

Manure sites

No-till sites

**Figure. 1.** No-till (red circles) and manure (brown circles) locations

of on-farm research experiments.



**Picture 1**. Measuring manure application rate at St. Rosa, MN.

**Picture 2.** Applying broadcast N fertilizer at Waseca, MN.

Picture 1. Measuring manure application rate at St. Rosa, MN.



**Picture 3.** No-till corn harvest at Norwalk, WI.

**Picture 4.** Sampling basal stalks at Norwalk, WI.

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| **Table 1. Background soil characteristics for six no-till locations in Experiment (Exp.) One and nine manure locations in Exp. Two.** | | | | |
|  |  |  | **Soil‡** | |
| **Exp.** | **Nearest city†** | **Soil series/texture** | **P** | **K** |
|  |  |  | -- ppm -- | |
| 1 | Cashton | Fayette silt loam | 69 | 72 |
|  | Goodhue | Port silt loam | 17 | 162 |
|  | Lake City | Hersey silt loam | 19 | 120 |
|  | Lakefield | Clarion loam | 6 | 147 |
|  | Norwalk | Wildale silt loam | 10 | 69 |
|  | Plainview-1 | Downs silt loam | 22 | 134 |
|  |  |  |  |  |
| 2 | Faribault | Merton silt loam | 80 | 129 |
|  | Howard Lake | Angus loam | 15 | 126 |
|  | Medford | Nicollet clay loam | 134 | 298 |
|  | Plainview-2 | Tama silty clay loam | 48 | 171 |
|  | Randolph | Cylinder loam | 89 | 277 |
|  | Redwing | Timula silt loam | 15 | 105 |
|  | St. Rosa | Waukon loam | 13 | 132 |
|  | Stewartville | Maxfield silty clay loam | 59 | 236 |
|  | Waseca | Guckeen silty clay loam | 21 | 226 |
| † Cashton and Norwalk are Wisconsin cities and the remaining locations are in Minnesota. | | | | |
| ‡ Bray 1-P and ammonium-acetate exchangeable K for the surface 6 inches. | | | | |

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| **Table 2. Manure application date, rate, analysis, and tillage data for nine farms in Minnesota.** | | | | | | | | | | | | | | | | |
|  | **2010 Manure application** | | | | | | | | | | | | |  | **Tillage** | |
| **Nearest city** | **Date** | | **Rate** | | **Type†** | | **DM** | | **TKN‡** | | **NH4-N** | | **C:N** |  | **Date** | **Type§** |
|  |  | | ton or 1,000 gal/ac | |  | | % | | ----- lb/ac----- | | | |  |  |  |  |
| Faribault | 14 Oct. | | 0.7 | | SB | | 30 | | 10 | | 1 | | 16 |  | 14 Oct. | DC |
| Howard Lake | 21 Oct. | | 7.3 | | LB | | 2 | | 219 | | 139 | | 7 |  | 21 Oct. | DC |
| Medford | 30 Sep. | | 1.6 | | LI | | 8 | | 66 | | 38 | | - |  | 15 Oct. | MP |
| Plainview-2 | 9 Nov. | | 4.6 | | SB | | 39 | | 78 | | 5 | | 23 |  | 20 Nov. | DC |
| Randolph | 11 Nov. | | 3.9 | | LB | | 24 | | 39 | | 20 | | 12 |  | 12 Nov. | DC |
| Red Wing | 7 Oct. | | 5.2 | | SB | | 30 | | 94 | | 10 | | 19 |  | 17 Nov. | MP |
| St. Rosa | 3 Nov. | | 4.7 | | SB | | 18 | | 56 | | 9 | | 12 |  | 4 Nov. | DC |
| Stewartville | 4 Nov. | | 7.8 | | LB | | 42 | | 55 | | 23 | | 21 |  | 9 Nov. | DC |
| Waseca | 14 Oct. | | 4.5 | | LI | | 1 | | 131 | | 108 | | 1 |  | 20 Oct. | DC |
| † LB, Broadcast liquid manure; LI, injected liquid manure; SB, Broadcast solid manure. | | | | | | | | | | | | | |  |  |  |
| ‡ Total Kjeldahl N. | |  | |  | |  | |  | |  | |  | |  |  |  |
| § DC, disc-chisel; MP, moldboard plow. | | | |  | |  | |  | |  | |  | |  |  |  |