Total	30	34	55	35	75	22	16	267	100

Notes:

See Appendix for Cornel crop codes.

2.2 Samples for Commercial Production

Crops for which recommendations are requested for commercial production:

Current year crop	1995	1996	1997	1998	1999	2000	2001	Total	%
ABE/ABT	5	5	1	1	0	0	0	12	0
AGE/AGT	82	53	81	73	170	140	154	753	20
ALE/ALT	30	15	7	5	5	6	10	78	2
APP	0	1	0	4	0	0	2	6	0
BCE/BCT	0	1	1	6	0	0	3	11	0
BDR	0	0	1	0	0	0	0	1	0
BGE/BGT	5	9	2	3	0	7	0	26	1
BND	3	0	0	0	0	0	0	3	0
BSP	2	0	0	0	2	0	0	4	0
BSS	1	0	0	0	2	0	0	3	0
BTE/BTT	1	0	0	0	0	0	1	2	0
BUK	2	2	0	1	1	1	0	7	0
CGE/CGT	26	20	18	29	38	54	23	208	5
CLE/CLT	2	8	4	5	4	7	12	42	1
COS/COG	142	157	142	165	236	285	385	1512	40
CSE/CST	0	0	0	1	1	0	0	2	0
CVE/CVT	0	0	0	0	1	0	0	1	0
GIE/GIT	0	0	0	19	26	24	152	221	6
GRE/GRT	9	26	61	24	183	204	89	596	16
IDL	1	0	0	0	2	1	1	5	0
MIL	0	0	2	0	0	0	0	2	0
MIX	2	0	5	0	3	1	0	11	0
OAS	2	11	1	3	2	5	4	28	1
OAT	0	0	2	1	2		1	6	0
PGE/PGT	2	0	4	4	4	6	4	24	1
PIE/PIT	0	2	1	7	0	0	8	18	0
PLE/PLT	2	1	6	1	0	1	0	11	0
PNE/PNT	2	2	13	12	27	8	14	78	2
POT	1	0	0	0	0	0	0	1	0
PUM	0	0	0	0	2	0	1	3	0
RSF	0	0	0	0	1	0	0	1	0
RSS	1	0	0	0	0	0	1	2	0
RYC	0	0	0	0	1	0	0	1	0
RYS	0	0	1	0	0	0	0	1	0
SOY	4	2	7	12	13	1	0	39	1
SQW	0	0	0	0	0	1	0	1	0
SSH	0	0	2	2	0	7	1	12	0

Current year crop	1995	1996	1997	1998	1999	2000	2001	Total	%
STE	0	0	0	0	1	0	0	1	0
STS	1	0	0	0	0	0	0	1	0
SUD	0	0	0	1	0	0	0	1	0
SUN	0	0	0	0	1	0	0	1	0
SWC	0	3	3	0	6	0	6	18	0
TOM	0	0	1	0	1	0	0	2	0
TRE/TRT	1	0	1	0	1	0	0	3	0
WHT	1	0	0	1	0	0	0	2	0
OTHER	0	3	0	2	0	0	0	5	0
UNKNOWN	0	2	11	2	16	0	7	38	1
Total	330	323	378	383	752	759	879	3804	100

Notes:

See Appendix for Cornell crop codes.

3. Soil Types

3.1 Samples for Home and Garden

Soil types (soil management groups) for home and garden samples:

	1995	1996	1997	1998	1999	2000	2001	Total
SMG 1 (clayey)	0	0	0	0	0	0	0	0
SMG 2 (silty)	2	4	8	7	3	1	0	25
SMG 3 (silt loam)	3	6	23	3	10	10	4	59
SMG 4 (sandy loam)	16	8	16	17	41	6	5	109
SMG 5 (sandy)	9	16	8	8	21	5	7	74
SMG 6 (mucky)	0	0	0	0	0	0	0	0
Total	30	34	55	35	75	22	16	267

3.2 Samples for Commercial Production

Soil series for samples submitted for commercial production:

Name	SMG	1995	1996	1997	1998	1999	2000	2001	Total
Adams	5	18	6	5	7	9	3	5	53
Adjidaumo	1	0	4	2	9	11	16	10	52
Becket	4	0	0	0	0	8	0	0	8
Benson	4	0	0	0	0	0	2	0	2
Berkshire	5	2	3	1	5	14	4	10	71
Carbondale	6	0	0	1	0	0	0	1	2
Chaumont	1	13	10	5	0	1	2	28	59
Collamer	3	1	9	17	11	16	7	5	66
Colton	5	0	0	0	1	0	1	0	2
Cornish	3	0	0	0	0	0	0	1	1
Coveytown	4	1	0	1	0	0	0	1	3
Covington	1	0	0	1	0	1	0	6	8
Crary	4	0	0	0	0	0	1	4	5
Croghan	5	9	11	13	12	14	10	8	77
Deford	4	0	0	0	1	0	0	0	1
Depeyster	3	8	0	3	0	6	0	21	38
Dixmont	5	0	4	3	0	3	1	0	11
Dunkirk	3	1	2	0	0	0	0	0	3
Eelweir	4	0	0	0	0	1	0	0	1
Elmwood	4	6	12	9	17	23	13	28	108
Empeyville	4	0	0	0	10	2	0	0	12
Fahey	5	0	0	0	0	0	1	1	2
Flackville	4	4	1	0	0	8	3	4	20
Galway	4	0	1	0	0	0	0	0	1
Georgia	4	0	13	8	0	15	117	55	208
Grenville	4	9	20	27	52	33	17	41	199
Guffin	1	0	2	0	0	10	1	43	56
Hailesboro	3	14	0	5	2	4	12	29	66
Hannawa	4	0	0	0	0	0	3	0	3
Heuvelton	2	1	1	1	1	4	4	1	14
Hogansburg	4	70	47	67	76	193	126	129	708
Hollis	4	7	14	6	14	3	0	1	45
Hudson	2	2	8	14	0	16	26	34	100
Insula	4	0	0	1	0	2	8	2	13
Kalurah	4	14	6	8	12	23	30	45	138
Kars	4	0	0	0	0	1	7	0	8
Kingsbury	1	4	4	1	5	1	4	16	35

Name	SMG	1995	1996	1997	1998	1999	2000	2001	Total
Lyme	5	0	0	0	0	0	3	0	3
Madalin	1	0	7	5	0	15	0	2	29
Madrid	4	0	0	0	0	0	1	0	1
Malone	4	10	12	20	17	55	38	51	203
Mardin	3	0	0	0	4	0	0	0	4
Massena	4	0	17	10	2	5	26	12	72
Matoon	1	2	4	9	5	20	30	15	85
Minoa	4	0	1	0	0	2	1	2	6
Munuscone	4	0	0	0	0	0	2	2	4
Muskellunge	3	15	35	38	44	81	131	128	472
Naumburg	5	9	4	7	1	12	4	6	43
Nehasne	4	1	2	5	5	8	10	8	39
Niagara	3	0	8	6	0	2	0	1	17
Nicholville	4	0	2	2	1	2	1	9	17
Ogdensburg	4	0	0	4	5	3	5	5	22
Pittsfield	4	44	5	4	12	19	2	8	94
Potsdam	4	1	0	0	0	2	0	6	9
Pyrities	4	7	5	3	6	16	10	3	50
Raquette	4	0	2	0	1	3	2	2	10
Redwater	3	0	0	2	0	3	3	1	9
Rhinebeck	2	0	8	9	4	16	13	26	76
Roundabout	3	0	5	1	0	4	0	2	12
Salmon	4	1	0	0	1	0	2	5	9
Stockholm	5	0	4	1	3	8	1	4	21
Summerville	4	0	0	2	2	1	14	4	23
Sun	4	0	3	1	0	0	4	0	8
Sunapee	6	0	0	0	0	0	0	6	6
Swanton	4	33	11	40	25	38	32	24	203
Trout River	5	0	0	0	0	0	1	0	1
Tunbridge	4	0	0	0	1	0	2	0	3
Vergennes	1	17	1	3	0	0	0	1	22
Volusia	3	0	0	0	1	0	0	0	1
Waddington	3	1	0	0	0	3	0	8	12
Unknown	-	5	9	7	8	12	2	9	53
Total		330	323	378	383	752	759	879	3804

4. Organic Matter

4.1 Samples for Home and Garden

Number of home and garden samples within each % organic matter range:

	<1	1.0-1.9	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	>6.9	Total
1995	0	2	5	13	4	1	2	3	30
1996	0	4	8	10	5	5	0	2	34
1997	1	6	7	25	10	3	3	0	55
1998	0	1	13	12	6	1	1	1	35
1999	3	5	11	17	13	12	4	10	75
2000	1	3	10	6	1	1	0	0	22
2001	0	0	4	4	4	3	1	0	16
Total	5	21	58	87	43	26	11	16	267

	1995	1996	1997	1998	1999	2000	2001	
Lowest % OM	1.6	1.0	0.9	1.7	0.1	0.8	2.0	
Highest % OM	7.9	10.9	6.9	7.6	10.4	5.8	6.5	
Mean % OM	4.0	3.7	3.5	3.4	4.4	2.7	4.0	
Median %OM	3.6	3.8	3.5	3.1	4.2	2.6	3.8	

Percent of home and garden samples within each % organic matter range:

	<1	1.0-1.9	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	>6.9	Total
1995	0	7	17	43	13	3	7	10	100
1996	0	12	24	29	15	15	0	6	100
1997	2	11	13	45	18	5	5	0	100
1998	0	3	37	34	17	3	3	3	100
1999	4	7	15	23	17	16	5	13	100
2000	5	14	45	27	5	5	0	0	100
2001	0	0	25	25	25	19	6	0	100
Total	2	8	22	33	16	10	4	6	100

4.2 Samples for Commercial Production

Number of samples for commercial production within each % organic matter range:

	<1	1.0-1.9	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	>6.9	Total
1995	1	5	58	123	98	27	14	4	330
1996	5	6	53	121	98	25	10	5	323
1997	0	6	69	163	100	18	14	8	378
1998	5	2	59	167	104	34	10	2	383
1999	1	17	109	354	185	64	13	9	752
2000	0	7	119	356	209	51	7	10	759
2001	1	18	119	373	250	82	25	11	879
Total	13	61	586	1657	1044	301	93	49	3804

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	0.6	0.1	1.4	0.4	0.5	1.5	0.9	
Highest:	9.1	15.8	9.7	8.1	18.3	13.7	23.5	
Mean:	3.9	3.8	3.8	3.8	3.8	3.8	3.9	
Median:	3.8	3.7	3.7	3.7	3.7	3.7	3.7	

Percent of samples for commercial production within each % organic matter range:

	<1	1.0-1.9	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	>6.9	Total
1995	0	2	18	37	30	8	4	1	100
1996	2	2	16	37	30	8	3	2	100
1997	0	2	18	43	26	5	4	2	100
1998	1	1	15	44	27	9	3	1	100
1999	0	2	14	47	25	9	2	1	100
2000	0	1	16	47	28	7	1	1	100
2001	0	2	14	42	28	9	3	1	100
Total	0	2	15	44	27	8	2	1	100

5. pH

5.1 Samples for Home and Garden

Number of home and garden samples within each pH range:

	<4.5	4.5-4.9	5.0-5.4	5.5-5.9	6.0-6.4	6.5-6.9	7.0-7.4	7.5-7.9	8.0-8.4	>8.4	Total
1995	0	1	0	1	6	4	14	3	1	0	30
1996	0	0	1	2	4	8	14	3	1	1	34
1997	1	0	0	4	5	10	30	5	0	0	55
1998	0	0	0	2	10	9	10	4	0	0	35
1999	0	3	3	8	14	15	23	8	1	0	75
2000	0	0	0	1	5	7	3	5	1	0	22
2001	0	0	0	0	4	4	8	0	0	0	16
Total	1	4	4	18	48	57	102	28	4	1	267

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	4.8	5.1	4.2	5.7	4.7	5.6	6.1	
Highest:	8.2	8.8	7.7	7.8	8.0	8.1	7.3	
Mean:	-	-	-	-	-	-	-	
Median:	7.1	7.1	7.1	6.8	6.8	6.8	6.9	

Percent of home and garden samples within each pH range:

	<4.5	4.5-4.9	5.0-5.4	5.5-5.9	6.0-6.4	6.5-6.9	7.0-7.4	7.5-7.9	8.0-8.4	>8.4	Total
1995	0	3	0	3	20	13	47	10	3	0	100
1996	0	0	3	6	12	24	41	9	3	3	100
1997	2	0	0	7	9	18	55	9	0	0	100
1998	0	0	0	6	29	26	29	11	0	0	100
1999	0	4	4	11	19	20	31	11	1	0	100
2000	0	0	0	5	23	32	14	23	5	0	100
2001	0	0	0	0	25	25	50	0	0	0	100
Total	0	1	1	7	18	21	38	10	0	0	100

5.2 Samples for Commercial Production

Number of samples for commercial production within each pH range:

	<4.5	4.5-4.9	5.0-5.4	5.5-5.9	6.0-6.4	6.5-6.9	7.0-7.4	7.5-7.9	8.0-8.4	>8.4	Total
1995	0	0	2	43	88	103	69	24	1	0	330
1996	0	2	6	27	70	126	75	17	0	0	323
1997	9	2	15	58	87	126	68	13	0	0	378
1998	1	0	5	38	71	109	131	28	0	0	383
1999	3	9	15	50	131	239	206	98	1	0	752
2000	0	2	3	32	131	243	241	99	8	0	759
2001	0	0	14	84	202	324	190	63	2	0	879
Total	13	15	60	332	780	1270	980	342	12	0	3804

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	5.3	4.5	2.2	4.0	4.1	4.6	5.0	
Highest:	8.1	7.9	7.7	8.1	8.0	8.2	8.1	
Mean:	-	-	-	-	-	-	-	
Median:	6.6	6.7	6.5	6.9	6.8	6.9	6.7	

Percent of samples for commercial production within each pH range:

	<4.5	4.5-4.9	5.0-5.4	5.5-5.9	6.0-6.4	6.5-6.9	7.0-7.4	7.5-7.9	8.0-8.4	>8.4	Total
1995	0	0	1	13	27	31	21	7	0	0	100
1996	0	1	2	8	22	39	23	5	0	0	100
1997	2	1	4	15	23	33	18	3	0	0	100
1998	0	0	1	10	19	28	34	7	0	0	100
1999	0	1	2	7	17	32	27	13	0	0	100
2000	0	0	0	4	17	32	32	13	1	0	100
2001	0	0	2	10	23	37	22	7	0	0	100
Total	0	0	2	9	21	33	26	9	0	0	100

6. Phosphorus

6.1 Samples for Home and Garden

Number of home and garden samples within each range Morgan extractable P range (lbs/acre Morgan P):

	<1	1-3	4-8	9-39	40-60	61-80	81-100	101-150	151-200	>200	Total
	VL	L	M	H	VH	VH	VH	VH	VH	VH	
1995	0	3	9	10	3	1	1	0	2	1	30
1996	0	7	3	11	3	3	2	3	1	1	34
1997	0	10	6	21	12	3	0	1	0	2	55
1998	0	6	11	7	3	4	1	3	0	0	35
1999	0	17	13	23	8	6	1	2	2	3	75
2000	0	4	4	10	1	1	1	1	0	0	22
2001	0	1	4	4	1	2	2	0	2	0	16
Total	0	48	50	86	31	20	8	10	7	7	267

VL = very low, L = low, M = medium, H = high, VH = very high.

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	1	1	1	1	1	1	3	
Highest:	250	202	398	129	364	139	188	
Mean:	39	44	38	32	38	26	51	
Median:	13	24	26	10	11	12	12	

Percent of home and garden samples within each Morgan extractable phosphorus range:

	<1	1-3	4-8	9-39	40-60	61-80	81-100	101-150	151-200	>200	Total
	VL	L	M	H	VH	VH	VH	VH	VH	VH	
1995	0	10	30	33	10	3	3	0	7	3	100
1996	0	21	9	32	9	9	6	9	3	3	100
1997	0	18	11	38	22	5	0	2	0	4	100
1998	0	17	31	20	9	11	3	9	0	0	100
1999	0	23	17	31	11	8	1	3	3	4	100
2000	0	18	18	45	5	5	5	5	0	0	100
2001	0	6	25	25	6	13	13	0	13	0	100
Total	0	18	19	32	12	7	3	4	3	3	100

VL = very low, L = low, M = medium, H = high, VH = very high.

6.2 Samples for Commercial Production

Number of samples submitted for commercial production within each Morgan extractable phosphorus (lbs P/acre) range:

	<1	1-3	4-8	9-39	40-60	61-80	81-100	101-150	151-200	>200	Total
	VL	L	M	H	VH	VH	VH	VH	VH	VH	
1995	0	114	117	90	5	1	1	1	1	0	330
1996	0	101	80	212	20	1	0	0	0	0	323
1997	0	135	109	119	7	2	1	3	1	1	378
1998	0	91	129	152	7	1	1	2	0	0	383
1999	0	225	230	257	22	9	1	7	0	1	752
2000	0	282	194	240	20	12	7	0	1	3	759
2001	0	287	282	282	19	2	1	3	1	2	879
Total	0	1235	1141	1352	100	28	12	16	4	7	3804

VL = very low, L = low, M = medium, H = high, VH = very high.

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	1	1	1	1	1	1	1	
Highest:	152	67	249	144	313	656	423	
Mean:	9	11	11	11	12	13	10	
Median:	5	7	5	7	6	5	5	

Percent of samples submitted for commercial production within each Morgan P range:

	<1	1-3	4-8	9-39	40-60	61-80	81-100	101-150	151-200	>200	Total
	VL	L	M	H	VH	VH	VH	VH	VH	VH	
1995	0	35	35	27	2	0	0	0	0	0	100
1996	0	31	25	37	6	0	0	0	0	0	100
1997	0	36	29	31	2	1	0	1	0	0	100
1998	0	24	34	40	2	0	0	1	0	0	100
1999	0	30	31	34	3	1	0	1	0	0	100
2000	0	37	26	32	3	2	1	0	0	0	100
2001	0	33	32	32	2	0	0	0	0	0	100
Total	0	32	30	33	3	1	0	0	0	0	100

VL = very low, L = low, M = medium, H = high, VH = very high.

7. Potassium

7.1 Samples for Home and Garden

Number of home and garden samples within each K range (lbs K/acre Morgan extraction):

Soil Management Group 1						
	<35	35-64	65-94	95-149	>149	Total
	Very low	Low	Medium	High	Very high	
1995	0	0	0	0	0	0
1996	0	0	0	0	0	0
1997	0	0	0	0	0	0
1998	0	0	0	0	0	0
1999	0	0	0	0	0	0
2000	0	0	0	0	0	0
2001	0	0	0	0	0	0
Total (#)	0	0	0	0	0	0
Total (%)	-	-	-	-	-	-
Soil Management Group 2						
	<40	40-69	70-99	100-164	>164	Total
	Very low	Low	Medium	High	Very high	
1995	0	0	0	0	2	2
1996	0	1	1	1	1	4
1997	0	1	1	4	2	8
1998	0	0	0	3	4	7
1999	0	0	0	0	3	3
2000	0	1	0	0	0	1
2001	0	0	0	0	0	0
Total (#)	0	3	2	8	12	25
Total (%)	0	12	8	32	48	100
Soil Management Group 3						
	<45	45-79	80-119	120-199	>199	Total
	Very low	Low	Medium	High	Very high	
1995	0	1	0	1	1	3
1996	0	1	2	0	3	6
1997	0	1	4	4	14	23
1998	0	0	1	1	1	3
1999	2	2	1	2	3	10
2000	0	0	2	5	3	10
2001	0	0	0	1	3	4
Total (#)	2	5	10	14	28	59
Total (%)	3	8	17	24	47	100

Soil Management Group 4						
	<55	55-99	100-149	150-239	>239	Total
	Very low	Low	Medium	High	Very high	
1995	0	3	2	4	7	16
1996	0	0	1	3	4	8
1997	0	3	6	1	6	16
1998	1	3	2	8	3	17
1999	1	3	8	9	20	41
2000	1	2	1	2	0	6
2001	0	0	2	0	3	5
Total (#)	3	14	22	27	43	109
Total (%)	3	13	20	25	39	100
Soil Management Group 5						
	<60	60-114	115-164	165-269	>269	Total
	Very low	Low	Medium	High	Very high	
1995	0	4	1	2	2	9
1996	4	6	2	1	3	16
1997	2	1	4	0	1	8
1998	0	5	0	1	2	8
1999	2	8	7	1	3	21
2000	2	2	0	0	1	5
2001	0	3	2	2	0	7
Total (#)	10	29	16	7	12	74
Total (%)	14	39	22	9	16	100
Soil Management Group 6						
	<60	60-114	115-164	165-269	>269	Total
	Very low	Low	Medium	High	Very high	
1995	0	0	0	0	0	0
1996	0	0	0	0	0	0
1997	0	0	0	0	0	0
1998	0	0	0	0	0	0
1999	0	0	0	0	0	0
2000	0	0	0	0	0	0
2001	0	0	0	0	0	0
Total (#)	0	0	0	0	0	0
Total (%)	-	-	-	-	-	-

Number of home and garden samples within each potassium classification:

Summary (#)	Very Low	Low	Medium	High	Very High	Total
1995	0	8	3	7	12	30
1996	4	8	6	5	11	34
1997	2	6	15	9	23	55
1998	1	8	3	13	10	35
1999	5	13	16	12	29	75
2000	3	5	3	7	4	22
2001	0	3	4	3	6	16
Grand Total	15	51	50	56	95	267

Percent of home and garden samples within each potassium classification

Summary (%)	Very Low	Low	Medium	High	Very High	Total
1995	0	27	10	23	40	100
1996	12	24	18	15	32	100
1997	4	11	27	16	42	100
1998	3	23	9	37	29	100
1999	7	17	21	16	39	100
2000	14	23	14	32	18	100
2001	0	19	25	19	38	100
Grand Total	6	19	19	21	36	100

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	55	39	39	54	1	44	87	
Highest:	1204	973	619	527	1448	360	512	
Mean:	230	205	189	183	260	145	230	
Median:	191	124	159	158	169	118	176	

7.2 Samples for Commercial Production

Number of samples submitted for commercial production within each potassium (lbs K/acre Morgan extraction) range:

Soil Management Group 1						
	<35	35-64	65-94	95-149	>149	Total
	Very low	Low	Medium	High	Very high	
1995	1	2	2	11	20	36
1996	0	1	12	11	11	35
1997	0	1	6	12	8	27
1998	0	0	5	5	9	19
1999	0	5	3	27	25	60
2000	0	6	14	20	13	53
2001	0	6	25	41	49	121
Total (#)	1	21	67	127	135	351
Total (%)	0	6	19	36	38	100
Soil Management Group 2						
	<40	40-69	70-99	100-164	>164	Total
	Very low	Low	Medium	High	Very high	
1995	0	0	1	1	1	3
1996	0	4	2	5	6	17
1997	1	0	4	16	3	24
1998	0	0	2	1	2	5
1999	0	4	7	18	7	36
2000	0	4	7	21	11	43
2001	4	3	9	22	23	61
Total (#)	5	15	32	94	51	189
Total (%)	3	8	17	44	28	100
Soil Management Group 3						
	<45	45-79	80-119	120-199	>199	Total
	Very low	Low	Medium	High	Very high	
1995	0	0	13	18	10	41
1996	1	15	16	24	5	61
1997	4	11	28	22	7	72
1998	0	12	23	20	7	62
1999	3	22	38	25	28	116
2000	9	42	51	37	14	153
2001	6	55	44	60	24	189
Total (#)	23	157	213	206	95	694
Total (%)	3	23	31	30	14	100

Soil Management Group 4						
	<55	55-99	100-149	150-239	>239	Total
	Very low	Low	Medium	High	Very high	
1995	8	77	52	47	24	208
1996	18	55	32	40	32	177
1997	14	84	62	44	19	223
1998	16	117	56	53	22	264
1999	56	182	117	60	54	469
2000	76	206	103	51	43	479
2001	106	164	104	57	33	464
Total (#)	294	885	526	352	227	2284
Total (%)	13	39	23	15	10	100

Soil Management Group 5						
	<60	60-114	115-164	165-269	>269	Total
	Very low	Low	Medium	High	Very high	
1995	0	11	9	12	6	38
1996	5	14	7	4	2	32
1997	7	18	3	2	0	30
1998	4	14	6	5	0	29
1999	15	29	7	5	4	60
2000	11	8	3	3	4	29
2001	11	11	4	7	1	34
Total (#)	53	105	39	38	17	252
Total (%)	21	42	15	15	7	100

Soil Management Group 6						
	<60	60-114	115-164	165-269	>269	Total
	Very low	Low	Medium	High	Very high	
1995	0	0	0	0	0	0
1996	0	0	0	0	0	0
1997	0	1	0	0	0	1
1998	0	0	0	0	0	0
1999	0	0	0	0	0	0
2000	0	0	0	0	0	0
2001	0	1	0	0	0	1
Total (#)	0	2	0	0	0	2
Total (%)	0	100	0	0	0	100

Number of samples submitted for commercial production within each potassium classification.

Summary (#)	Very Low	Low	Medium	High	Very High	Unknown	Total
1995	9	90	77	89	61	4	326
1996	24	89	69	84	56	1	322
1997	26	115	103	96	37	1	377
1998	20	143	92	84	40	4	379
1999	74	242	172	135	118	11	741
2000	100	265	180	133	97	2	757
2001	127	240	186	187	130	9	870
Unknown	-	-	-	-	-	-	32
Grand Total	380	1184	879	808	539	32	3804

Percent of samples submitted for commercial production within each potassium classification.

% summary	Very Low	Low	Medium	High	Very High	Unknown	Total
1995	3	28	24	27	19	1	100
1996	7	28	21	26	17	0	100
1997	7	31	27	25	10	0	100
1998	5	38	24	22	11	1	100
1999	10	33	23	18	16	2	100
2000	13	35	24	18	13	0	100
2001	15	28	21	21	15	1	100
Grand Total	10	31	23	21	14	1	100

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	25	11	34	32	1	18	10	
Highest:	851	547	667	793	940	3743	990	
Mean:	157	140	127	130	136	127	122	
Median:	131	113	107	103	102	93	101	

8. Magnesium

8.1 Samples for Home and Garden

Number of home and garden samples within each Mg range (lbs Morgan Mg/acre):

	<20	20-65	66-100	101-199	>199	Total
	Very low	Low	Medium	High	Very high	
1995	0	0	1	0	29	30
1996	0	0	0	4	30	34
1997	0	0	1	5	49	55
1998	0	0	1	4	30	35
1999	0	4	1	6	64	75
2000	0	1	1	3	17	22
2001	0	0	0	0	16	16
Total	0	5	5	22	235	267

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	65	112	66.5	94.9	21.5	64.8	252	
Highest:	779	1922	1396	1312	1744	1758	1027	
Mean:	478	534	473	421	620	538	569	
Median:	480	415	404	399	601	329	598	

Percent of home and garden samples within each Mg range (lbs Morgan Mg/acre):

	<20	20-65	66-100	101-199	>199	Total
	Very low	Low	Medium	High	Very high	
1995	0	0	3	0	97	100
1996	0	0	0	12	88	100
1997	0	0	2	9	89	100
1998	0	0	3	11	86	100
1999	0	5	1	8	85	100
2000	0	5	5	14	77	100
2001	0	0	0	0	100	100
Total	0	2	2	8	88	100

8.2 Samples for Commercial Production

Number of samples submitted for commercial production within each Mg range (lbs Mg/acre Morgan extraction):

	<20	20-65	66-100	101-199	>199	Total
	Very low	Low	Medium	High	Very high	
1995	0	1	7	34	288	330
1996	1	6	3	14	299	323
1997	0	2	8	19	349	378
1998	0	4	6	16	357	383
1999	1	19	8	18	706	752
2000	1	5	0	21	732	759
2001	0	7	8	39	825	879
Total	3	44	40	161	3556	3804

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	54.7	15.9	22.2	46.6	14.8	14.4	47.8	
Highest:	1694	1603	1751	1584	2100	2665	2216	
Mean:	561	625	627	620	635	679	653	
Median:	530	606	619	589	590	645	598	

Percent of samples submitted for commercial production within each magnesium range (lbs Mg/acre Morgan extraction):

	<20	20-65	66-100	101-199	>199	Total
	Very low	Low	Medium	High	Very high	
1995	0	0	2	10	87	100
1996	0	2	1	4	93	100
1997	0	1	2	5	92	100
1998	0	1	2	4	93	100
1999	0	3	1	2	94	100
2000	0	1	0	3	96	100
2001	0	1	1	4	94	100
Total	0	1	1	4	93	100

9. Iron

9.1 Samples for Home and Garden

Iron (lbs Fe/acre Morgan extraction) in samples for home and garden:

	0-49	>49	Total
	Normal	Excessive	
1995	29	1	30
1996	31	3	34
1997	54	1	55
1998	35	0	35
1999	67	8	75
2000	22	0	22
2001	15	1	16
Total	253	14	267

0-49	>49	Total
Normal	Excessive	
97	3	100
91	9	100
98	2	100
100	0	100
89	11	100
100	0	100
94	6	100
95	5	100

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	1.7	0.9	2.8	0.8	0.9	2.2	0.8	
Highest:	53.6	109	281	35.9	386	28.5	78.1	
Mean:	11.3	13.3	15.6	9.2	22.7	7.0	13.5	
Median:	5.4	4.9	7.1	4.7	6	3.8	9.1	

9.2 Samples for Commercial Production

Iron (lbs Fe/acre Morgan extraction) in samples submitted for commercial production:

Total number of samples:

	0-49	>49	Total
	Normal	Excessive	
1995	323	7	330
1996	308	15	323
1997	366	12	378
1998	371	12	383
1999	727	25	752
2000	745	14	759
2001	846	33	879
Total	3686	118	3804

Percentages:

0-49	>49	Total
Normal	Excessive	
98	2	100
95	5	100
97	3	100
97	3	100
97	3	100
98	2	100
96	4	100
97	3	100

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	1	0.8	1.8	0.9	0.8	0.8	0.8	
Highest:	260	1177	203	255	181	163	143	
Mean:	14.3	18.9	14.5	10.4	12.4	8.6	12.2	
Median:	8.1	7.4	8.4	5.1	6.1	4.8	6.6	

10. Manganese

10.1 Samples for Home and Garden

Manganese (lbs Mn/acre Morgan extraction) in samples for home and garden:

Total number of samples:

	0-99	>99	Total
	Normal	Excessive	
1995	30	0	30
1996	33	1	34
1997	53	2	55
1998	35	0	35
1999	75	0	75
2000	22	0	22
2001	16	0	16
Total	264	3	267

Percentages:

0-99	>99	Total
Normal	Excessive	
100	0	100
97	3	100
96	4	100
100	0	100
100	0	100
100	0	100
100	0	100
99	1	100

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	8.6	2.3	5	4.6	3.7	9.8	4.9	
Highest:	58.7	169	117	65.1	70.4	45.6	47.4	
Mean:	24.2	26	27.4	23.2	22.6	17.5	20.2	
Median:	21.7	19.1	19	23	19.8	14.8	18.6	

10.2 Samples for Commercial Production

Manganese (lbs Mn/acre Morgan extraction) in samples for commercial production:

Total number of samples:

	0-99	>99	Total
	Normal	Excessive	
1995	327	3	330
1996	316	7	323
1997	376	2	378
1998	382	1	383
1999	745	7	752
2000	756	3	759
2001	879	0	879
Total	3781	23	3804

Percentages:

0-99	>99	Total
Normal	Excessive	
99	1	100
98	2	100
99	1	100
100	0	100
99	1	100
100	0	100
100	0	100
99	1	100

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	2.4	3	6.9	1.9	4.3	1.4	3.1	
Highest:	368	354	173	115	293	194	99.1	
Mean:	24.5	28.2	31.9	25.7	26.3	18.7	21.9	
Median:	21.5	23	28.6	24.6	22.8	15.9	21.7	

11. Zinc

11.1 Samples for Home and Garden

Zinc (lbs Zn/acre Morgan extraction) in samples for home and garden:

Total number of samples:

	<0.5	0.5-1.0	>1	Total
	Low	Medium	High	
1995	0	0	30	30
1996	0	3	31	34
1997	0	1	54	55
1998	0	3	32	35
1999	1	6	68	75
2000	0	3	19	22
2001	0	2	14	16
Total	1	18	248	267

Percentages:

<0.5	0.5-1.0	>1	Total
Low	Medium	High	
0	0	100	100
0	9	91	100
0	2	98	100
0	9	91	100
1	8	91	100
0	14	86	100
0	13	87	100
0	7	93	100

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	1.0	0.7	0.8	0.5	0.5	0.5	0.9	
Highest:	32.5	181	54.4	109	111	237	65.2	
Mean:	6.9	17.3	7.3	7.6	9.8	18	12	
Median:	3.3	5.0	5.2	2.8	4.0	4.3	6.1	

11.2 Samples for Commercial Production

Zinc (lbs Zn/acre Morgan extraction) in samples for commercial production:

Total number of samples:

	<0.5	0.5-1.0	>1	Total
	Low	Medium	High	
1995	8	92	230	330
1996	2	63	258	323
1997	3	58	317	378
1998	17	74	292	383
1999	26	156	570	752
2000	76	227	456	759
2001	12	116	751	879
Total	144	786	2874	3804

Percentages:

<0.5	0.5-1.0	>1	Total
Low	Medium	High	
2	28	70	100
1	20	80	100
1	15	84	100
4	19	76	100
3	21	76	100
10	30	60	100
1	13	85	100
4	21	76	100

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	0.2	0.1	0.5	0.1	0.1	0.1	0.2	
Highest:	671	1968	56.9	124	425	23.2	255	
Mean:	4.6	14.4	2.6	2.4	2.4	1.5	2.9	
Median:	1.4	1.5	1.7	1.4	1.4	1.2	1.8	

Appendix: Cornell Crop Codes

Crop codes used in the Cornell Nutrient Analyses Laboratory:

Crop Code	Crop Description
	Alfalfa
ABE	Alfalfa trefoil grass, Establishment
ABT	Alfalfa trefoil grass, Established
AGE	Alfalfa grass, Establishment
AGT	Alfalfa grass, Established
ALE	Alfalfa, Establishment
ALT	Alfalfa, Established
	Birdsfoot
BCE	Birdsfoot trefoil clover, Establishment
BCT	Birdsfoot trefoil clover, Established
BGE	Birdsfoot trefoil grass, Establishment
BGT	Birdsfoot trefoil grass, Established
BSE	Birdsfoot trefoil seed, Establishment
BST	Birdsfoot trefoil seed, Established
BTE	Birdsfoot trefoil, Establishment
BTT	Birdsfoot trefoil, Established
	Barley
BSP	Spring barley
BSS	Spring barley with legumes
BUK	Buckwheat
BWI	Winter barley
BWS	Winter barley with legumes
	Clover
CGE	Clover grass, Establishment
CGT	Clover grass, Established
CLE	Clover, Establishment
CLT	Clover, Established
CSE	Clover seed production, Establishment
CST	Clover seed production, Established

Crop Code	Crop Description
	Corn
COG	Corn grain
COS	Corn silage
	Grasses, pastures, covercrops
CVE	Crownvetch, Establishment
CVT	Crownvetch
GIE	Grasses intensively managed, Establishment
GIT	Grasses intensively managed, Established
GRE	Grasses, Establishment
GRT	Grasses, Established
PGE	Pasture, Establishment
PGT	Pasture improved grasses, Established
PIE	Pasture intensively grazed, Establishment
PIT	Pasture intensively grazed, Established
PLE	Pasture with legumes, Establishment
PLT	Pasture with legumes, Established
PNT	Pasture native grasses
RYC	Rye cover crop
RYS	Rye seed production
TRP	Triticale peas
	Small grains
MIL	Millet
OAS	Oats with legume
OAT	Oats
SOF	Sorghum forage
SOG	Sorghum grain
SOY	Soybeans
SSH	Sorghum sudan hybrid
SUD	Sudangrass
WHS	Wheat with legume
WHT	Wheat
	Others
ALG	Azalea
APP	Apples
ATF	Athletic Field
BDR/DND	Beans-dry

Crop Code	Crop Description
BLU	Blueberries
CEM	Cemetery
FAR	Fairway
FLA	Flowering Annuals
GRA	Grapes
GEN	Green
HRB	Herbs
IDL	Idle land
LAW	Lawn
MIX/MVG	Mixed vegetables
PER	Perennials
PRK	Park
POT/PTO	Potatoes
PUM	Pumpkins
ROD	Roadside
ROS	Roses
RSF	Raspberries, Fall
RSP	Raspberries (homeowners)
RSS	Raspberries, Summer
SAG	Ornamentals adapted to pH 6.0 to 7.5
SQW	Squash, Winter
STE	Strawberries, Ever
STR	Strawberries (homeowners)
STS	Strawberries, Spring
SUN	Sunflowers
SWC	Sweet corn
TOM	Tomatoes
TRE	Christmas trees, Established
TRF	Turf
TRT	Christmas trees, Topdressing