

# 1998 Interim North American Proficiency Testing Program

1<sup>st</sup> Quarter Results

May 4, 1998

Plant ID - 98201

| Plant                      | Lab ID |     |       |       |              |                  |       |                            |
|----------------------------|--------|-----|-------|-------|--------------|------------------|-------|----------------------------|
| Analysis                   | Units  | No. | Min   | Max   | Median       | MAD <sup>1</sup> | RMD % | % Values < WL <sup>2</sup> |
| Dry Matter                 | %      | 42  | 8.9   | 96.8  | <b>91.2</b>  | 1.8              | 2.0   | 80.5                       |
| NO <sub>3</sub> - N Cd Rd. | mg/kg  | 22  | 145   | 10568 | <b>4490</b>  | 410              | 9.1   | 73.9                       |
| NO <sub>3</sub> - N ISE    | mg/kg  | 19  | 2080  | 17600 | <b>4980</b>  | 380              | 7.6   | 73.7                       |
| NO <sub>3</sub> - N Oth.   | mg/kg  | 12  | 4290  | 22060 | <b>5170</b>  | 592              | 11.5  | 81.8                       |
| PO <sub>4</sub> - P        | mg/kg  | 18  | 410   | 1520  | <b>1360</b>  | 72               | 5.3   | 83.3                       |
| SO <sub>4</sub> - S        | mg/kg  | 5   | 41    | 7580  | <b>315</b>   | 205              | 65.1  | 80.0                       |
| Cl                         | %      | 19  | 0.05  | 9.35  | <b>4.41</b>  | 0.34             | 7.7   | 63.2                       |
| TKN                        | %      | 44  | 0.95  | 27    | <b>1.20</b>  | 0.10             | 8.4   | 80.0                       |
| N- Dry Comb.               | %      | 51  | 1.18  | 2.32  | <b>1.42</b>  | 0.05             | 3.5   | 84.0                       |
| S- Dry Comb.               | %      | 18  | 0.02  | 0.72  | <b>0.068</b> | 0.017            | 24.7  | 83.3                       |
| <b>Nitric / Perchloric</b> |        |     |       |       |              |                  |       |                            |
| P                          | %      | 41  | 0.07  | 0.71  | <b>0.195</b> | 0.014            | 7.2   | 78.6                       |
| K                          | %      | 41  | 0.19  | 5.3   | <b>2.22</b>  | 0.115            | 5.2   | 85.7                       |
| Ca                         | %      | 41  | 0.32  | 1.2   | <b>0.97</b>  | 0.06             | 5.8   | 85.7                       |
| Mg                         | %      | 40  | 0.26  | 0.58  | <b>0.42</b>  | 0.02             | 4.7   | 82.9                       |
| S                          | %      | 38  | 0.04  | 1.1   | <b>0.060</b> | 0.01             | 16.7  | 76.9                       |
| Na                         | mg/kg  | 30  | 0.44  | 31500 | <b>26200</b> | 1710             | 6.5   | 77.4                       |
| B                          | mg/kg  | 24  | 21.8  | 37    | <b>28.2</b>  | 2.2              | 7.8   | 88.0                       |
| Zn                         | mg/kg  | 40  | 1.00  | 48    | <b>14.0</b>  | 1.3              | 9.3   | 78.0                       |
| Mn                         | mg/kg  | 37  | 10.5  | 39.49 | <b>13.2</b>  | 0.8              | 6.1   | 76.3                       |
| Fe                         | mg/kg  | 37  | 32.5  | 249   | <b>88</b>    | 10               | 10.9  | 76.3                       |
| Cu                         | mg/kg  | 38  | 1.1   | 24    | <b>5.0</b>   | 1.0              | 20.0  | 82.1                       |
| <b>Dry Ash</b>             |        |     |       |       |              |                  |       |                            |
| P                          | %      | 50  | 0.14  | 0.23  | <b>0.200</b> | 0.010            | 5.0   | 87.5                       |
| K                          | %      | 51  | 1.888 | 2.90  | <b>2.25</b>  | 0.10             | 4.4   | 85.7                       |
| Ca                         | %      | 51  | 0.47  | 1.28  | <b>0.97</b>  | 0.03             | 3.1   | 77.6                       |
| Mg                         | %      | 50  | 0.31  | 0.8   | <b>0.42</b>  | 0.028            | 6.6   | 81.3                       |
| Na                         | mg/kg  | 32  | 0.23  | 30400 | <b>26050</b> | 2000             | 7.7   | 74.2                       |
| B                          | mg/kg  | 53  | 14.9  | 90    | <b>27.8</b>  | 2.1              | 7.7   | 74.5                       |
| Zn                         | mg/kg  | 50  | 4.4   | 34    | <b>14.2</b>  | 1.5              | 10.5  | 83.3                       |
| Mn                         | mg/kg  | 52  | 6.1   | 33    | <b>13.0</b>  | 1.0              | 7.7   | 76.0                       |
| Fe                         | mg/kg  | 49  | 55    | 205   | <b>81</b>    | 12               | 14.6  | 87.2                       |
| Cu                         | mg/kg  | 50  | 1.1   | 56    | <b>4.8</b>   | 0.8              | 16.7  | 77.1                       |
| <b>Microwave</b>           |        |     |       |       |              |                  |       |                            |
| P                          | %      | 10  | 0.15  | 0.23  | <b>0.190</b> | 0.010            | 5.3   | 63.6                       |
| K                          | %      | 12  | 1.69  | 5.80  | <b>2.23</b>  | 0.24             | 10.8  | 92.3                       |
| Ca                         | %      | 12  | 0.72  | 2.50  | <b>0.98</b>  | 0.14             | 14.4  | 92.3                       |
| Mg                         | %      | 12  | 0.31  | 0.90  | <b>0.41</b>  | 0.06             | 14.6  | 92.3                       |
| S                          | %      | 9   | 0.1   | 0.08  | <b>0.066</b> | 0.009            | 13.6  | 100                        |
| Na                         | mg/kg  | 10  | 20854 | 29600 | <b>27700</b> | 1585             | 5.7   | 63.6                       |
| B                          | mg/kg  | 12  | 16.0  | 33    | <b>25.8</b>  | 3.1              | 12.0  | 92.3                       |
| Zn                         | mg/kg  | 11  | 11.1  | 26    | <b>15.0</b>  | 1.5              | 10.0  | 75.0                       |
| Mn                         | mg/kg  | 12  | 9.1   | 16    | <b>13.0</b>  | 1.0              | 7.7   | 76.9                       |
| Fe                         | mg/kg  | 12  | 55    | 108   | <b>85</b>    | 13               | 15.1  | 100.0                      |
| Cu                         | mg/kg  | 11  | 2.7   | 9     | <b>4.0</b>   | 0.1              | 2.9   | 58.3                       |

1 - Values flagged exceed Warning Limits " \* " based on 2.5 x MAD (Median Absolute Deviation) and Control Limits " \* \* " based on 4 x MAD.

2 - Percentage (%) of all reported laboratory values within established Warning Limits.



# 1998 Interim North American Proficiency Testing Program

## 1<sup>st</sup> Quarter Results

May 4, 1998

Plant ID - 98202

| Plant                      | Lab ID |     |        |       |        |                  |       |                            |
|----------------------------|--------|-----|--------|-------|--------|------------------|-------|----------------------------|
| Analysis                   | Units  | No. | Min    | Max   | Median | MAD <sup>1</sup> | RMD % | % Values < WL <sup>2</sup> |
| Dry Matter                 | %      | 42  | 9.0    | 98.5  | 90.8   | 2.0              | 2.2   | 90.9                       |
| NO <sub>3</sub> - N Cd Rd. | mg/kg  | 22  | 98     | 3957  | 1560   | 164              | 10.5  | 80.0                       |
| NO <sub>3</sub> - N ISE    | mg/kg  | 20  | 257    | 17900 | 1960   | 322              | 16.4  | 85.7                       |
| NO <sub>3</sub> - N Oth.   | mg/kg  | 12  | 1287   | 6569  | 1980   | 374              | 18.9  | 75.0                       |
| PO <sub>4</sub> - P        | mg/kg  | 18  | 1841   | 6522  | 5440   | 495              | 9.1   | 89.5                       |
| SO <sub>4</sub> - S        | mg/kg  | 6   | 2980   | 6750  | 3580   | 313              | 8.7   | 85.7                       |
| Cl                         | %      | 19  | 3.7    | 13.1  | 6.00   | 0.43             | 7.2   | 65.0                       |
| TKN                        | %      | 43  | 1.45   | 4.4   | 1.95   | 0.12             | 6.2   | 82.2                       |
| N- Dry Comb.               | %      | 51  | 1.92   | 4.08  | 2.08   | 0.07             | 3.4   | 90.2                       |
| S- Dry Comb.               | %      | 18  | 0.18   | 0.81  | 0.425  | 0.05             | 10.6  | 78.9                       |
| <b>Nitric / Perchloric</b> |        |     |        |       |        |                  |       |                            |
| P                          | %      | 41  | 0.29   | 1.19  | 0.740  | 0.040            | 5.4   | 77.3                       |
| K                          | %      | 41  | 2.28   | 6.43  | 4.70   | 0.26             | 5.5   | 81.8                       |
| Ca                         | %      | 42  | 0.49   | 1.0   | 0.85   | 0.05             | 5.9   | 82.2                       |
| Mg                         | %      | 41  | 0.2    | 0.49  | 0.27   | 0.017            | 6.4   | 79.5                       |
| S                          | %      | 39  | 0.04   | 1.3   | 0.430  | 0.02             | 4.7   | 73.8                       |
| Na                         | mg/kg  | 30  | 2100   | 44600 | 38000  | 2200             | 5.8   | 84.8                       |
| B                          | mg/kg  | 25  | 27.0   | 50    | 45.0   | 3.0              | 6.7   | 85.7                       |
| Zn                         | mg/kg  | 40  | 9.00   | 68    | 22.8   | 2.5              | 11.0  | 74.4                       |
| Mn                         | mg/kg  | 38  | 19.7   | 76.1  | 23.0   | 1.6              | 6.7   | 90.2                       |
| Fe                         | mg/kg  | 38  | 45.8   | 211   | 93     | 17               | 17.7  | 90.2                       |
| Cu                         | mg/kg  | 39  | 0.1    | 29    | 4.7    | 1.1              | 23.2  | 85.7                       |
| <b>Dry Ash</b>             |        |     |        |       |        |                  |       |                            |
| P                          | %      | 50  | 0.5016 | 1.3   | 0.750  | 0.040            | 5.3   | 81.3                       |
| K                          | %      | 51  | 3.243  | 6.29  | 4.74   | 0.24             | 5.1   | 83.7                       |
| Ca                         | %      | 51  | 0.40   | 1.23  | 0.87   | 0.04             | 4.6   | 73.5                       |
| Mg                         | %      | 50  | 0.14   | 0.3   | 0.26   | 0.02             | 7.7   | 85.4                       |
| Na                         | mg/kg  | 32  | 0.41   | 46550 | 36050  | 4520             | 12.5  | 71.9                       |
| B                          | mg/kg  | 53  | 9.1    | 149   | 44.0   | 3.3              | 7.5   | 74.5                       |
| Zn                         | mg/kg  | 50  | 5.6    | 42    | 23.3   | 1.7              | 7.1   | 85.4                       |
| Mn                         | mg/kg  | 52  | 13     | 42    | 22.8   | 1.7              | 7.4   | 82.0                       |
| Fe                         | mg/kg  | 49  | 41     | 233   | 77     | 15               | 19.0  | 87.5                       |
| Cu                         | mg/kg  | 50  | 0.5    | 33    | 4.1    | 0.9              | 21.9  | 83.3                       |
| <b>Microwave</b>           |        |     |        |       |        |                  |       |                            |
| P                          | %      | 10  | 0.54   | 0.94  | 0.751  | 0.021            | 2.8   | 66.7                       |
| K                          | %      | 12  | 3.37   | 12.50 | 4.71   | 0.33             | 7.0   | 78.6                       |
| Ca                         | %      | 12  | 0.57   | 2.20  | 0.86   | 0.06             | 7.0   | 85.7                       |
| Mg                         | %      | 12  | 0.17   | 0.60  | 0.27   | 0.02             | 7.5   | 78.6                       |
| S                          | %      | 9   | 0.4    | 0.48  | 0.430  | 0.023            | 5.3   | 81.8                       |
| Na                         | mg/kg  | 10  | 28155  | 44000 | 39250  | 2950             | 7.5   | 75.0                       |
| B                          | mg/kg  | 12  | 21.5   | 53    | 43.8   | 3.4              | 7.8   | 85.7                       |
| Zn                         | mg/kg  | 12  | 0.5    | 31    | 23.6   | 1.0              | 4.2   | 71.4                       |
| Mn                         | mg/kg  | 12  | 15     | 26    | 22.4   | 2.2              | 9.8   | 92.9                       |
| Fe                         | mg/kg  | 12  | 53     | 105   | 89     | 6                | 7.0   | 85.7                       |
| Cu                         | mg/kg  | 11  | 2.94   | 7     | 3.9    | 0.3              | 6.4   | 69.2                       |

1 - Values flagged exceed Warning Limits " \* " based on 2.5 x MAD (Median Absolute Deviation) and Control Limits " \* \* " based on 4 x MAD.

2 - Percentage (%) of all reported laboratory values within established Warning Limits.



# 1998 Interim North American Proficiency Testing Program

May 4, 1998

1<sup>st</sup> Quarter Results

Plant ID - 98203

| Plant                      | Lab ID |     |       |       |              |                  |       |                            |
|----------------------------|--------|-----|-------|-------|--------------|------------------|-------|----------------------------|
| Analysis                   | Units  | No. | Min   | Max   | Median       | MAD <sup>1</sup> | RMD % | % Values < WL <sup>2</sup> |
| Dry Matter                 | %      | 41  | 4.8   | 98.6  | <b>95.0</b>  | 1.0              | 1.0   | 83.3                       |
| NO <sub>3</sub> - N Cd Rd. | mg/kg  | 22  | 24    | 8340  | <b>3960</b>  | 435              | 11.0  | 88.0                       |
| NO <sub>3</sub> - N ISE    | mg/kg  | 19  | 2418  | 7900  | <b>4300</b>  | 325              | 7.6   | 76.2                       |
| NO <sub>3</sub> - N Oth.   | mg/kg  | 12  | 3655  | 18400 | <b>4510</b>  | 450              | 10.0  | 92.3                       |
| PO <sub>4</sub> - P        | mg/kg  | 18  | 829   | 2800  | <b>2430</b>  | 131              | 5.4   | 80.0                       |
| SO <sub>4</sub> - S        | mg/kg  | 6   | 819   | 3670  | <b>1930</b>  | 600              | 31.1  | 87.5                       |
| Cl                         | %      | 17  | 0.05  | 4.1   | <b>0.14</b>  | 0.08             | 57.1  | 84.2                       |
| TKN                        | %      | 44  | 3.35  | 6     | <b>4.05</b>  | 0.19             | 4.7   | 89.4                       |
| N- Dry Comb.               | %      | 51  | 2.13  | 4.754 | <b>4.36</b>  | 0.11             | 2.5   | 88.5                       |
| S- Dry Comb.               | %      | 18  | 0.12  | 0.68  | <b>0.37</b>  | 0.04             | 11.6  | 80.0                       |
| <b>Nitric / Perchloric</b> |        |     |       |       |              |                  |       |                            |
| P                          | %      | 41  | 0.12  | 0.72  | <b>0.370</b> | 0.012            | 3.1   | 65.9                       |
| K                          | %      | 41  | 0.47  | 7.49  | <b>5.40</b>  | 0.26             | 4.8   | 84.1                       |
| Ca                         | %      | 41  | 0.32  | 0.8   | <b>0.48</b>  | 0.04             | 7.9   | 84.1                       |
| Mg                         | %      | 39  | 0.18  | 0.34  | <b>0.22</b>  | 0.01             | 4.5   | 78.6                       |
| S                          | %      | 39  | 0.03  | 1.2   | <b>0.370</b> | 0.03             | 8.1   | 86.0                       |
| Na                         | mg/kg  | 30  | 0.05  | 2138  | <b>400</b>   | 80               | 20.0  | 64.7                       |
| B                          | mg/kg  | 24  | 1.2   | 29    | <b>8.9</b>   | 1.9              | 21.7  | 78.6                       |
| Zn                         | mg/kg  | 40  | 16.0  | 40    | <b>30.6</b>  | 2.4              | 7.8   | 88.4                       |
| Mn                         | mg/kg  | 37  | 63.6  | 98.4  | <b>77.7</b>  | 3.5              | 4.5   | 82.5                       |
| Fe                         | mg/kg  | 37  | 73.22 | 585   | <b>448</b>   | 26               | 5.8   | 70.0                       |
| Cu                         | mg/kg  | 38  | 6.6   | 26    | <b>10.4</b>  | 1.1              | 10.3  | 85.4                       |
| <b>Dry Ash</b>             |        |     |       |       |              |                  |       |                            |
| P                          | %      | 50  | 0.30  | 0.50  | <b>0.370</b> | 0.020            | 5.4   | 90.0                       |
| K                          | %      | 51  | 0.70  | 6.47  | <b>5.30</b>  | 0.29             | 5.5   | 90.2                       |
| Ca                         | %      | 51  | 0.14  | 0.80  | <b>0.48</b>  | 0.03             | 6.3   | 80.4                       |
| Mg                         | %      | 50  | 0.10  | 0.3   | <b>0.21</b>  | 0.01             | 4.8   | 79.6                       |
| Na                         | mg/kg  | 35  | 0.05  | 4000  | <b>513</b>   | 100              | 19.5  | 74.3                       |
| B                          | mg/kg  | 52  | 0.3   | 75    | <b>9.0</b>   | 1.7              | 18.8  | 80.8                       |
| Zn                         | mg/kg  | 50  | 18.9  | 42    | <b>30.3</b>  | 1.8              | 6.0   | 84.0                       |
| Mn                         | mg/kg  | 52  | 59    | 97    | <b>78.2</b>  | 5.0              | 6.4   | 92.3                       |
| Fe                         | mg/kg  | 49  | 211   | 569   | <b>373</b>   | 50               | 13.4  | 81.6                       |
| Cu                         | mg/kg  | 50  | 3     | 36    | <b>9.2</b>   | 1.3              | 13.8  | 82.0                       |
| <b>Microwave</b>           |        |     |       |       |              |                  |       |                            |
| P                          | %      | 10  | 0.2   | 0.43  | <b>0.365</b> | 0.010            | 2.7   | 61.5                       |
| K                          | %      | 12  | 2.92  | 14.7  | <b>5.42</b>  | 0.57             | 10.5  | 86.7                       |
| Ca                         | %      | 12  | 0.23  | 0.90  | <b>0.48</b>  | 0.05             | 10.4  | 86.7                       |
| Mg                         | %      | 12  | 0.11  | 0.50  | <b>0.22</b>  | 0.02             | 9.3   | 80.0                       |
| S                          | %      | 9   | 0.3   | 0.40  | <b>0.388</b> | 0.009            | 2.3   | 75.0                       |
| Na                         | mg/kg  | 10  | 154   | 600   | <b>442</b>   | 105              | 23.8  | 92.3                       |
| B                          | mg/kg  | 12  | 1.1   | 10    | <b>8.0</b>   | 0.8              | 10.1  | 80.0                       |
| Zn                         | mg/kg  | 13  | 0.4   | 39    | <b>30.9</b>  | 3.7              | 11.9  | 81.3                       |
| Mn                         | mg/kg  | 12  | 42    | 91    | <b>74.6</b>  | 8.2              | 11.0  | 93.3                       |
| Fe                         | mg/kg  | 12  | 1.0   | 501   | <b>417</b>   | 39               | 9.5   | 80.0                       |
| Cu                         | mg/kg  | 12  | 0.9   | 13    | <b>9.8</b>   | 0.5              | 5.1   | 66.7                       |

1 - Values flagged exceed Warning Limits " \*\* " based on 2.5 x MAD (Median Absolute Deviation) and Control Limits " \*\*\* " based on 4 x MAD.

2 - Percentage (%) of all reported laboratory values within established Warning Limits.