

EXAMPLE NITRATE LEACHING FROM "NLEAP"
(Nitrogen Leaching & Economic Analysis Program)

The following three pages are some examples of the data output by NLEAP. The output data was changed from tabular form to graphic output in QUATTRO PRO (spreadsheet) and represents the dollars of profit plotted against pounds of NO₃-N leached and nitrates available for leaching (NAL) per acre for the year 4/15 through 12/31.

Each graph is a combination of 8 different management options for a specific climate. The four climates represented on the four graphs are 1) typical average, 2) dry, 3) wet, and 4) 1991 (somewhat recent average) based on historical data bases of weather from Sioux Falls dating back the past 40 years. The dry and wet climate years are expected to each occur 1 year in 10. The average year represents occurrences of 5 years in 10.

The soil listed on the first sheet of graphs is LaPrairie silt loam (a medium-coarse textured soil), followed by Fordville loam (medium-coarse) and Estelline silt loam (medium) on the second sheet of graphs. These three soils are extensive in this part of the state.

This data represents the first cut of environmental tradeoffs with example scenarios. There are no rotation effects, or before and after farm program examples presented here; however, those scenarios are in the process of development. The graphs are EXAMPLE OUTPUTS which represent differing types and amounts of fertilizer applied, tillage effects, and fertilizer application method, and the information is subject to change.

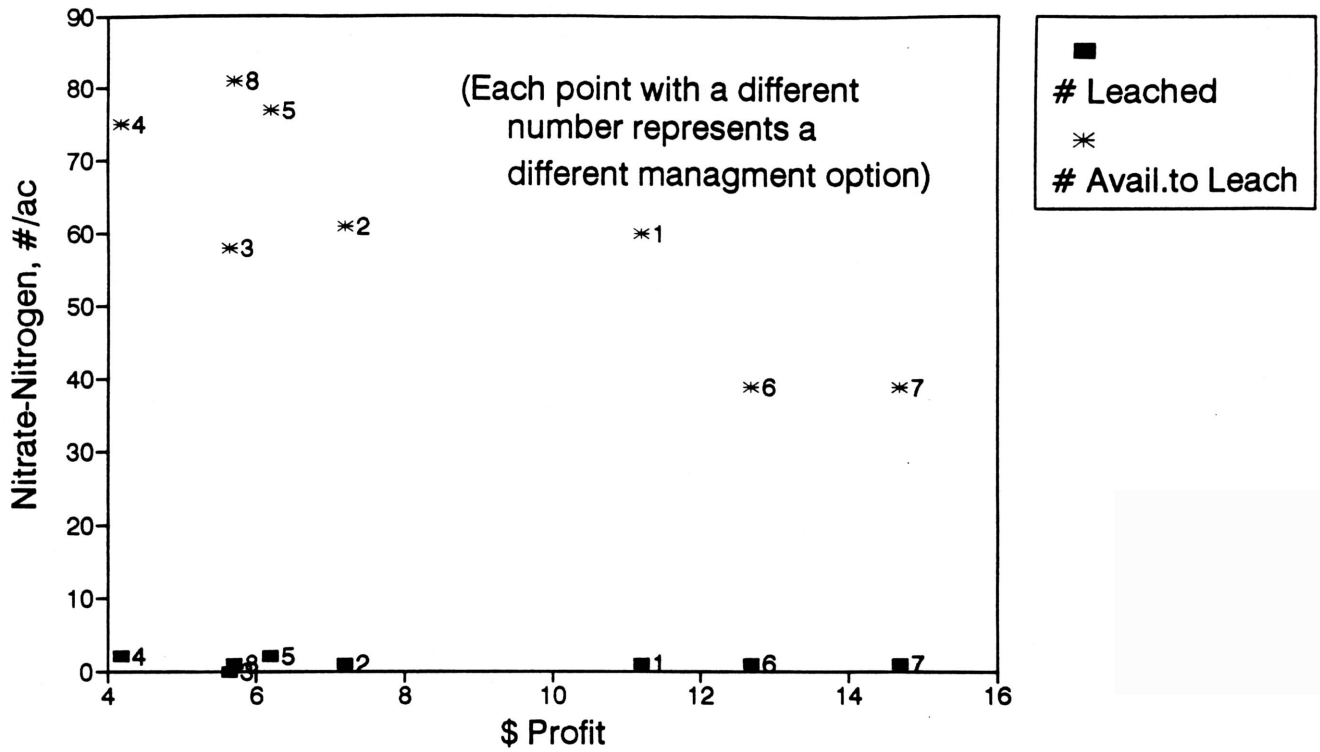
There is some baseline information and some assumptions which go with these graphs. They are as follows:

- 1) the leaching was evaluated from April 15th through December 31st,
- 2) the soil profile was full (at field capacity) on April 15th,
- 3) there is 30# in the top foot and 15# of NO₃-N in the 1-5' soil profile at the beginning of the crop year (4/15),
- 4) the crop evaluated is corn in a corn\soybeans\corn\soybeans, etc. rotation,
- 5) the yield is the same within each graph,
- 6) the NAL is the amount of nitrate available for leaching at the end of the run (Dec. 31),
- 7) no other nutrients are limiting,
- 8) there is glacial outwash beneath the soils at 5' and the water table (aquifer) is 8' below the ground surface,
- 9) the aquifer is used for a drinking water supply,
- 10) there is no lateral movement onto or away from the tract of land evaluated,
- 11) there is no run-on to this tract of land but there is some run-off that varies between scenarios,
- 12) all numbers are rounded off to the nearest integer.

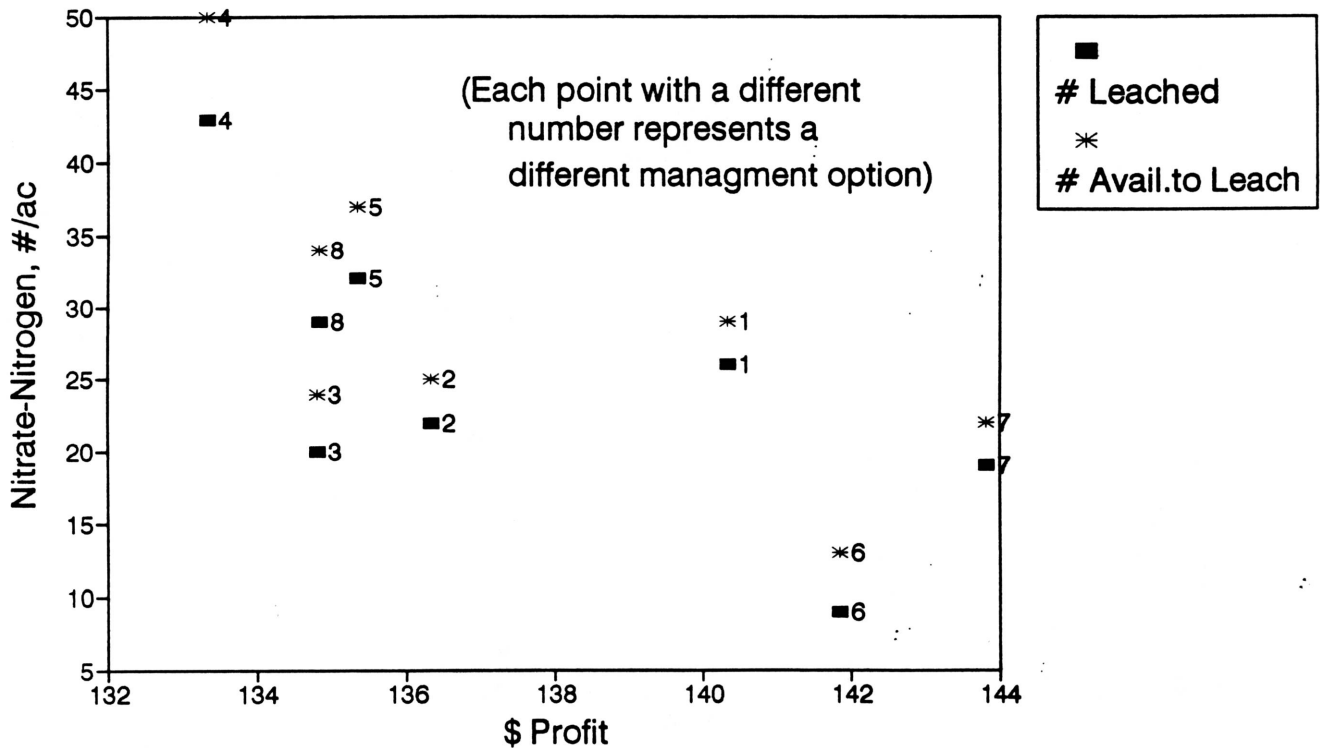
The management scenarios which are listed in the graphs are numbered 1 through 8 and represent 7 alterations from the base management (scenario 1). The management options are listed as follows:

Option	Primary Tillage	Fertilizer Type	Fertilizer Amount, #/ac	Appln Method	Date of Appln
1	Disk	Ammonium SO4	50# (as N)	Brdcst Incorp.	5/9
2	Disk	UAN	50# (as N)	Injected	6/20
3	M. Plow	Ammonium SO4	50# (as N)	Brdcst Incorp.	5/9
4	No-till	Ammonium SO4	50# (as N)	Brdcst	5/9
5	No-till	UAN	50# (as N)	Injected	6/20
6	Disk	Ammonium SO4	25# (as N)	Brdcst Incorp.	5/9
7	Disk	UAN	25# (as N)	Injected	6/20
8	Disk	Ammonium SO4	75# (as N)	Brdcst Incorp.	5/9

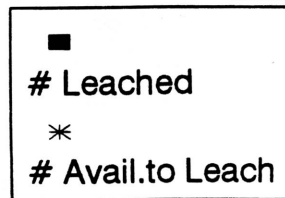
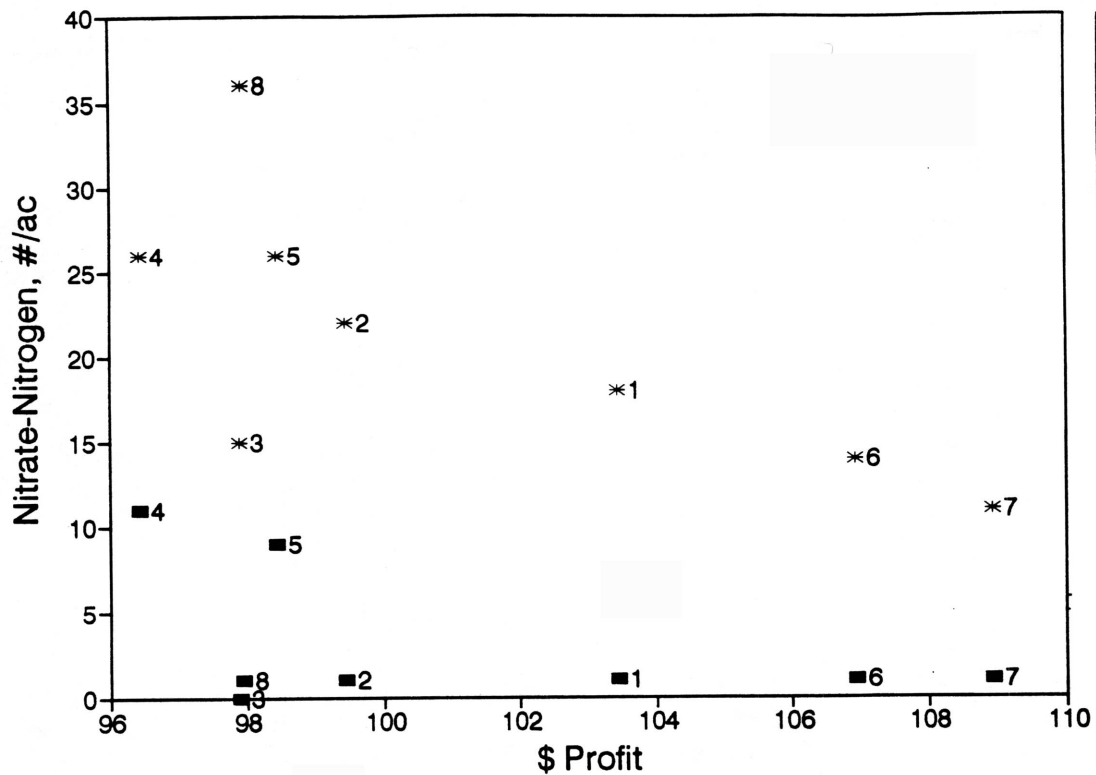
Dry Year (15.3" An. Precip)
60 bu/ac yield corn



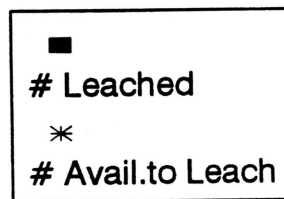
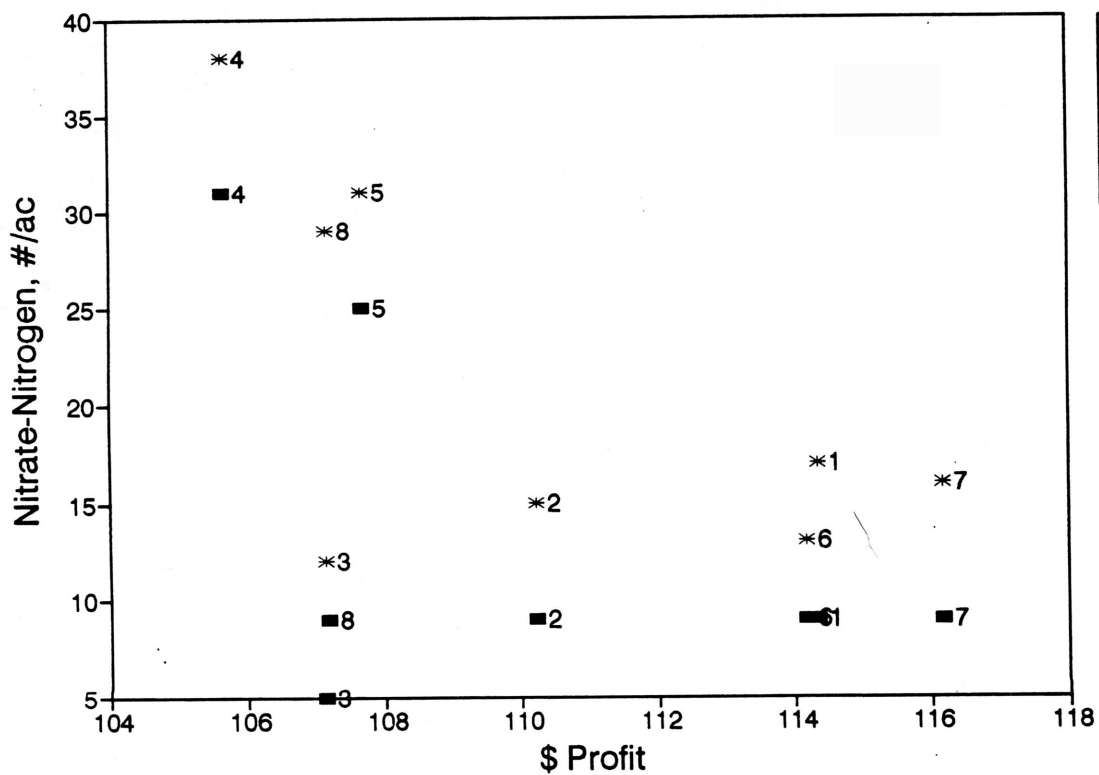
Wet Year (30.8" An. Precip)
130 bu/ac yield corn



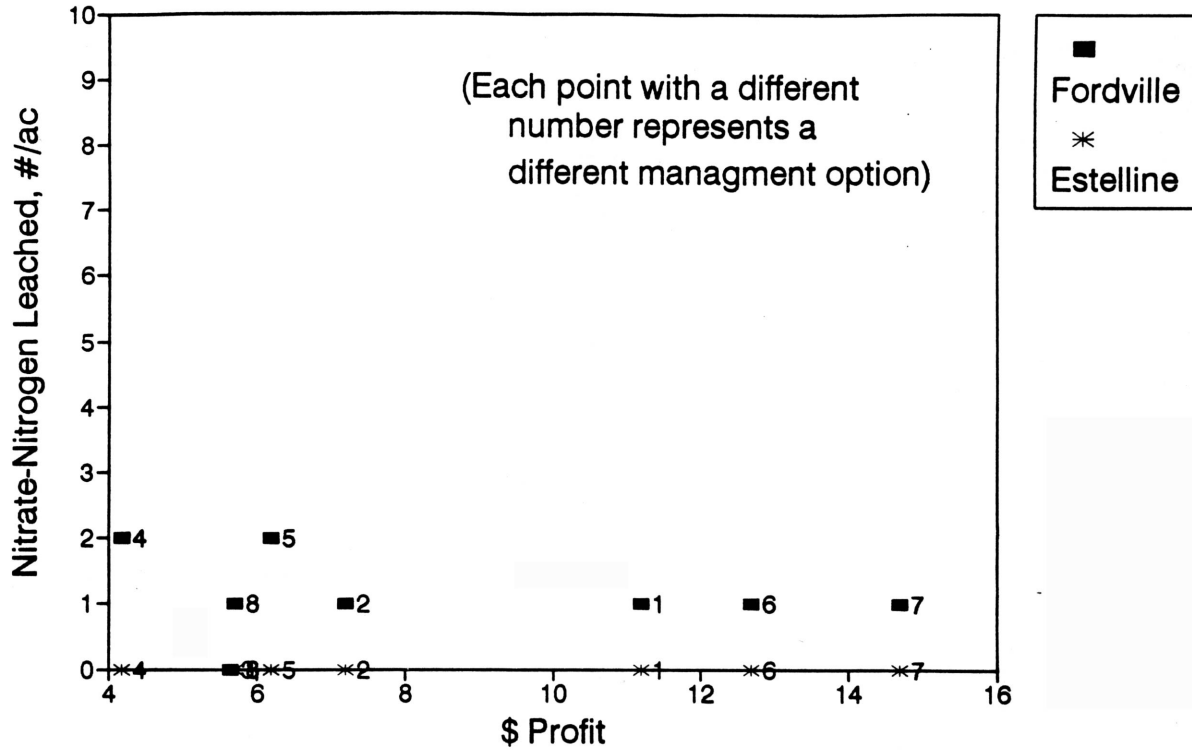
Average Year (24.7" An. Precip)
110 bu/ac yield corn



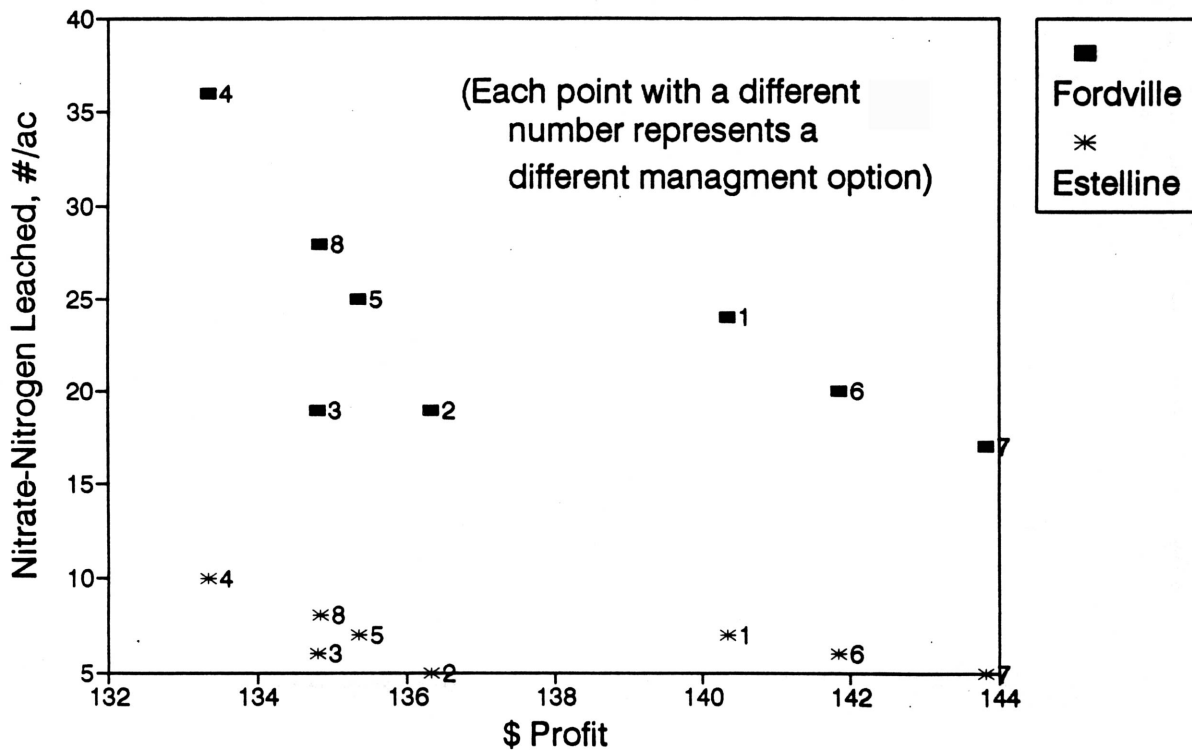
Year 1991 (20.8" An. Precip)
115 bu/ac yield corn



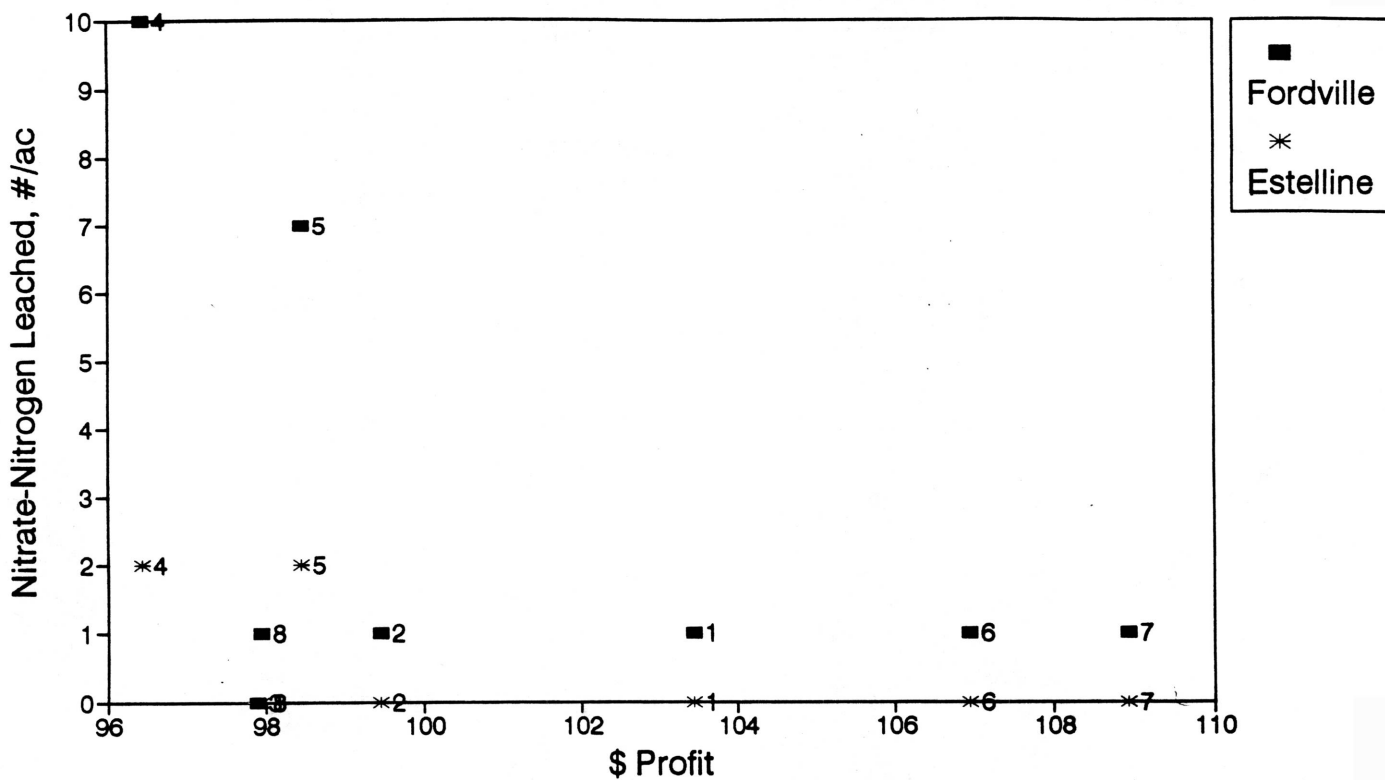
Dry Year (15.3" An. Precip)
60 bu/ac yield corn



Wet Year (30.8" An. Precip)
130 bu/ac yield corn



Average Year (24.7" An. Precip)
110 bu/ac yield corn



Year 1991 (20.8" An. Precip)
115 bu/ac yield corn

