

Soil Sample Survey

Ontario Co.

Samples analyzed by CNAL in 1995-2001



Picture by Nathan Herendeen

Summary compiled by

Quirine M. Ketterings, Hettie Krol, W. Shaw Reid, Nathan Herendeen



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

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Front page picture caption: The northern third of Ontario county is dotted with drumlins, a geologic feature resulting from the glaciation of this area that receded about 10,000 years ago. The soils that have developed since then have great variability. These are young soils, with good native fertility. Typically, the north ends of drumlins are too steep to be farmed with modern equipment. They were extensively farmed with horses for many years. This one is used as a hang-glider site while farming is productive on the adjacent glacial till plain. (Picture and caption courtesy of Nathan Herendeen).

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Introduction

Ontario County is located in the central Finger Lakes area of New York, southeast of Rochester. It contains over 415,000 acres of land area. Roughly 46% of the area is used for farm production.

The northern two-thirds of the county lies in the Ontario Lowlands with transition to the Allegheny Plateau or Uplands in the south. The northern boundary of Ontario joins Wayne County. The elevation is about 550 feet above sea level. The northern part of the county is dotted with drumlins, long hills oriented in a north-south direction. These plus the extensive deposits of glacial kames create most of the topography in the area. South of these, the glacial till plain is gently undulating. It extends south to the Portage Escarpment where the elevation rises from the 600 to 800 foot level to about 1800 feet in the Allegheny Plateau. The maximum elevation is at Gannett Hill between Canandaigua and Honeoye Lakes at 2256 feet above sea level.

The eroded Allegheny Plateau and deep valleys of the Finger Lakes dominate the county's topography. These begin with Hemlock Lake on the west and include Canadice, Honeoye, and Canandaigua with Seneca Lake on the east. The glacial advance against the north flowing rivers deepened these valleys. When the ice receded, the deep valleys became the Finger Lakes. On the west side of the county, the Honeoye and Hemlock Lake watersheds drain northward into the Genesee. The central Finger Lakes drain northward and eastward into the Clyde River and eventually the Oswego River.

Ontario County soils are extremely diverse. The soils in the north are dominated by high carbonate materials developed from the limestone parent material in the northern parts of the county. This was spread southward by the last glacial action that advanced from north to south across the county. In the southwest, soils formed from the low carbonate Devonian shale deposits.

The agriculture of Ontario County is diverse. Dairy farming is the largest single generator of farm income. Livestock farmers produce and market beef, hogs and sheep. Thousands of acres are devoted to field and forage crops to support the dairy and livestock industry and for cash sales. Processing vegetable crops comprise the next largest segment of the

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agricultural economy. Crops grown for processing include snap beans, sweet corn, red beets, kidney beans, cabbage, carrots and black beans. Grapes are extensively grown on the slopes adjacent to the lakes. They are processed into wine at estate wineries and commercial wineries in Canandaigua and Naples. These help make agri-tourism an important part of the agricultural economy.

Fresh vegetables produced include all the above plus asparagus, cucumbers, tomatoes, squash, pumpkins, garlic and cole crops. Bedding plants and ornamentals are important commodities on farms with greenhouses and/or nursery stock. Fruits such as strawberries, grapes, apples and blueberries are grown for fresh market. Christmas trees are grown on a wide range of soils, especially the acid soils on the hills in the southwest.

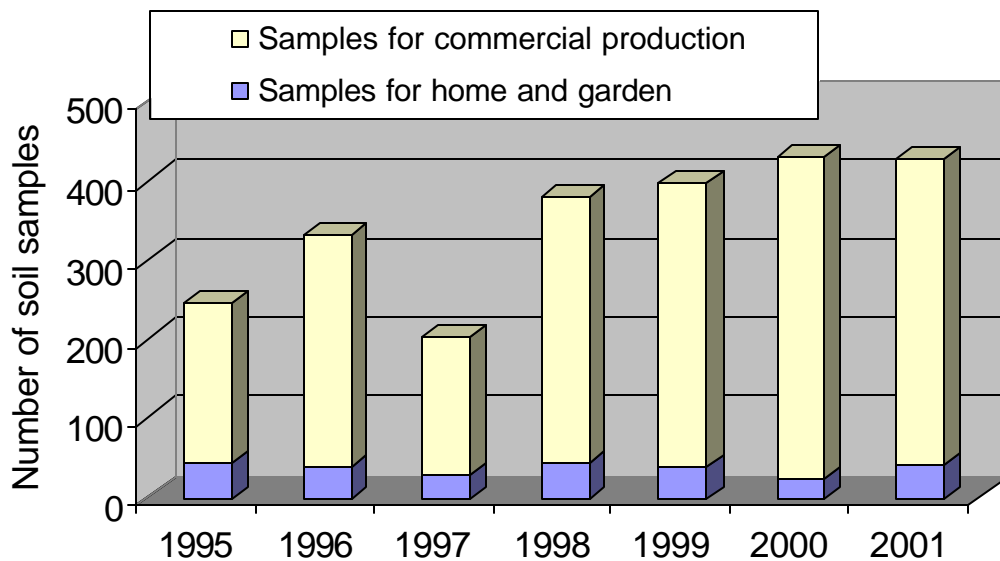
Ontario County is headquarters to several of the larger dairy farms in New York plus many smaller dairy farms. Large vegetable farms are also located in the county. There is a significant horse industry supporting Finger Lakes Race Track plus farms that board horses for recreational use. There are many farms that have found niche markets for a variety of products from flowers to maple products.

All the above industries rely heavily on soil testing to maintain optimum production while protecting the agricultural environment from nutrient runoff.

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1. General Survey Summary

This survey summarizes the soil test results from Ontario County soil samples submitted for analyses to the Cornell Nutrient Analysis Laboratory (CNAL) during 1995-2001. The total number of samples analyzed in these years amounted to 2408. Of these 2408 samples, 2152 (89%) were submitted to obtain fertilizer recommendations for commercial production while 256 samples (11%) were submitted as home and garden samples.



| Homeowners | | Commercial | | Total |
|-------------------|------------|-------------------|-------------|--------------|
| 1995 | 45 | 1995 | 200 | 245 |
| 1996 | 39 | 1996 | 292 | 331 |
| 1997 | 29 | 1997 | 175 | 204 |
| 1998 | 44 | 1998 | 334 | 378 |
| 1999 | 37 | 1999 | 358 | 395 |
| 2000 | 22 | 2000 | 407 | 429 |
| <u>2001</u> | <u>40</u> | <u>2001</u> | <u>386</u> | <u>426</u> |
| Total | 256 | Total | 2152 | 2408 |

Many of the home and garden (25%) were submitted to request fertilizer recommendations for lawns while 22% of the samples were submitted to obtain home garden vegetable recommendation. People submitting samples for commercial production requested fertilizer recommendations for corn silage or grain production (31%), alfalfa or alfalfa/grass mixtures (23%), sweet corn (6%), beans (6%), cabbage (4%) while fewer samples were submitted for other crops including apples, soybeans, small grains, vegetables and fruits.

Home and garden samples in Monroe County were silty (25%), silt loams (25%), sandy loams (30%) or sandy (19%) belonging to soil management group 2, 3, 4, and 5, respectively. 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, 63% belonged to soil management group 2. One percent belonged to soil management group 1 while 28% were classified as group 3 soils, 2% as group 4 soils and 1% as group 5 soils. Two percent of the samples

were from soil management group 6 while the remainder of the soils could not be classified with regards to soil management group. The five most common soil series were Lima (21%), Palmyra (19%), Honeoye (19%), Ontario (12%), and Odessa (4%).

Organic matter levels, as measured by loss on ignition, ranged from less than 1% to almost 70% with median values ranging from 2.7 to 4.0% organic matter for home and garden samples and 2.3 to 2.6% for samples submitted for commercial production. Sixty-one percent of the home and garden samples had between 2.0 and 4.9% organic matter with 28% testing between 2.0 and 2.9% organic matter, 21% between 3.0 and 3.9% organic matter, and 12% between 4.0 and 4.9% organic matter. Twenty-one percent of the soils submitted for home and garden tested >4.9% in organic matter while 18% had less than 2.0% organic matter. Of the samples submitted for commercial production, 21% contained between 1.0-1.9% organic matter, while 54% had between 2.0 and 2.9% organic matter and 18% contained between 3.0 and 3.9% organic matter. In total, 94% of the samples had less than 4% organic matter.

Soil pH in water (1:1 extraction ratio) varied from pH 3.6 to 8.4 with the median for home and garden samples ranging from pH 7.0 to pH 7.6 and for samples submitted for commercial production ranging from pH 6.8 to pH 7.1. Of the home and garden samples, 91% had a pH of 6.0 or higher. For the samples submitted for commercial production, this was 94% while 6% tested between pH 5.0 and pH 5.9.

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 lb 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 soils with >39 lbs P/acre are classified as very high. Of the home and garden samples, 8% tested low, 17% tested medium, 39% tested high and 36% tested very high. This meant that 75% tested high or very high in P.

Phosphorus levels for samples for commercial production in Ontario County were skewed towards high and very high levels as compared to the state average in the 1995-

2001 period. Sixty-one percent of the samples tested very high in P. Seven percent were low in P, 14% tested medium for P while 19% of the submitted samples were classified as high in soil test P. This means that 80% tested high or very high in P. There were no clear trends in P levels over the 7 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, 12% were classified as very low or low in potassium. Twelve percent tested medium, 30% high and 46% very high. For samples submitted for commercial production, 1% tested very low in K, 7% tested low, 16% tested medium, 36% tested high and 38% tested very high in potassium with the remainder being of unknown K classification. As with phosphorus, there were no trends over the 7 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 27 to over 17,000 lbs Mg/acre (Morgan extraction) in a sample that was heavily amended with poultry manure. There were no samples that tested very low in Mg. Most soils tested high or very high for Mg (98% of the homeowner soils and 99% of the soils of the commercial growers). No more than 6 of the homeowner soils and 16 of the commercial growers' soil tested low or medium in Mg. Thus, magnesium deficiency is not likely to occur in Ontario 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 fell for 96-99% in the normal range with 4% of the home and garden samples and 1% of the samples for commercial production testing excessive for Fe. Similarly, most soils (89-100%) 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. Soils with less than 0.5 lb zinc per acre in the Morgan extraction are classified as low in Zn. Medium testing soils have between 0.5 and 1 lb of Morgan extractable Zn per acre. If more than 1 lb of Zn/acre is extracted with the Morgan solution, the soil tests high in Zn. For the home and garden samples, 87% tested high for zinc while 12% tested medium and 1% was low in zinc. Of the samples for commercial production, 3% tested low in zinc, 36% tested medium while 61% were 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 | % |
|---------|------|------|------|------|------|------|------|-------|-----|
| ALG | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 4 | 2 |
| ATF | 0 | 0 | 7 | 11 | 0 | 0 | 3 | 21 | 8 |
| BLU | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| FAR | 3 | 0 | 1 | 0 | 2 | 0 | 0 | 6 | 2 |
| FLA | 2 | 0 | 0 | 3 | 1 | 1 | 3 | 10 | 4 |
| GEN | 17 | 0 | 0 | 0 | 1 | 0 | 0 | 18 | 7 |
| GRA | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| HRB | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| LAW | 8 | 14 | 4 | 11 | 7 | 4 | 16 | 64 | 25 |
| MVG | 4 | 12 | 5 | 12 | 8 | 6 | 9 | 56 | 22 |
| OTH | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 4 | 2 |
| PER | 4 | 1 | 3 | 2 | 2 | 2 | 2 | 16 | 6 |
| PRK | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 7 | 3 |
| ROD | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 1 |
| ROS | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 4 | 2 |
| SAG | 1 | 6 | 2 | 1 | 9 | 1 | 1 | 21 | 8 |
| SOD | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| STR | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 1 |
| SUB | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 1 |
| TRF | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 5 | 2 |
| Unknown | 3 | 0 | 0 | 0 | 2 | 4 | 1 | 10 | 5 |
| | | | | | | | | | |
| Total | 45 | 39 | 29 | 44 | 37 | 22 | 40 | 256 | 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 | 1 | 0 | 0 | 3 | 5 | 0 |
| AGE/AGT | 18 | 51 | 22 | 63 | 55 | 87 | 75 | 371 | 17 |
| ALE/ALT | 29 | 8 | 1 | 50 | 20 | 19 | 11 | 138 | 6 |
| APP | 6 | 31 | 2 | 2 | 8 | 2 | 2 | 53 | 2 |
| BCE/BCT | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 3 | 0 |
| BET | 1 | 0 | 0 | 0 | 0 | 0 | 10 | 11 | 1 |
| BGE/BGT | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 0 |
| BLB | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| BND/BDR | 0 | 0 | 0 | 1 | 16 | 0 | 19 | 36 | 2 |
| BNS | 17 | 9 | 9 | 3 | 9 | 11 | 35 | 93 | 4 |
| BRP | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 |
| BSS | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| BUK | 2 | 0 | 0 | 2 | 0 | 1 | 0 | 5 | 0 |
| CAR | 0 | 0 | 0 | 8 | 14 | 0 | 0 | 22 | 1 |
| CBP | 4 | 3 | 8 | 0 | 15 | 19 | 45 | 94 | 4 |
| CBS | 1 | 0 | 0 | 9 | 0 | 0 | 0 | 10 | 0 |
| CFP | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| CGE/CGT | 5 | 0 | 0 | 11 | 3 | 3 | 0 | 22 | 1 |
| CHS | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| CKP | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 4 | 0 |
| CKS | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 6 | 0 |
| CLE/CLT | 0 | 0 | 0 | 0 | 1 | 1 | 6 | 8 | 0 |
| COG/COS | 24 | 136 | 25 | 116 | 103 | 170 | 89 | 663 | 31 |
| GIE/GIT | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 4 | 0 |
| GPA | 1 | 0 | 1 | 3 | 0 | 0 | 1 | 6 | 0 |
| GPF | 0 | 0 | 4 | 0 | 0 | 11 | 0 | 15 | 1 |
| GPV | 0 | 0 | 0 | 0 | 6 | 14 | 0 | 20 | 1 |
| GRE/GRT | 1 | 11 | 1 | 9 | 16 | 13 | 11 | 62 | 3 |
| IDL | 22 | 0 | 2 | 0 | 8 | 1 | 0 | 33 | 2 |
| LET | 2 | 0 | 2 | 0 | 0 | 2 | 0 | 6 | 0 |
| MIX | 0 | 2 | 33 | 1 | 0 | 4 | 12 | 52 | 2 |
| NUR | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| OAS | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 4 | 0 |
| OAT | 0 | 1 | 0 | 3 | 10 | 0 | 2 | 16 | 1 |
| OTH | 2 | 2 | 0 | 1 | 3 | 0 | 0 | 8 | 0 |

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| Current year crop | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | Total | % |
|-------------------|------|------|------|------|------|------|------|-------|-----|
| PAR | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| PCH | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 4 | 0 |
| PEP | 0 | 0 | 1 | 2 | 7 | 0 | 0 | 10 | 0 |
| PGE/PGT | 3 | 6 | 0 | 0 | 1 | 1 | 1 | 12 | 1 |
| PIE/PIT | 0 | 1 | 2 | 0 | 6 | 0 | 2 | 11 | 1 |
| PLE/PLT | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 3 | 0 |
| PNE/PNT | 2 | 0 | 3 | 2 | 2 | 0 | 4 | 13 | 1 |
| POT | 8 | 4 | 0 | 0 | 0 | 0 | 0 | 12 | 1 |
| PUM | 4 | 1 | 3 | 2 | 2 | 1 | 8 | 21 | 1 |
| RSS | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 |
| RYC | 1 | 2 | 0 | 0 | 0 | 1 | 0 | 4 | 0 |
| RYS | 0 | 1 | 4 | 1 | 8 | 0 | 8 | 22 | 1 |
| SOF | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| SOG | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 |
| SOY | 4 | 5 | 1 | 12 | 9 | 7 | 3 | 41 | 2 |
| SQS | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| SQW | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 5 | 0 |
| SSH | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 5 | 0 |
| STS | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| SUN | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| SWC | 33 | 5 | 36 | 16 | 21 | 9 | 10 | 130 | 6 |
| TOM | 0 | 0 | 0 | 2 | 1 | 2 | 2 | 7 | 0 |
| TRE/TRT | 0 | 0 | 0 | 1 | 0 | 0 | 5 | 6 | 0 |
| WHS | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 0 |
| WHT | 1 | 1 | 0 | 1 | 8 | 0 | 13 | 24 | 1 |
| Unknown | 0 | 4 | 2 | 0 | 3 | 16 | 4 | 29 | 1 |
| | | | | | | | | | |
| Total | 200 | 292 | 175 | 334 | 358 | 407 | 386 | 2152 | 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) | 5 | 12 | 8 | 13 | 10 | 5 | 12 | 65 |
| SMG 3 (silt loam) | 12 | 4 | 10 | 6 | 13 | 5 | 15 | 65 |
| SMG 4 (sandy loam) | 19 | 15 | 6 | 17 | 9 | 5 | 6 | 77 |
| SMG 5 (sandy) | 9 | 8 | 4 | 8 | 5 | 7 | 7 | 48 |
| SMG 6 (mucky) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| unknown | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Total | 45 | 39 | 29 | 44 | 37 | 22 | 40 | 256 |

3.2 Samples for Commercial Production

Soil series for samples submitted for commercial production:

| Name | SMG | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | Total |
|------------|-----|------|------|------|------|------|------|------|-------|
| Allendale | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Alluvial | 3 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 3 |
| Arkport | 4 | 10 | 11 | 4 | 6 | 5 | 5 | 6 | 47 |
| Bath | 3 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 3 |
| Berrien | 5 | 0 | 1 | 0 | 0 | 4 | 0 | 0 | 5 |
| Braceville | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Camillus | 3 | 0 | 3 | 0 | 0 | 0 | 1 | 6 | 10 |
| Carlisle | 6 | 4 | 4 | 1 | 4 | 5 | 0 | 2 | 20 |
| Cayuga | 2 | 0 | 0 | 1 | 1 | 6 | 0 | 1 | 9 |
| Cazenovia | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 |
| Chagrin | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Chenango | 3 | 1 | 0 | 0 | 0 | 0 | 12 | 0 | 13 |
| Collamer | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 2 | 6 |
| Darien | 2 | 3 | 1 | 1 | 8 | 1 | 1 | 4 | 19 |
| Dunkirk | 3 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 5 |
| Edwards | 6 | 4 | 4 | 0 | 8 | 10 | 0 | 0 | 26 |
| Farmington | 3 | 3 | 2 | 2 | 1 | 2 | 6 | 4 | 20 |
| Fremont | 2 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 3 |
| Fulton | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Galen | 4 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 4 |
| Genesee | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 3 |
| Granby | 5 | 0 | 3 | 0 | 0 | 2 | 0 | 0 | 5 |
| Homer | 2 | 0 | 3 | 0 | 1 | 6 | 3 | 1 | 14 |
| Honeoye | 2 | 42 | 33 | 34 | 83 | 48 | 57 | 109 | 406 |
| Howard | 3 | 1 | 9 | 8 | 0 | 3 | 29 | 0 | 50 |
| Junius | 5 | 0 | 7 | 1 | 2 | 5 | 2 | 2 | 19 |
| Kendaia | 2 | 1 | 4 | 0 | 8 | 12 | 10 | 9 | 44 |
| Lakemont | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 |
| Langford | 3 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| Lansing | 2 | 5 | 2 | 0 | 1 | 1 | 0 | 1 | 10 |
| Lima | 2 | 64 | 21 | 76 | 43 | 81 | 61 | 104 | 450 |
| Lobdell | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 3 |
| Lordstown | 3 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 3 |
| Lyons | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| Mardin | 3 | 4 | 0 | 1 | 4 | 3 | 4 | 0 | 16 |
| Muck | 6 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 2 |

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| Name | SMG | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | Total |
|-----------|-----|------|------|------|------|------|------|------|-------|
| Nunda | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 |
| Odessa | 2 | 11 | 14 | 3 | 26 | 12 | 23 | 1 | 90 |
| Ontario | 2 | 14 | 61 | 12 | 39 | 45 | 58 | 36 | 265 |
| Ovid | 2 | 1 | 8 | 0 | 1 | 6 | 1 | 1 | 18 |
| Palmyra | 3 | 15 | 72 | 15 | 83 | 61 | 104 | 62 | 412 |
| Phelps | 3 | 0 | 10 | 6 | 1 | 15 | 2 | 7 | 41 |
| Romulus | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| Schoharie | 1 | 5 | 1 | 1 | 3 | 0 | 8 | 5 | 23 |
| Valois | 3 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 3 |
| Volusia | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Warners | 3 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 3 |
| Wayland | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 4 |
| Westland | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| Woostern | 3 | 0 | 0 | 1 | 0 | 4 | 5 | 3 | 13 |
| Unknown | - | 1 | 7 | 4 | 4 | 10 | 5 | 9 | 40 |
| | | | | | | | | | |
| Total | - | 200 | 292 | 175 | 334 | 358 | 407 | 386 | 2152 |

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 | 1 | 8 | 15 | 11 | 4 | 3 | 1 | 2 | 45 |
| 1996 | 0 | 7 | 13 | 6 | 4 | 0 | 2 | 7 | 39 |
| 1997 | 2 | 4 | 10 | 6 | 5 | 1 | 0 | 1 | 29 |
| 1998 | 0 | 3 | 14 | 14 | 4 | 3 | 3 | 3 | 44 |
| 1999 | 4 | 6 | 5 | 8 | 5 | 2 | 2 | 5 | 37 |
| 2000 | 1 | 1 | 4 | 5 | 3 | 4 | 0 | 4 | 22 |
| 2001 | 2 | 8 | 11 | 4 | 5 | 1 | 1 | 8 | 40 |
| Total | 10 | 37 | 72 | 54 | 30 | 14 | 9 | 30 | 256 |

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | |
|----------|------|------|------|------|------|------|------|--|
| Lowest: | 0.7 | 1.0 | 0.7 | 1.2 | 0.1 | 0.9 | 0.7 | |
| Highest: | 41.1 | 20.8 | 13.5 | 20.8 | 46.3 | 18.1 | 26.3 | |
| Mean: | 3.9 | 4.5 | 3.2 | 4.0 | 5.6 | 5.1 | 4.6 | |
| Median: | 2.7 | 2.9 | 2.8 | 3.3 | 3.6 | 4.0 | 2.8 | |

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 | 2 | 18 | 33 | 24 | 9 | 7 | 2 | 4 | 100 |
| 1996 | 0 | 18 | 33 | 15 | 10 | 0 | 5 | 18 | 100 |
| 1997 | 7 | 14 | 34 | 21 | 17 | 3 | 0 | 3 | 100 |
| 1998 | 0 | 7 | 32 | 32 | 9 | 7 | 7 | 7 | 100 |
| 1999 | 11 | 16 | 14 | 22 | 14 | 5 | 5 | 14 | 100 |
| 2000 | 5 | 5 | 18 | 23 | 14 | 18 | 0 | 18 | 100 |
| 2001 | 5 | 20 | 28 | 10 | 13 | 3 | 3 | 20 | 100 |
| Total | 4 | 14 | 28 | 21 | 12 | 5 | 4 | 12 | 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 | 2 | 42 | 91 | 38 | 13 | 3 | 2 | 9 | 200 |
| 1996 | 1 | 55 | 164 | 59 | 4 | 2 | 1 | 6 | 292 |
| 1997 | 0 | 54 | 87 | 27 | 3 | 2 | 1 | 1 | 175 |
| 1998 | 1 | 66 | 188 | 52 | 11 | 4 | 0 | 12 | 334 |
| 1999 | 0 | 87 | 186 | 56 | 10 | 1 | 0 | 18 | 358 |
| 2000 | 1 | 87 | 222 | 83 | 11 | 0 | 1 | 2 | 407 |
| 2001 | 1 | 70 | 216 | 78 | 13 | 5 | 1 | 2 | 386 |
| Total | 6 | 461 | 1154 | 393 | 65 | 17 | 6 | 50 | 2152 |

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | |
|----------|------|------|------|------|------|------|------|--|
| Lowest: | 0.5 | 0.8 | 1.1 | 0.9 | 1.1 | 0.7 | 0.9 | |
| Highest: | 56.6 | 44.6 | 61.0 | 65.3 | 67.3 | 39.9 | 12.9 | |
| Mean: | 4.3 | 3.1 | 2.7 | 3.9 | 4.1 | 2.6 | 2.6 | |
| Median: | 2.6 | 2.4 | 2.3 | 2.4 | 2.4 | 2.4 | 2.5 | |

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 | 1 | 21 | 46 | 19 | 7 | 2 | 1 | 5 | 100 |
| 1996 | 0 | 19 | 56 | 20 | 1 | 1 | 0 | 2 | 100 |
| 1997 | 0 | 31 | 50 | 15 | 2 | 1 | 1 | 1 | 100 |
| 1998 | 0 | 20 | 56 | 16 | 3 | 1 | 0 | 4 | 100 |
| 1999 | 0 | 24 | 52 | 16 | 3 | 0 | 0 | 5 | 100 |
| 2000 | 0 | 21 | 55 | 20 | 3 | 0 | 0 | 0 | 100 |
| 2001 | 0 | 18 | 56 | 20 | 3 | 1 | 0 | 1 | 100 |
| Total | 0 | 21 | 54 | 18 | 3 | 1 | 0 | 2 | 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 | 1 | 0 | 1 | 1 | 6 | 4 | 15 | 16 | 1 | 0 | 45 |
| 1996 | 0 | 0 | 3 | 0 | 3 | 3 | 14 | 13 | 3 | 0 | 39 |
| 1997 | 0 | 0 | 2 | 2 | 1 | 4 | 8 | 12 | 0 | 0 | 29 |
| 1998 | 0 | 0 | 2 | 1 | 1 | 11 | 14 | 15 | 0 | 0 | 44 |
| 1999 | 1 | 0 | 3 | 2 | 1 | 7 | 7 | 14 | 2 | 0 | 37 |
| 2000 | 0 | 0 | 0 | 2 | 2 | 4 | 6 | 6 | 2 | 0 | 22 |
| 2001 | 0 | 0 | 0 | 2 | 2 | 3 | 11 | 16 | 6 | 0 | 40 |
| Total | 2 | 0 | 11 | 10 | 16 | 36 | 75 | 92 | 14 | 0 | 256 |

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | |
|----------|------|------|------|------|------|------|------|--|
| Lowest: | 4.3 | 5.0 | 5.0 | 5.1 | 3.6 | 5.7 | 5.5 | |
| Highest: | 8.0 | 8.3 | 7.8 | 7.9 | 8.1 | 8.2 | 8.4 | |
| Mean: | - | - | - | - | - | - | - | |
| Median: | 7.3 | 7.2 | 7.3 | 7.2 | 7.0 | 7.3 | 7.6 | |

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 | 2 | 0 | 2 | 2 | 13 | 9 | 33 | 36 | 2 | 0 | 100 |
| 1996 | 0 | 0 | 8 | 0 | 8 | 8 | 36 | 33 | 8 | 0 | 100 |
| 1997 | 0 | 0 | 7 | 7 | 3 | 14 | 28 | 41 | 0 | 0 | 100 |
| 1998 | 0 | 0 | 5 | 2 | 2 | 25 | 32 | 34 | 0 | 0 | 100 |
| 1999 | 3 | 0 | 8 | 5 | 3 | 19 | 19 | 38 | 5 | 0 | 100 |
| 2000 | 0 | 0 | 0 | 9 | 9 | 18 | 27 | 27 | 9 | 0 | 100 |
| 2001 | 0 | 0 | 0 | 5 | 5 | 8 | 28 | 40 | 15 | 0 | 100 |
| Total | 1 | 0 | 4 | 4 | 6 | 14 | 29 | 36 | 5 | 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 | 1 | 0 | 4 | 16 | 34 | 75 | 56 | 14 | 0 | 0 | 200 |
| 1996 | 0 | 0 | 3 | 17 | 36 | 85 | 121 | 30 | 0 | 0 | 292 |
| 1997* | 1 | 2 | 7 | 8 | 21 | 64 | 57 | 13 | 0 | 0 | 173 |
| 1998 | 0 | 4 | 7 | 8 | 37 | 122 | 106 | 50 | 0 | 0 | 334 |
| 1999 | 1 | 0 | 7 | 23 | 25 | 82 | 151 | 67 | 2 | 0 | 358 |
| 2000 | 0 | 0 | 1 | 16 | 47 | 97 | 158 | 83 | 5 | 0 | 407 |
| 2001 | 1 | 0 | 3 | 20 | 29 | 98 | 153 | 81 | 1 | 0 | 386 |
| Total | 4 | 6 | 32 | 108 | 229 | 623 | 802 | 338 | 8 | 0 | 2150 |

* Two samples were not analyzed for pH in 1997.

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | |
|----------|------|------|------|------|------|------|------|--|
| Lowest: | 4.4 | 5.1 | 4.3 | 4.9 | 4.4 | 5.2 | 4.3 | |
| Highest: | 7.9 | 7.9 | 7.9 | 7.9 | 8.0 | 8.1 | 8.0 | |
| Mean: | - | - | - | - | - | - | - | |
| Median: | 6.8 | 7.0 | 6.8 | 6.9 | 7.1 | 7.1 | 7.1 | |

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 | 1 | 0 | 2 | 8 | 17 | 38 | 28 | 7 | 0 | 0 | 100 |
| 1996 | 0 | 0 | 1 | 6 | 12 | 29 | 41 | 10 | 0 | 0 | 100 |
| 1997 | 1 | 1 | 4 | 5 | 12 | 37 | 33 | 8 | 0 | 0 | 100 |
| 1998 | 0 | 1 | 2 | 2 | 11 | 37 | 32 | 15 | 0 | 0 | 100 |
| 1999 | 0 | 0 | 2 | 6 | 7 | 23 | 42 | 19 | 1 | 0 | 100 |
| 2000 | 0 | 0 | 0 | 4 | 12 | 24 | 39 | 20 | 1 | 0 | 100 |
| 2001 | 0 | 0 | 1 | 5 | 8 | 25 | 40 | 21 | 0 | 0 | 100 |
| Total | 0 | 0 | 1 | 5 | 11 | 29 | 37 | 16 | 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 | 5 | 2 | 18 | 8 | 1 | 3 | 5 | 1 | 2 | 45 |
| 1996 | 0 | 3 | 5 | 16 | 2 | 1 | 2 | 1 | 0 | 9 | 39 |
| 1997 | 0 | 0 | 8 | 14 | 3 | 1 | 0 | 3 | 0 | 1 | 29 |
| 1998 | 0 | 4 | 7 | 19 | 4 | 2 | 1 | 2 | 2 | 3 | 44 |
| 1999 | 0 | 7 | 7 | 11 | 2 | 1 | 0 | 0 | 2 | 7 | 37 |
| 2000 | 0 | 1 | 5 | 6 | 1 | 0 | 0 | 3 | 1 | 5 | 22 |
| 2001 | 0 | 1 | 10 | 16 | 3 | 0 | 0 | 1 | 2 | 7 | 40 |
| Total | 0 | 21 | 44 | 100 | 23 | 6 | 6 | 14 | 8 | 34 | 256 |

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

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | |
|----------|------|------|------|------|------|------|------|--|
| Lowest: | 1 | 1 | 5 | 1 | 1 | 3 | 2 | |
| Highest: | 622 | 988 | 744 | 538 | 732 | 784 | 885 | |
| Mean: | 61 | 138 | 56 | 68 | 101 | 133 | 111 | |
| Median: | 38 | 26 | 20 | 21 | 15 | 29 | 21 | |

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 | 11 | 4 | 40 | 18 | 2 | 7 | 11 | 2 | 4 | 100 |
| 1996 | 0 | 8 | 13 | 41 | 5 | 3 | 5 | 3 | 0 | 23 | 100 |
| 1997 | 0 | 0 | 28 | 48 | 10 | 3 | 0 | 7 | 0 | 3 | 100 |
| 1998 | 0 | 9 | 16 | 43 | 9 | 5 | 2 | 5 | 5 | 7 | 100 |
| 1999 | 0 | 19 | 19 | 30 | 5 | 3 | 0 | 0 | 5 | 19 | 100 |
| 2000 | 0 | 5 | 23 | 27 | 5 | 0 | 0 | 14 | 5 | 23 | 100 |
| 2001 | 0 | 3 | 25 | 40 | 8 | 0 | 0 | 3 | 5 | 18 | 100 |
| Total | 0 | 8 | 17 | 39 | 9 | 2 | 2 | 5 | 3 | 13 | 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 | 26 | 27 | 120 | 13 | 3 | 3 | 5 | 1 | 2 | 200 |
| 1996 | 0 | 28 | 41 | 186 | 19 | 12 | 2 | 2 | 1 | 1 | 292 |
| 1997 | 0 | 11 | 23 | 125 | 8 | 2 | 2 | 3 | 0 | 1 | 175 |
| 1998 | 0 | 6 | 47 | 187 | 51 | 20 | 6 | 9 | 3 | 5 | 334 |
| 1999 | 0 | 26 | 55 | 198 | 45 | 12 | 10 | 5 | 3 | 4 | 358 |
| 2000 | 0 | 27 | 49 | 241 | 29 | 10 | 2 | 11 | 3 | 35 | 407 |
| 2001 | 0 | 23 | 52 | 247 | 36 | 17 | 4 | 2 | 2 | 3 | 386 |
| Total | 0 | 147 | 294 | 1304 | 201 | 76 | 29 | 37 | 13 | 51 | 2152 |

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: | 487 | 206 | 452 | 518 | 984 | 1149 | 306 | |
| Mean: | 27 | 23 | 23 | 35 | 32 | 58 | 26 | |
| Median: | 16 | 18 | 17 | 22 | 21 | 20 | 19 | |

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 | 13 | 14 | 60 | 7 | 2 | 2 | 3 | 1 | 1 | 100 |
| 1996 | 0 | 10 | 14 | 64 | 7 | 4 | 1 | 1 | 0 | 0 | 100 |
| 1997 | 0 | 6 | 13 | 71 | 5 | 1 | 1 | 2 | 0 | 1 | 100 |
| 1998 | 0 | 2 | 14 | 56 | 15 | 6 | 2 | 3 | 1 | 1 | 100 |
| 1999 | 0 | 7 | 15 | 55 | 13 | 3 | 3 | 1 | 1 | 1 | 100 |
| 2000 | 0 | 7 | 12 | 59 | 7 | 2 | 0 | 3 | 1 | 9 | 100 |
| 2001 | 0 | 6 | 13 | 64 | 9 | 4 | 1 | 1 | 1 | 1 | 100 |
| Total | 0 | 7 | 14 | 61 | 9 | 4 | 1 | 2 | 1 | 2 | 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 | 1 | 1 | 3 | 5 |
| 1996 | 0 | 1 | 1 | 3 | 7 | 12 |
| 1997 | 0 | 0 | 1 | 1 | 6 | 8 |
| 1998 | 0 | 0 | 0 | 3 | 10 | 13 |
| 1999 | 0 | 2 | 2 | 5 | 1 | 10 |
| 2000 | 0 | 0 | 0 | 2 | 3 | 5 |
| 2001 | 0 | 0 | 1 | 4 | 7 | 12 |
| Total (#) | 0 | 3 | 6 | 19 | 37 | 65 |
| Total (%) | 0 | 5 | 9 | 29 | 57 | 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 | 2 | 9 | 12 |
| 1996 | 0 | 0 | 1 | 1 | 2 | 4 |
| 1997 | 0 | 0 | 2 | 6 | 2 | 10 |
| 1998 | 0 | 0 | 0 | 3 | 3 | 6 |
| 1999 | 1 | 1 | 1 | 2 | 8 | 13 |
| 2000 | 0 | 0 | 0 | 0 | 5 | 5 |
| 2001 | 2 | 0 | 0 | 7 | 6 | 15 |
| Total (#) | 3 | 1 | 5 | 21 | 35 | 65 |
| Total (%) | 5 | 2 | 8 | 32 | 54 | 100 |

| Soil Management Group 4 | | | | | | |
|-------------------------|----------|--------|---------|---------|-----------|-------|
| | <55 | 55-99 | 100-149 | 150-239 | >239 | Total |
| | Very Low | Low | Medium | High | Very High | |
| 1995 | 0 | 3 | 4 | 9 | 3 | 19 |
| 1996 | 0 | 2 | 2 | 2 | 9 | 15 |
| 1997 | 0 | 0 | 1 | 1 | 4 | 6 |
| 1998 | 0 | 2 | 3 | 3 | 9 | 17 |
| 1999 | 0 | 1 | 1 | 5 | 2 | 9 |
| 2000 | 0 | 1 | 0 | 1 | 3 | 5 |
| 2001 | 0 | 1 | 1 | 1 | 3 | 6 |
| Total (#) | 0 | 10 | 12 | 22 | 33 | 77 |
| Total (%) | 0 | 13 | 16 | 29 | 43 | 100 |
| Soil Management Group 5 | | | | | | |
| | <60 | 60-114 | 115-164 | 165-269 | >269 | Total |
| | Very Low | Low | Medium | High | Very High | |
| 1995 | 0 | 1 | 2 | 4 | 2 | 9 |
| 1996 | 1 | 3 | 2 | 2 | 0 | 8 |
| 1997 | 0 | 1 | 1 | 1 | 1 | 4 |
| 1998 | 0 | 1 | 0 | 3 | 4 | 8 |
| 1999 | 1 | 0 | 1 | 2 | 1 | 5 |
| 2000 | 0 | 3 | 0 | 2 | 2 | 7 |
| 2001 | 1 | 2 | 1 | 0 | 3 | 7 |
| Total (#) | 3 | 11 | 7 | 14 | 13 | 48 |
| Total (%) | 6 | 23 | 15 | 29 | 27 | 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 | Un-known | Total |
|-------------|----------|-----|--------|------|-----------|----------|-------|
| 1995 | 0 | 4 | 8 | 16 | 17 | 0 | 45 |
| 1996 | 1 | 6 | 6 | 8 | 18 | 0 | 39 |
| 1997 | 0 | 1 | 5 | 9 | 13 | 1 | 29 |
| 1998 | 0 | 3 | 3 | 12 | 26 | 0 | 44 |
| 1999 | 2 | 4 | 5 | 14 | 12 | 0 | 37 |
| 2000 | 0 | 4 | 0 | 5 | 13 | 0 | 22 |
| 2001 | 3 | 3 | 3 | 12 | 19 | 0 | 40 |
| Total # | 6 | 25 | 30 | 76 | 118 | 1 | 256 |

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | |
|----------|------|-------|------|------|------|------|------|--|
| Lowest: | 70 | 50 | 79 | 76 | 37 | 76 | 34 | |
| Highest: | 2736 | 33671 | 949 | 1443 | 3145 | 1323 | 2565 | |
| Mean: | 264 | 1200 | 219 | 336 | 343 | 609 | 364 | |
| Median: | 178 | 180 | 172 | 248 | 172 | 295 | 179 | |

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

| Summary (%) | Very Low | Low | Medium | High | Very High | Un-known | Total |
|-------------|----------|-----|--------|------|-----------|----------|-------|
| 1995 | 0 | 9 | 18 | 36 | 38 | 0 | 100 |
| 1996 | 3 | 15 | 15 | 21 | 46 | 0 | 100 |
| 1997 | 0 | 3 | 17 | 31 | 45 | 3 | 100 |
| 1998 | 0 | 7 | 7 | 27 | 59 | 0 | 100 |
| 1999 | 5 | 11 | 14 | 38 | 32 | 0 | 100 |
| 2000 | 0 | 18 | 0 | 23 | 59 | 0 | 100 |
| 2001 | 8 | 8 | 8 | 30 | 48 | 0 | 100 |
| Grand Total | 2 | 10 | 12 | 30 | 46 | 0 | 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 | 0 | 0 | 3 | 2 | 5 |
| 1996 | 0 | 0 | 0 | 0 | 1 | 1 |
| 1997 | 0 | 0 | 0 | 0 | 1 | 1 |
| 1998 | 0 | 0 | 0 | 2 | 2 | 4 |
| 1999 | 0 | 0 | 0 | 0 | 1 | 1 |
| 2000 | 0 | 0 | 1 | 6 | 1 | 8 |
| 2001 | 0 | 0 | 0 | 1 | 4 | 5 |
| Total (#) | 0 | 0 | 1 | 12 | 12 | 25 |
| Total (%) | 0 | 0 | 4 | 48 | 48 | 100 |
| Soil Management Group 2 | | | | | | |
| | <40 | 40-69 | 70-99 | 100-164 | >164 | Total |
| | Very Low | Low | Medium | High | Very High | |
| 1995 | 0 | 6 | 16 | 51 | 72 | 145 |
| 1996 | 1 | 20 | 20 | 68 | 41 | 150 |
| 1997 | 1 | 3 | 41 | 60 | 22 | 127 |
| 1998 | 0 | 10 | 33 | 66 | 105 | 214 |
| 1999 | 4 | 13 | 29 | 65 | 109 | 220 |
| 2000 | 2 | 12 | 54 | 75 | 77 | 220 |
| 2001 | 0 | 14 | 41 | 125 | 93 | 273 |
| Total (#) | 8 | 78 | 234 | 510 | 519 | 1349 |
| Total (%) | 1 | 6 | 17 | 38 | 38 | 100 |
| Soil Management Group 3 | | | | | | |
| | <45 | 45-79 | 80-119 | 120-199 | >199 | Total |
| | Very Low | Low | Medium | High | Very High | |
| 1995 | 1 | 0 | 2 | 16 | 11 | 30 |
| 1996 | 1 | 1 | 16 | 43 | 41 | 102 |
| 1997 | 0 | 2 | 12 | 14 | 9 | 37 |
| 1998 | 0 | 5 | 13 | 36 | 36 | 90 |
| 1999 | 2 | 20 | 19 | 29 | 25 | 95 |
| 2000 | 2 | 7 | 22 | 49 | 86 | 166 |
| 2001 | 0 | 5 | 16 | 30 | 38 | 89 |
| Total (#) | 6 | 40 | 100 | 217 | 246 | 609 |
| Total (%) | 1 | 7 | 16 | 36 | 40 | 100 |

| Soil Management Group 4 | | | | | | |
|-------------------------|----------|--------|---------|---------|-----------|-------|
| | <55 | 55-99 | 100-149 | 150-239 | >239 | Total |
| | Very Low | Low | Medium | High | Very High | |
| 1995 | 2 | 1 | 1 | 4 | 2 | 10 |
| 1996 | 1 | 4 | 1 | 7 | 0 | 13 |
| 1997 | 0 | 2 | 1 | 1 | 0 | 4 |
| 1998 | 0 | 4 | 1 | 1 | 1 | 7 |
| 1999 | 0 | 0 | 3 | 2 | 1 | 6 |
| 2000 | 1 | 4 | 0 | 1 | 0 | 6 |
| 2001 | 0 | 2 | 1 | 3 | 0 | 6 |
| Total (#) | 4 | 17 | 8 | 19 | 4 | 52 |
| Total (%) | 8 | 33 | 15 | 37 | 8 | 100 |
| Soil Management Group 5 | | | | | | |
| | <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 | 2 | 2 | 6 | 1 | 11 |
| 1997 | 0 | 0 | 0 | 1 | 0 | 1 |
| 1998 | 1 | 0 | 0 | 1 | 0 | 2 |
| 1999 | 1 | 3 | 1 | 3 | 3 | 11 |
| 2000 | 0 | 2 | 0 | 0 | 0 | 2 |
| 2001 | 0 | 1 | 0 | 1 | 0 | 2 |
| Total (#) | 2 | 8 | 3 | 12 | 4 | 29 |
| Total (%) | 7 | 28 | 10 | 41 | 14 | 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 | 9 | 9 |
| 1996 | 0 | 0 | 1 | 3 | 4 | 8 |
| 1997 | 0 | 0 | 0 | 0 | 1 | 1 |
| 1998 | 0 | 0 | 1 | 0 | 12 | 13 |
| 1999 | 0 | 1 | 0 | 1 | 13 | 15 |
| 2000 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2001 | 0 | 0 | 0 | 2 | 0 | 2 |
| Total (#) | 0 | 1 | 2 | 6 | 39 | 48 |
| Total (%) | 0 | 2 | 4 | 13 | 81 | 100 |

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

| Summary (#) | Very Low | Low | Medium | High | Very High | Un-known | Total |
|-------------|----------|-----|--------|------|-----------|----------|-------|
| 1995 | 3 | 7 | 19 | 74 | 96 | 1 | 200 |
| 1996 | 3 | 27 | 40 | 127 | 88 | 7 | 292 |
| 1997 | 1 | 7 | 54 | 76 | 33 | 4 | 175 |
| 1998 | 1 | 19 | 48 | 106 | 156 | 4 | 334 |
| 1999 | 7 | 37 | 52 | 100 | 152 | 10 | 358 |
| 2000 | 5 | 25 | 77 | 131 | 164 | 5 | 407 |
| 2001 | 0 | 22 | 58 | 162 | 135 | 9 | 386 |
| Grand Total | 20 | 144 | 348 | 776 | 824 | 40 | 2152 |

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | |
|----------|------|------|------|------|-------|-------|------|--|
| Lowest: | 43 | 39 | 35 | 44 | 1 | 35 | 51 | |
| Highest: | 2302 | 658 | 1416 | 1159 | 27095 | 34084 | 1196 | |
| Mean: | 215 | 180 | 149 | 210 | 278 | 295 | 180 | |
| Median: | 169 | 149 | 122 | 166 | 162 | 151 | 143 | |

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

| % summary | Very Low | Low | Medium | High | Very High | Un-known | Total |
|-------------|----------|-----|--------|------|-----------|----------|-------|
| 1995 | 2 | 4 | 10 | 37 | 48 | 1 | 100 |
| 1996 | 1 | 9 | 14 | 43 | 30 | 2 | 100 |
| 1997 | 1 | 4 | 31 | 43 | 19 | 2 | 100 |
| 1998 | 0 | 6 | 14 | 32 | 47 | 1 | 100 |
| 1999 | 2 | 10 | 15 | 28 | 42 | 3 | 100 |
| 2000 | 1 | 6 | 19 | 32 | 40 | 1 | 100 |
| 2001 | 0 | 6 | 15 | 42 | 35 | 2 | 100 |
| Grand Total | 1 | 7 | 16 | 36 | 38 | 2 | 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 | 1 | 1 | 43 | 45 |
| 1996 | 0 | 0 | 0 | 3 | 36 | 39 |
| 1997 | 0 | 1 | 1 | 1 | 26 | 29 |
| 1998 | 0 | 0 | 1 | 2 | 41 | 44 |
| 1999 | 0 | 0 | 1 | 3 | 33 | 37 |
| 2000 | 0 | 0 | 1 | 0 | 21 | 22 |
| 2001 | 0 | 0 | 0 | 2 | 38 | 40 |
| Total | 0 | 1 | 5 | 12 | 238 | 256 |

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | |
|----------|------|-------|------|------|------|------|------|--|
| Lowest: | 81 | 119 | 55 | 84 | 91 | 77 | 147 | |
| Highest: | 4788 | 17392 | 1696 | 1972 | 2813 | 4210 | 1998 | |
| Mean: | 553 | 1055 | 563 | 622 | 662 | 764 | 671 | |
| Median: | 386 | 592 | 482 | 575 | 545 | 529 | 510 | |

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 | 2 | 2 | 96 | 100 |
| 1996 | 0 | 0 | 0 | 8 | 92 | 100 |
| 1997 | 0 | 3 | 3 | 3 | 90 | 100 |
| 1998 | 0 | 0 | 2 | 5 | 93 | 100 |
| 1999 | 0 | 0 | 3 | 8 | 89 | 100 |
| 2000 | 0 | 0 | 5 | 0 | 95 | 100 |
| 2001 | 0 | 0 | 0 | 5 | 95 | 100 |
| Total | 0 | 0 | 2 | 5 | 93 | 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 | 0 | 3 | 13 | 184 | 200 |
| 1996 | 0 | 0 | 1 | 16 | 275 | 292 |
| 1997 | 0 | 1 | 0 | 5 | 169 | 175 |
| 1998 | 0 | 0 | 5 | 14 | 315 | 334 |
| 1999 | 0 | 1 | 2 | 18 | 337 | 358 |
| 2000 | 0 | 1 | 0 | 18 | 388 | 407 |
| 2001 | 0 | 2 | 0 | 19 | 365 | 386 |
| Total | 0 | 5 | 11 | 103 | 2033 | 2152 |

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | |
|----------|------|------|------|------|------|------|------|--|
| Lowest: | 68 | 91 | 35 | 70 | 39 | 27 | 29 | |
| Highest: | 3184 | 1474 | 2133 | 3287 | 5303 | 7283 | 1042 | |
| Mean: | 461 | 464 | 413 | 471 | 508 | 442 | 411 | |
| Median: | 375 | 427 | 390 | 410 | 434 | 386 | 402 | |

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 | 7 | 92 | 100 |
| 1996 | 0 | 0 | 0 | 5 | 94 | 100 |
| 1997 | 0 | 1 | 0 | 3 | 97 | 100 |
| 1998 | 0 | 0 | 1 | 4 | 94 | 100 |
| 1999 | 0 | 0 | 1 | 5 | 94 | 100 |
| 2000 | 0 | 0 | 0 | 4 | 95 | 100 |
| 2001 | 0 | 1 | 0 | 5 | 95 | 100 |
| Total | 0 | 0 | 1 | 5 | 94 | 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 | 44 | 1 | 45 |
| 1996 | 39 | 0 | 39 |
| 1997 | 28 | 1 | 29 |
| 1998 | 43 | 1 | 44 |
| 1999 | 32 | 5 | 37 |
| 2000 | 22 | 0 | 22 |
| 2001 | 39 | 1 | 40 |
| Total | 247 | 9 | 256 |

Percentages:

| | 0-49 | >49 | Total |
|--|--------|-----------|-------|
| | Normal | Excessive | |
| | 98 | 2 | 100 |
| | 100 | 0 | 100 |
| | 97 | 3 | 100 |
| | 98 | 2 | 100 |
| | 86 | 14 | 100 |
| | 100 | 0 | 100 |
| | 98 | 3 | 100 |
| | 96 | 4 | 100 |

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | |
|----------|------|------|------|------|------|------|------|--|
| Lowest: | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| Highest: | 544 | 28 | 78 | 124 | 640 | 31 | 380 | |
| Mean: | 18 | 8 | 11 | 10 | 38 | 6 | 18 | |
| Median: | 4 | 5 | 7 | 6 | 11 | 3 | 7 | |

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 | 196 | 4 | 200 |
| 1996 | 288 | 4 | 292 |
| 1997 | 175 | 0 | 175 |
| 1998 | 329 | 5 | 334 |
| 1999 | 350 | 8 | 358 |
| 2000 | 406 | 1 | 407 |
| 2001 | 386 | 0 | 386 |
| Total | 2130 | 22 | 2152 |

Percentages:

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

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | |
|----------|------|------|------|------|------|------|------|--|
| Lowest: | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| Highest: | 500 | 445 | 24 | 381 | 386 | 127 | 38 | |
| Mean: | 12 | 9 | 4 | 8 | 10 | 4 | 3 | |
| Median: | 4 | 4 | 3 | 3 | 3 | 3 | 3 | |

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 | 44 | 1 | 45 |
| 1996 | 34 | 5 | 39 |
| 1997 | 26 | 3 | 29 |
| 1998 | 39 | 5 | 44 |
| 1999 | 31 | 6 | 37 |
| 2000 | 20 | 2 | 22 |
| 2001 | 34 | 6 | 40 |
| Total | 228 | 28 | 256 |

Percentages:

| 0-99 | >99 | Total |
|--------|-----------|-------|
| Normal | Excessive | |
| 98 | 2 | 100 |
| 87 | 13 | 100 |
| 90 | 10 | 100 |
| 89 | 11 | 100 |
| 84 | 16 | 100 |
| 91 | 9 | 100 |
| 85 | 15 | 100 |
| 89 | 11 | 100 |

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | |
|----------|------|------|------|------|------|------|------|--|
| Lowest: | 11 | 18 | 7 | 15 | 10 | 6 | 6 | |
| Highest: | 187 | 148 | 129 | 177 | 361 | 287 | 210 | |
| Mean: | 41 | 55 | 58 | 53 | 68 | 51 | 57 | |
| Median: | 37 | 39 | 48 | 40 | 50 | 33 | 45 | |

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 | 199 | 1 | 200 |
| 1996 | 292 | 0 | 292 |
| 1997 | 175 | 0 | 175 |
| 1998 | 333 | 1 | 334 |
| 1999 | 355 | 3 | 358 |
| 2000 | 406 | 1 | 407 |
| 2001 | 386 | 0 | 386 |
| Total | 2146 | 6 | 2152 |

Percentages:

| | 0-99 | >99 | Total |
|--|--------|-----------|-------|
| | Normal | Excessive | |
| | 100 | 0 | 100 |
| | 100 | 0 | 100 |
| | 100 | 0 | 100 |
| | 100 | 0 | 100 |
| | 99 | 1 | 100 |
| | 100 | 0 | 100 |
| | 100 | 0 | 100 |
| | 100 | 0 | 100 |

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | |
|----------|------|------|------|------|------|------|------|--|
| Lowest: | 6 | 6 | 12 | 12 | 10 | 3 | 6 | |
| Highest: | 149 | 91 | 87 | 114 | 136 | 345 | 95 | |
| Mean: | 34 | 35 | 32 | 32 | 34 | 32 | 35 | |
| Median: | 30 | 33 | 31 | 30 | 31 | 32 | 33 | |

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 | 3 | 42 | 45 | 0 | 7 | 93 | 100 | |
| 1996 | 1 | 3 | 35 | 39 | 3 | 8 | 90 | 100 | |
| 1997 | 0 | 4 | 25 | 29 | 0 | 14 | 86 | 100 | |
| 1998 | 0 | 7 | 37 | 44 | 0 | 16 | 84 | 100 | |
| 1999 | 1 | 9 | 27 | 37 | 3 | 24 | 73 | 100 | |
| 2000 | 0 | 1 | 21 | 22 | 0 | 5 | 95 | 100 | |
| 2001 | 0 | 4 | 36 | 40 | 0 | 10 | 90 | 100 | |
| Total | 2 | 31 | 223 | 256 | 1 | 12 | 87 | 100 | |

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | |
|----------|------|------|------|------|-------|------|------|--|
| Lowest: | 0.6 | 0.4 | 0.7 | 0.6 | 0.4 | 0.9 | 0.5 | |
| Highest: | 54.1 | 59.1 | 14.6 | 26.2 | 177.4 | 93.9 | 26.2 | |
| Mean: | 8.5 | 7.2 | 3.9 | 4.6 | 12.8 | 17.5 | 6.1 | |
| Median: | 3.4 | 3.2 | 2.3 | 2.1 | 5.2 | 13.5 | 2.0 | |

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 | 7 | 99 | 94 | 200 |
| 1996 | 7 | 87 | 198 | 292 |
| 1997 | 1 | 92 | 82 | 175 |
| 1998 | 14 | 115 | 205 | 334 |
| 1999 | 17 | 140 | 201 | 358 |
| 2000 | 11 | 119 | 277 | 407 |
| 2001 | 11 | 130 | 245 | 386 |
| Total | 68 | 782 | 1302 | 2152 |

Percentages:

| <0.5 | 0.5-1.0 | >1 | Total |
|------|---------|------|-------|
| Low | Medium | High | |
| 4 | 50 | 47 | 100 |
| 2 | 30 | 68 | 100 |
| 1 | 53 | 47 | 100 |
| 4 | 34 | 61 | 100 |
| 5 | 39 | 56 | 100 |
| 3 | 29 | 68 | 100 |
| 3 | 34 | 63 | 100 |
| 3 | 36 | 61 | 100 |

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | |
|----------|------|------|------|------|------|------|------|--|
| Lowest: | 0.3 | 0.4 | 0.3 | 0.1 | 0.1 | 0.1 | 0.3 | |
| Highest: | 46.1 | 28.3 | 13.4 | 20.0 | 97.8 | 45.0 | 21.9 | |
| Mean: | 2.1 | 1.8 | 1.4 | 2.0 | 2.1 | 2.1 | 1.6 | |
| Median: | 1.0 | 1.4 | 1.0 | 1.2 | 1.2 | 1.4 | 1.3 | |

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 | |
| 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 |
| PNE | Pasture native grasses, Established |
| 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 |

| Crop Code | Crop Description |
|-----------|---------------------------|
| ASP | Asparagus |
| BDR/BND | Beans-dry |
| BET | Beets |
| BLU/BLB | Blueberries |
| BNS | Beans, Snap |
| BRP | Broccoli, Transplanted |
| CAR | Carrots |
| CBP | Cabbage, Transplanted |
| CBS | Cabbage, Seeded |
| CEM | Cemetery |
| CFP | Cauliflower, Transplanted |
| CHS | Cherries, Sweet |
| CKP | Cucumber, Transplanted |
| CKS | Cucumber, Seeded |
| END | Endives |
| FAR | Fairway |
| FLA | Flowering Annuals |
| GPA | Grapes, American |
| GPF | Grapes, French-American |
| GPV | Grapes, Vinifera |
| GRA | Grapes |
| GEN | Green |
| HRB | Herbs |
| IDL | Idle land |
| LAW | Lawn |
| LET | Lettuce |
| MIX/MVG | Mixed vegetables |
| MML | Muskmelon |
| NUR | Nursery |
| ONS | Onion-seeded |
| OTH | Other |
| PAR | Pears |
| PCH | Peaches |
| PEP | Peppers |
| PER | Perennials |
| POP | Popcorn |
| PRK | Park |
| POT/PTO | Potatoes |
| PUM | Pumpkins |

| Crop Code | Crop Description |
|-----------|--------------------------------------|
| ROD | Roadside |
| ROS | Roses |
| ROU | Rough |
| RSF | Raspberries, Fall |
| RSP | Raspberries (homeowners) |
| RSS | Raspberries, Summer |
| SAG | Ornamentals adapted to pH 6.0 to 7.5 |
| SOD | Sod production |
| SQS | Squash, Summer |
| SQW | Squash, Winter |
| STE | Strawberries, Ever |
| STR | Strawberries (homeowners) |
| STS | Strawberries, Spring |
| SUB | Summer flowering bulbs |
| SUN | Sunflowers |
| SWC | Sweet corn |
| TOM | Tomatoes |
| TRE | Christmas trees, Established |
| TRF | Tree fruits |
| TRT | Christmas trees, Topdressing |