

Soil Sample Survey

Clinton Co.

Samples analyzed by CNAL in 1995-2001



Harvest of no-till alfalfa at the Miner Institute in Clinton County.

Summary compiled by

Quirine M. Ketterings, Hettie Krol, W. Shaw Reid, Elizabeth A. Spaugh



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

Ketterings, Q.M., H. Krol, W.S. Reid and A.E. Spaugh (2003). Clinton County Soil Sample Survey 1995-2001. CSS Extension Bulletin E03-9. 37 pages.

Soil Sample Survey

Clinton 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

Elizabeth A. Spaugh

Field Crops Educator

Cornell Cooperative Extension of Clinton County

May 8, 2003

Correct Citation:

Ketterings, Q.M., H. Krol, W.S. Reid, and E.A. Spaugh (2003). Soil samples survey of Clinton County. Samples analyzed by the Cornell Nutrient Analysis Laboratory in 1995-2001. CSS Extension Bulletin E03-9. 37 pages.

Acknowledgment: Front page picture by Ev Thomas, Miner Institute.

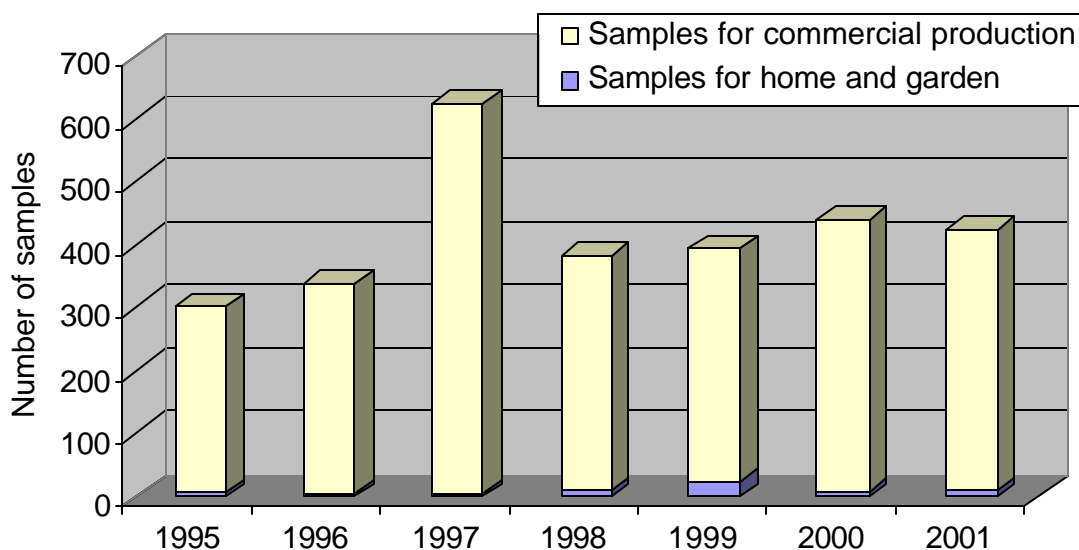
Thanks to Theodore Trevail, NY NRCS, for help with the Clinton County soil series.

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 from Clinton County soil samples submitted for analyses to the Cornell Nutrient Analysis Laboratory (CNAL) during 1995-2001. The total number of Clinton County samples analyzed in these years was 2911. Of these 2836 samples (97%) were submitted to obtain fertilizer recommendations for commercial production while 75 samples (3%) was submitted as home and garden samples.



Home and Garden		Commercial Production		Total
1995	8	1995	295	303
1996	6	1996	333	339
1997	5	1997	621	626
1998	11	1998	372	383
1999	24	1999	370	394
2000	10	2000	430	440
<u>2001</u>	<u>11</u>	<u>2001</u>	<u>415</u>	<u>426</u>
Total	75	Total	2836	2911

The majority (68%) of the home and garden soil samples during 1995-2001 was submitted to request fertilizer recommendations for lawns (40%) and home garden vegetable production (28%). People submitting samples for commercial production requested fertilizer recommendations to grow alfalfa or alfalfa/grass mixes (30%), corn silage or grain (37%), and hay production (16%), while a few producers were planning on growing other crops including apples, clover/grass mixes, pasture, pumpkins, and soybeans.

Of the home and garden samples in Clinton County 19% were classified as sandy loam soils belonging to soil management group 3. Two percent belonged to soil management group 2. Group 4 and 5 were represented with 27% of all samples each. The table below gives descriptions of each of the soil management groups.

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 for commercial production, 44% belonged to soil management group 4. Seventeen percent belonged to group 1 (fine-textured soils developed from clayey lake sediments and medium to fine-textured soils developed from lake sediments). Six percent belonged to group 2 while ten percent belonged to group 3. Group 5 was represented by 22% of all samples while less than 1% was classified as a muck soil. The five most common soil series were Adjidaumo (10%), Muskellunge (8%), Malone (8%), Kingsbury (7%) and Hogansburg (6%). In Clinton County Adjidaumo accounts for 1.2% of the total 714,800 acres of the County. Muskellunge, Malone, Kingsbury and Hogansburg soil series account for 1.4%, 2.8%, 0.2%, and 1.7% of the total acreage.

Organic matter levels, as measured by loss on ignition, ranged from 1% to 12% with only a few muck soils submitted in 2001 reporting over 40% organic matter. Home and garden samples had between 2 and 5% (49% of all samples) with 28% testing between 2 and 2.9% organic matter, 8% between 3.0 and 3.9% organic matter and 13% between 4.0 and 4.9% organic matter. Twenty six percent of the soils submitted for home and garden tested higher than 4.9%. Of the samples submitted for commercial production, 52% contained between 3 and 4% organic matter and 20% tested between 4.0 and 4.9%. In total, 80% of the samples had organic matter levels between 2 and 5%.

Soil pH in water (1:1 extraction ratio) varied from less than 4.0 to 8.1. Of the home and garden samples, 80% tested between pH 6.0 and 7.4 and 13% tested higher than pH 7.4. The median ranged between pH 6.3 and pH 7.2. Eighty four percent of the samples submitted for commercial production were between pH 6.0 and pH 7.4 and only 6% tested higher than pH 7.4. Ten percent tested lower than pH 6.0. Median soil pH for samples submitted for commercial production ranged from pH 6.6-6.8.

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 home and garden

Ketterings, Q.M., H. Krol, W.S. Reid and A.E. Spaugh (2003). Clinton County Soil Sample Survey 1995-2001. CSS Extension Bulletin E03-9. 37 pages.

samples, 7% tested low, 20% tested medium, 33% tested high and 40% tested very high. This meant that 73% tested high or very high in P.

Phosphorus levels for samples for commercial production in Clinton County were higher than the state average (50% test high or very high in P). Fifteen percent tested very high. Seventeen percent were low in P, 24% tested medium for P while 44% of the submitted samples were classified as high in soil test P. This means that 59% tested high or very high in P. There were no clear trends in P levels over the 6 years.

Classifications for potassium depend on soil management group. The fine-textured soils of 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 low, 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).

Potassium classifications depend on soil test K levels and soil management group.

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

Of the home and garden samples, 9% was very low and 19% was low in potassium. Fifteen percent tested medium, 21% high and 36% very high. For samples submitted for commercial production, 7% tested very low, 21% tested low, 21% tested medium, 28% tested high and 23% tested very high in potassium. As with phosphorus, there were no trends over the 6 years of soil sampling.

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 just over 10 to over 16000 lbs Mg/acre (Morgan extraction) on a heavily manured Kingsbury clay soil. There were only five samples that tested very low in Mg. Most soils tested high or very high for Mg (88% of the homeowner soils and 89% of the soils of the commercial growers). Approximately 12% of the home and garden soils and 11% of the commercial growers' soil tested low or medium in Mg.

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 fell for 95-98% in the normal range with 2-5% of the samples testing excessive for Fe. Similarly, most soils (93-99%) for both groups tested normal for manganese. Soils with more than 100 lbs Morgan extractable Mn per acre are classified as excessive in Mn. 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. For the home and garden samples, 91% tested high for zinc while 9% tested medium in zinc. Of the samples for commercial production, 3% tested low in zinc, 28% tested medium while 69% 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:

	1995	1996	1997	1998	1999	2000	2001	Total	%
ATF	0	0	0	0	0	0	2	2	3
BLU	1	0	0	0	0	0	0	1	1
GEN	2	0	3	0	0	0	0	5	7
GRA	0	0	0	1	0	0	1	2	3
HRB	0	1	0	0	0	0	0	1	1
LAW	2	1	0	5	15	5	2	30	40
MVG	1	3	1	4	6	3	3	21	28
OTH	0	0	0	0	1	0	1	2	3
PER	0	1	0	0	0	0	0	1	1
PRK	0	0	0	0	0	2	0	2	3
ROU	0	0	0	0	1	0	0	1	1
SAG	2	0	1	1	0	0	1	5	7
Unknown	0	0	0	0	1	0	1	2	3
Total	8	6	5	11	24	10	11	75	100

Notes:

See Appendix for Cornell 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	1	0	0	0	0	0	0	1	0
ACT	0	0	0	0	1	0	0	1	0
AGE/AGT	102	89	179	79	69	134	149	801	28
ALE/ALT	20	3	6	1	2	15	12	59	2
APP	16	18	37	5	20	4	0	100	4
ASP	0	0	0	0	0	0	1	1	0
BET	1	0	1	0	0	0	0	2	0
BGE/BGT	0	0	0	0	0	1	0	1	0
BLB	0	1	2	2	2	0	2	9	0
BUK	2	0	0	2	0	0	0	4	0
CBP	0	0	3	0	0	0	0	3	0
CGE/CGT	4	6	6	12	6	9	4	47	2
CLE/CLT	0	2	0	1	2	0	0	5	0
COS/COG	104	108	269	148	108	161	155	1053	37
GIE/GIT	0	1	4	2	0	6	20	33	1
GPA	0	0	0	2	0	0	0	2	0
GRE/GRT	28	89	46	93	62	60	44	422	15
IDL	0	0	0	0	1	0	0	1	0
MIX	4	1	2	0	9	0	0	16	0
OAS	0	0	0	0	0	1	0	1	0
OAT	1	0	0	0	0	4	0	5	0
OTH	0	1	0	2	25	0	0	28	1
PGE/PGT	2	0	7	0	0	0	1	10	0
PIE/PIT	0	0	5	5	2	1	0	13	0
PLE/PLT	0	0	1	0	1	0	0	2	0
PLM	0	0	0	0	1	0	0	1	0
PNE/PNT	0	12	1	12	2	1	1	29	1
POT	0	0	0	2	0	0	0	2	0
PUM	0	0	11	0	1	0	3	15	1
RSF	0	0	1	0	0	0	0	1	0
RSS	0	0	1	0	0	0	0	1	0
RYC	0	1	0	0	0	1	0	2	0
SSH	0	0	0	0	2	1	0	3	0
SOY	7	0	0	0	5	20	11	43	2
SQS	0	0	1	0	0	0	0	1	0
SQW	0	0	1	0	0	0	0	1	0

Ketterings, Q.M., H. Krol, W.S. Reid and A.E. Spaugh (2003). Clinton County Soil Sample Survey 1995-2001. CSS Extension Bulletin E03-9. 37 pages.

Current year crop	1995	1996	1997	1998	1999	2000	2001	Total	%
STE	0	0	1	0	0	0	0	1	0
STS	0	0	7	0	1	0	1	9	0
SWC	1	1	7	0	4	0	1	14	0
TOM	0	0	1	0	0	0	0	1	0
Unknown	2	0	21	4	44	11	10	92	3
Total	295	333	621	372	370	430	415	2836	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)	0	0	1	0	1	0	0	2
SMG 3 (silt loam)	5	2	0	0	3	4	5	19
SMG 4 (sandy loam)	1	2	3	3	14	2	2	27
SMG 5 (sandy)	2	2	1	8	6	4	4	27
SMG 6 (mucky)	0	0	0	0	0	0	0	0
Total	8	6	5	11	24	10	11	75

3.2 Samples for Commercial Production

Soil series for samples submitted for commercial production:

SMG	Soil Series	1995	1996	1997	1998	1999	2000	2001	Total
5	Adams	3	12	27	1	3	14	5	65
4	Adirondack	2	1	1	10	1	9	0	24
1	Adjidaumo	70	78	45	6	17	39	35	290
4	Amenia	2	5	20	8	3	8	0	46
2	Appleton	0	1	39	30	14	4	43	131
4	Becket	5	6	9	2	4	28	0	54
4	Benson	0	0	0	1	0	0	0	1
5	Bice	0	1	1	3	1	7	3	16
4	Bombay	5	4	42	27	14	0	33	125
6	Bucksport	0	3	2	0	3	0	0	8
5	Champlain	1	4	8	7	7	1	7	35
4	Colosse	2	3	5	1	8	1	5	25
5	Colton	4	5	2	0	3	0	0	14
3	Cornish	7	0	0	0	1	3	1	12
4	Covert	0	0	7	15	3	0	11	36
4	Coveytown	4	4	9	8	5	3	0	33
5	Croghan	3	6	4	4	4	3	0	24
5	Deerfield	0	1	1	2	2	5	3	14
5	Deinache	20	6	11	14	3	1	36	91
5	Fahey	0	3	9	10	16	0	5	43
4	Flackville	2	0	0	1	0	0	4	7
5	Gougeville	0	0	9	0	0	6	4	19
5	Grattan	0	0	1	3	1	0	1	6
4	Grenville	1	5	8	0	2	9	12	37
3	Hailesboro	1	2	3	7	8	0	8	29
4	Hero	0	0	0	2	0	0	0	2
2	Heuvelton	1	4	24	0	3	2	0	34
4	Hogansburg	13	22	38	31	26	16	29	175
4	Irona	0	0	0	0	2	0	0	2
5	Junius	4	0	0	2	0	0	3	9
4	Kalurah	22	10	33	1	24	4	1	95
1	Kingsbury	53	68	15	1	0	46	10	193
2	Lovewell	1	0	2	1	1	0	1	6
4	Lyman	0	0	2	1	0	0	0	3
4	Madrid	2	3	28	11	1	48	26	119
4	Malone	12	49	35	52	37	27	19	231

Ketterings, Q.M., H. Krol, W.S. Reid and A.E. Spough (2003). Clinton County Soil Sample Survey 1995-2001. CSS Extension Bulletin E03-9. 37 pages.

SMG	Soil Series	1995	1996	1997	1998	1999	2000	2001	Total
6	Markey	0	0	0	0	1	0	0	1
4	Massena	0	1	14	1	8	17	1	42
4	Mino	2	0	6	0	3	0	2	13
4	Monadnock	0	0	2	0	2	0	2	6
5	Mooers	0	0	1	0	1	0	0	2
3	Muskellunge	1	7	69	8	61	49	45	240
4	Neckrock	0	0	0	1	0	0	0	1
4	Nicholville	1	0	11	4	7	0	4	27
5	Northway	0	0	2	18	0	0	17	37
4	Ogdensburg	0	0	0	5	0	0	1	6
4	Pinconning	5	3	6	2	3	0	1	20
5	Pipestone	0	0	13	4	4	0	16	37
5	Plainfield	0	1	0	0	3	0	0	4
3	Roundabout	0	0	0	2	1	0	0	3
4	Runeberg	0	0	8	1	22	29	3	63
5	Schroon	12	1	14	40	10	5	3	85
2	Shaker	0	0	1	1	0	0	2	4
5	Skerry	20	10	18	21	9	19	3	100
4	Sunapee	0	2	0	0	0	0	2	4
4	Swanton	7	0	11	0	6	16	5	45
3	Unadilla	0	0	1	0	0	0	0	1
4	Waddington	0	2	0	2	0	0	0	4
5	Wainola	2	0	2	0	9	2	0	15
6	Wonsqueak	4	0	2	0	1	0	1	8
-	Unknown	1	0	0	0	2	9	2	14
-	Total	295	333	621	372	370	430	415	2836

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	1	0	2	0	0	3	8
1996	0	1	1	1	0	3	0	0	6
1997	0	1	1	1	1	1	0	0	5
1998	0	4	1	2	1	0	1	2	11
1999	0	8	9	1	4	1	0	1	24
2000	0	1	4	1	1	1	0	2	10
2001	0	2	4	0	1	0	1	3	11
Total	0	19	21	6	10	6	2	11	75

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	1.5	1.3	1.0	1.5	1.2	1.8	1.2	
Highest:	11.5	5.8	5.7	10	7.4	7.7	44.4	
Mean:	5.2	4.0	3.4	4.2	2.8	4.0	7.8	
Median:	4.8	4.4	3.8	3.4	2.2	3.3	2.9	

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	25	13	0	25	0	0	38	100
1996	0	17	17	17	0	50	0	0	100
1997	0	20	20	20	20	20	0	0	100
1998	0	36	9	18	9	0	9	18	100
1999	0	33	38	4	17	4	0	4	100
2000	0	10	40	10	10	10	0	20	100
2001	0	18	36	0	9	0	9	27	100
Total	0	25	28	8	13	8	3	15	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	19	53	91	89	23	10	9	295
1996	4	14	52	150	81	25	3	4	333
1997	7	51	184	193	106	47	16	17	621
1998	1	48	146	98	48	21	6	4	372
1999	4	21	86	119	87	20	11	22	370
2000	2	12	99	156	105	38	9	9	430
2001	1	46	170	103	58	22	8	7	415
Total	20	211	790	910	574	196	63	72	2836

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	0.8	0.4	0.1	0.8	0.7	0.7	0.9	
Highest:	24.1	14.5	18.1	7.3	24.1	12.5	9.0	
Mean:	4.0	3.7	3.5	3.1	4.0	3.7	3.2	
Median:	3.8	3.7	3.3	2.9	3.6	3.5	2.9	

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	6	18	31	30	8	3	3	100
1996	1	4	16	45	24	8	1	1	100
1997	1	8	30	31	17	8	3	3	100
1998	0	13	39	26	13	6	2	1	100
1999	1	6	23	32	24	5	3	6	100
2000	0	3	23	36	24	9	2	2	100
2001	0	11	41	25	14	5	2	2	100
Total	1	7	28	32	20	7	2	3	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	0	1	0	1	3	2	1	0	0	8
1996	0	0	1	0	3	2	0	0	0	0	6
1997	0	0	1	0	0	2	2	0	0	0	5
1998	0	0	0	0	4	2	5	0	0	0	11
1999	0	0	0	0	1	9	8	6	0	0	24
2000	0	0	1	1	3	2	2	1	0	0	10
2001	0	0	0	0	2	2	5	2	0	0	11
Total	0	0	4	1	14	22	24	10	0	0	75

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	5.1	5.1	5.0	6.0	6.1	5.0	6.0	
Highest:	7.6	6.9	7.0	7.4	7.8	7.5	7.5	
Mean:	-	-	-	-	-	-	-	
Median:	6.9	6.3	6.6	6.9	7.1	6.6	7.2	

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	0	13	0	13	38	25	13	0	0	100
1996	0	0	17	0	50	33	0	0	0	0	100
1997	0	0	20	0	0	40	40	0	0	0	100
1998	0	0	0	0	36	18	45	0	0	0	100
1999	0	0	0	0	4	38	33	25	0	0	100
2000	0	0	10	10	30	20	20	10	0	0	100
2001	0	0	0	0	18	18	45	18	0	0	100
Total	0	0	5	1	19	29	32	13	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	1	19	76	107	74	18	0	0	295
1996	0	1	9	44	15	172	77	14	1	0	333
1997*	0	0	12	29	137	246	138	32	1	0	595
1998	0	10	22	28	86	128	73	24	1	0	372
1999	4	10	10	20	60	132	115	19	0	0	370
2000	0	5	8	19	74	164	131	25	4	0	430
2001	0	0	8	25	81	179	99	23	0	0	415
Total	4	26	70	184	529	1128	707	155	7	0	2810

*26 samples submitted in 1997 were not analyzed for pH.

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	5.3	4.8	5.0	4.7	3.9	4.8	5.0	
Highest:	7.9	8.1	8.0	8.0	7.9	8.1	7.9	
Mean:	-	-	-	-	-	-	-	
Median:	6.7	6.6	6.7	6.6	6.8	6.8	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	0	6	26	36	25	6	0	0	100
1996	0	0	3	13	5	52	23	4	0	0	100
1997	0	0	2	5	23	41	23	5	0	0	100
1998	0	3	6	8	23	34	20	6	0	0	100
1999	1	3	3	5	16	36	31	5	0	0	100
2000	0	1	2	4	17	38	30	6	1	0	100
2001	0	0	2	6	20	43	24	6	0	0	100
Total	0	1	2	7	19	40	25	6	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	0	4	3	0	0	0	0	0	1	8
1996	0	2	1	1	0	0	0	2	0	0	5
1997	0	0	2	3	0	0	0	0	0	0	5
1998	0	0	0	5	0	0	1	0	0	5	11
1999	0	2	4	11	3	1	0	1	0	2	24
2000	0	0	1	2	1	2	1	0	3	0	10
2001	0	1	3	0	0	1	0	0	2	4	11
Total	0	5	15	25	4	4	2	3	5	12	75

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

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	4	2	5	13	2	4	1	
Highest:	297	136	33	436	527	184	566	
Mean:	47	46	18	164	59	85	193	
Median:	10	13	18	95	18	69	162	

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	0	50	38	0	0	0	0	0	13	100
1996	0	33	17	17	0	0	0	33	0	0	100
1997	0	0	40	60	0	0	0	0	0	0	100
1998	0	0	0	45	0	0	9	0	0	45	100
1999	0	8	17	46	13	4	0	4	0	8	100
2000	0	0	10	20	10	20	10	0	30	0	100
2001	0	9	27	0	0	9	0	0	18	36	100
Total	0	7	20	33	5	5	3	4	7	16	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	53	75	131	16	5	3	4	3	5	295
1996	0	107	68	122	20	5	6	2	2	1	333
1997	0	81	144	304	64	7	6	4	1	10	621
1998	0	81	126	136	10	5	4	6	2	2	372
1999	0	71	70	170	33	12	3	8	1	2	370
2000	0	48	76	174	41	32	15	20	11	13	430
2001	0	48	123	207	20	7	5	3	1	1	415
Total	0	489	682	1244	204	73	42	47	21	34	2836

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:	566	340	447	306	315	464	378	
Mean:	24	16	24	17	22	42	18	
Median:	11	8	13	8	13	18	10	

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
1995	0	18	25	44	5	2	1	1	1	2	100
1996	0	32	20	37	6	2	2	1	1	0	100
1997	0	13	23	49	10	1	1	1	0	2	100
1998	0	22	34	37	3	1	1	2	1	1	100
1999	0	19	19	46	9	3	1	2	0	1	100
2000	0	11	18	40	10	7	3	5	3	3	100
2001	0	12	30	50	5	2	1	1	0	0	100
Total	0	17	24	44	7	3	1	2	1	1	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	0	0
1996	0	0	0	0	0	0
1997	0	0	0	0	1	1
1998	0	0	0	0	0	0
1999	0	0	0	0	1	1
2000	0	0	0	0	0	0
2001	0	0	0	0	0	0
Total (#)	0	0	0	0	2	2
Total (%)	0	0	0	0	100	100
Soil Management Group 3						
	<45	45-79	80-119	120-199	>199	Total
	Very Low	Low	Medium	High	Very High	
1995	0	0	1	3	1	5
1996	0	1	1	0	0	2
1997	0	0	0	0	0	0
1998	0	0	0	0	0	0
1999	0	0	0	0	3	3
2000	0	0	1	1	2	4
2001	1	1	0	0	3	5
Total (#)	1	2	3	4	9	19
Total (%)	5	11	16	21	47	100

Ketterings, Q.M., H. Krol, W.S. Reid and A.E. Spaugh (2003). Clinton County Soil Sample Survey 1995-2001. CSS Extension Bulletin E03-9. 37 pages.

Soil Management Group 4						
	<55	55-99	100-149	150-239	>239	Total
	Very Low	Low	Medium	High	Very High	
1995	0	0	0	0	1	1
1996	0	0	0	2	0	2
1997	0	0	0	1	2	3
1998	0	0	0	0	3	3
1999	2	4	4	3	1	14
2000	0	0	0	0	2	2
2001	0	0	0	1	1	2
Total (#)	2	4	4	7	10	27
Total (%)	7	15	15	26	37	100

Soil Management Group 5						
	<55	55-99	100-149	150-239	>239	Total
	Very Low	Low	Medium	High	Very High	
1995	0	2	0	0	0	2
1996	1	0	0	0	1	2
1997	0	1	0	0	0	1
1998	0	1	2	5	0	8
1999	2	1	2	0	1	6
2000	0	2	0	0	2	4
2001	1	1	0	0	2	4
Total (#)	4	8	4	5	6	27
Total (%)	15	30	15	19	22	100

Soil Management Group 6						
	<55	55-99	100-149	150-239	>239	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	2	1	3	2	8
1996	1	1	1	2	1	6
1997	0	1	0	1	3	5
1998	0	1	2	5	3	11
1999	4	5	6	3	6	24
2000	0	2	1	1	6	10
2001	2	2	0	1	6	11
Total #	7	14	11	16	27	75

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	61	48	57	73	24	56	33	
Highest:	1430	288	273	1079	1153	1374	1155	
Mean:	305	149	148	345	188	486	380	
Median:	156	139	120	202	131	326	242	

Percent of samples submitted for home and garden within each potassium classification.

Summary (%)	Very Low	Low	Medium	High	Very High	Total
1995	0	25	13	38	25	100
1996	17	17	17	33	17	100
1997	0	20	0	20	60	100
1998	0	9	18	45	27	100
1999	17	21	25	13	25	100
2000	0	20	10	10	60	100
2001	18	18	0	9	55	100
Grand Total	9	19	15	21	36	100

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	0	12	12	32	67	123
1996	0	24	30	48	44	146
1997	0	0	10	28	22	60
1998	0	0	1	3	3	7
1999	0	2	3	5	7	17
2000	0	5	9	26	45	85
2001	0	4	5	16	20	45
Total (#)	0	47	70	158	208	483
Total (%)	0	10	14	33	43	100
Soil Management Group 2						
	<40	40-69	70-99	100-164	>164	Total
	Very Low	Low	Medium	High	Very High	
1995	0	0	0	1	1	2
1996	0	1	0	0	4	5
1997	0	11	16	34	5	66
1998	1	17	3	7	4	32
1999	1	5	4	3	4	17
2000	0	1	1	2	2	6
2001	0	5	9	20	12	46
Total (#)	2	40	33	67	32	174
Total (%)	1	23	19	39	18	100
Soil Management Group 3						
	<45	45-79	80-119	120-199	>199	Total
	Very Low	Low	Medium	High	Very High	
1995	2	2	0	2	3	9
1996	0	1	3	3	2	9
1997	0	6	14	27	26	73
1998	0	6	7	3	1	17
1999	0	2	11	35	23	71
2000	0	1	8	21	22	52
2001	0	0	5	23	26	54
Total (#)	2	18	48	114	103	285
Total (%)	1	6	17	40	36	100

Ketterings, Q.M., H. Krol, W.S. Reid and A.E. Spaugh (2003). Clinton County Soil Sample Survey 1995-2001. CSS Extension Bulletin E03-9. 37 pages.

Soil Management Group 4						
	<55	55-99	100-149	150-239	>239	Total
	Very Low	Low	Medium	High	Very High	
1995	6	18	22	28	14	88
1996	21	40	29	23	7	120
1997	12	53	98	87	45	295
1998	39	50	37	36	26	188
1999	7	44	34	49	49	183
2000	22	47	36	49	61	215
2001	15	45	40	40	20	160
Total (#)	122	297	296	312	222	1249
Total (%)	10	24	24	25	18	100

Soil Management Group 5						
	<60	60-114	115-164	165-269	>269	Total
	Very Low	Low	Medium	High	Very High	
1995	4	20	17	19	8	68
1996	9	16	9	7	9	50
1997	9	26	42	30	16	123
1998	19	48	27	27	7	128
1999	9	21	17	12	16	75
2000	13	13	6	18	13	63
2001	13	56	22	11	5	107
Total (#)	76	200	140	124	74	614
Total (%)	12	33	23	20	12	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	3	1	4
1996	0	1	0	2	0	3
1997	0	0	0	3	1	4
1998	0	0	0	0	0	0
1999	0	1	1	3	0	5
2000	0	0	0	0	0	0
2001	0	0	1	0	0	1
Total (#)	0	2	2	11	2	17
Total (%)	0	12	12	65	12	100

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

Summary (#)	Very Low	Low	Medium	High	Very High	Un-known	Total
1995	12	52	51	85	94	1	295
1996	30	83	71	83	66	0	333
1997	21	96	180	209	115	0	621
1998	59	121	75	76	41	0	372
1999	17	75	70	107	99	2	370
2000	35	67	60	116	143	9	430
2001	28	110	82	110	83	2	415
Grand Total	202	604	589	786	641	14	2836

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	25	21	29	18	31	27	29	
Highest:	1212	1340	621	693	1357	2181	703	
Mean:	187	152	157	129	182	196	149	
Median:	152	106	139	102	154	161	123	

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

% summary	Very Low	Low	Medium	High	Very High	Un-known	Total
1995	4	18	17	29	32	0	100
1996	9	25	21	25	20	0	100
1997	3	15	29	34	19	0	100
1998	16	33	20	20	11	0	100
1999	5	20	19	29	27	1	100
2000	8	16	14	27	33	2	100
2001	7	27	20	27	20	0	100
Grand Total	7	21	21	28	23	0	100

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	0	2	6	8
1996	0	0	1	3	2	6
1997	0	0	1	0	4	5
1998	0	0	0	2	9	11
1999	0	1	2	6	15	24
2000	0	0	1	1	8	10
2001	0	0	3	0	8	11
Total	0	1	8	14	52	75

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	103	94	99	136	51	93	92	
Highest:	1043	451	346	1116	1144	1113	2655	
Mean:	488	220	248	406	312	500	648	
Median:	372	162	255	325	250	531	337	

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	0	25	75	100
1996	0	0	17	50	33	100
1997	0	0	20	0	80	100
1998	0	0	0	18	82	100
1999	0	4	8	25	63	100
2000	0	0	10	10	80	100
2001	0	0	27	0	73	100
Total	0	1	11	19	69	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	1	18	17	46	213	295
1996	1	18	8	81	225	333
1997	1	16	33	104	467	621
1998	0	26	43	104	199	372
1999	0	17	12	74	267	370
2000	1	19	18	65	327	430
2001	1	15	29	98	272	415
Total	5	129	160	572	1970	2836

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	19	15	17	20	20	15	11	
Highest:	2448	16064	2247	1330	2067	1600	1298	
Mean:	437	412	436	283	438	493	354	
Median:	362	279	342	226	365	396	279	

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	6	6	16	72	100
1996	0	5	2	24	68	100
1997	0	3	5	17	75	100
1998	0	7	12	28	53	100
1999	0	5	3	20	72	100
2000	0	4	4	15	76	100
2001	0	4	7	24	66	100
Total	0	5	6	20	69	100

9. Iron

9.1 Samples for Home and Garden

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

Total number of samples:

	0-49	>49	Total
	Normal	Excessive	
1995	8	0	8
1996	4	2	6
1997	5	0	5
1998	11	0	11
1999	24	0	24
2000	9	1	10
2001	10	1	11
Total	71	4	75

Percentages:

	0-49	>49	Total
	Normal	Excessive	
	100	0	100
	67	33	100
	100	0	100
	100	0	100
	100	0	100
	90	10	100
	91	9	100
	95	5	100

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	3	4	4	3	1	2	3	
Highest:	30	159	33	14	26	58	52	
Mean:	8	45	13	7	8	13	13	
Median:	5	25	5	5	7	6	4	

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	290	5	295
1996	325	8	333
1997	613	8	621
1998	364	8	372
1999	348	22	370
2000	424	6	430
2001	411	4	415
Total	2775	61	2836

Percentages:

	0-49	>49	Total
	Normal	Excessive	
	98	2	100
	98	2	100
	99	1	100
	98	2	100
	94	6	100
	99	1	100
	99	1	100
	98	2	100

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	1	1	1	1	1	1	1	
Highest:	109	149	176	347	248	116	120	
Mean:	10	11	10	13	16	9	9	
Median:	7	6	7	8	8	6	7	

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	8	0	8
1996	6	0	6
1997	5	0	5
1998	11	0	11
1999	22	2	24
2000	8	2	10
2001	10	1	11
Total	70	5	75

Percentages:

0-99	>99	Total
Normal	Excessive	
100	0	100
100	0	100
100	0	100
100	0	100
92	8	100
80	20	100
91	9	100
93	7	100

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	7	2	5	8	4	6	9	
Highest:	44	73	67	74	110	476	136	
Mean:	22	23	35	38	26	80	44	
Median:	22	14	43	36	16	24	29	

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	293	2	295
1996	330	3	333
1997	621	0	621
1998	370	2	372
1999	359	11	370
2000	429	1	430
2001	415	0	415
Total	2817	19	2836

Percentages:

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

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	1	1	1	5	2	3	2	
Highest:	174	617	99	144	495	151	85	
Mean:	20	23	21	21	28	20	19	
Median:	16	19	19	20	21	17	17	

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:					Percentages:				
	<0.5	0.5-1.0	>1	Total	<0.5	0.5-1.0	>1	Total	
	Low	Medium	High		Low	Medium	High		
1995	0	0	8	8	0	0	100	100	
1996	0	0	6	6	0	0	100	100	
1997	0	1	4	5	0	20	80	100	
1998	0	0	11	11	0	0	100	100	
1999	0	4	20	24	0	17	83	100	
2000	0	0	10	10	0	0	100	100	
2001	0	2	9	11	0	18	82	100	
Total	0	7	68	75	0	9	91	100	

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	1.3	1.7	0.9	1.1	0.6	1.5	1.0	
Highest:	27.5	14.5	41.1	25.3	37.7	16.3	32.5	
Mean:	8.8	8.7	15.3	7.9	4.9	7.6	8.4	
Median:	2.7	9.4	10.9	6.2	2.6	6.2	4.6	

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	24	87	184	295
1996	14	106	213	333
1997	8	164	449	621
1998	15	173	184	372
1999	12	73	285	370
2000	10	74	346	430
2001	14	116	285	415
Total	97	793	1946	2836

Percentages:

<0.5	0.5-1.0	>1	Total
Low	Medium	High	
8	29	62	100
4	32	64	100
1	26	72	100
4	47	49	100
3	20	77	100
2	17	80	100
3	28	69	100
3	28	69	100

	1995	1996	1997	1998	1999	2000	2001	
Lowest:	0.2	0.1	0.3	0.2	0.1	0.1	0.3	
Highest:	22.4	203.9	495.9	37.5	695.1	145.5	358.5	
Mean:	2.0	2.8	3.6	1.8	4.7	2.9	3.3	
Median:	1.4	1.2	1.5	1.0	1.8	2.0	1.5	

Appendix: Cornell Crop Codes

Crop codes are 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
ACT	Apricots
APP	Apples

Crop Code	Crop Description
ATF	Athletic Field
ASP	Asparagus
BET	Beets
BDR/BND	Beans-dry
BLB/BLU	Blueberries
CBP	Cabbage - transplanted
CEL	Celery
CEM	Cemetery
FAR	Fairway
FLA	Flowering Annuals
GAR	Garlic
GPA	Grapes, American
GRA	Grapes
GEN	Green
HRB	Herbs
IDL	Idle land
LAW	Lawn
MIX/MVG	Mixed vegetables
PER	Perennials
PLM	Plums
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
SQS	Squash, Summer
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