

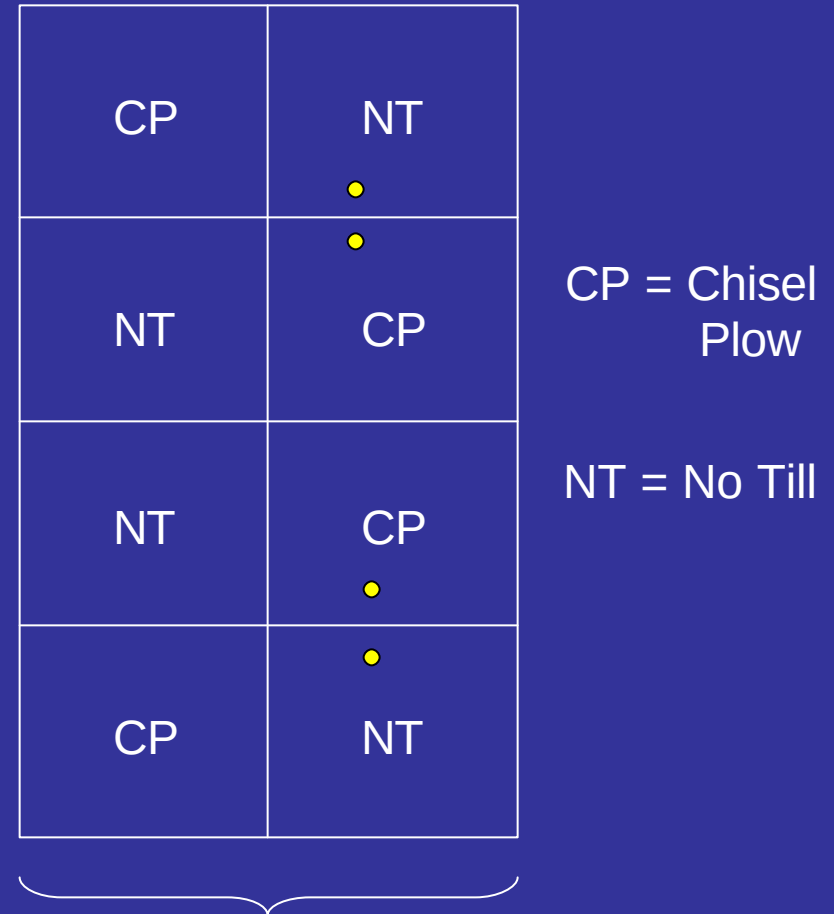
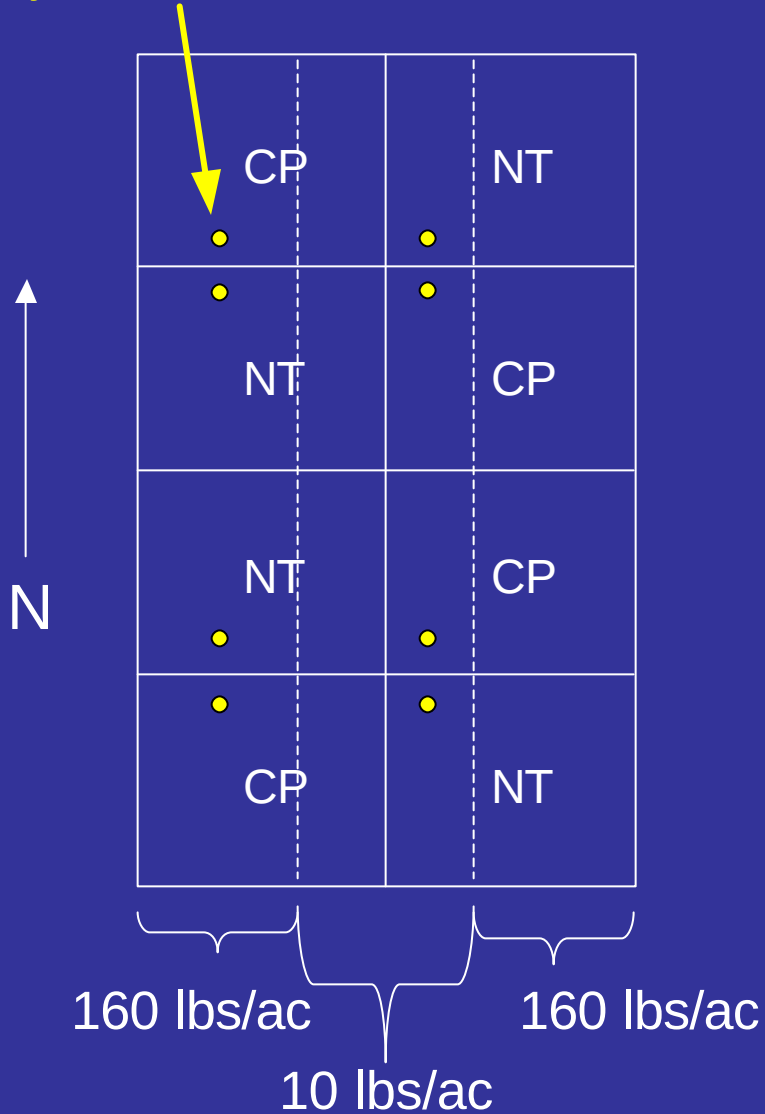
Nitrogen Leaching From Fields Fertilized at the Economically Optimum Rate

John M. Norman, Kevin Masarik, and
Larry Bundy

Department of Soil Science
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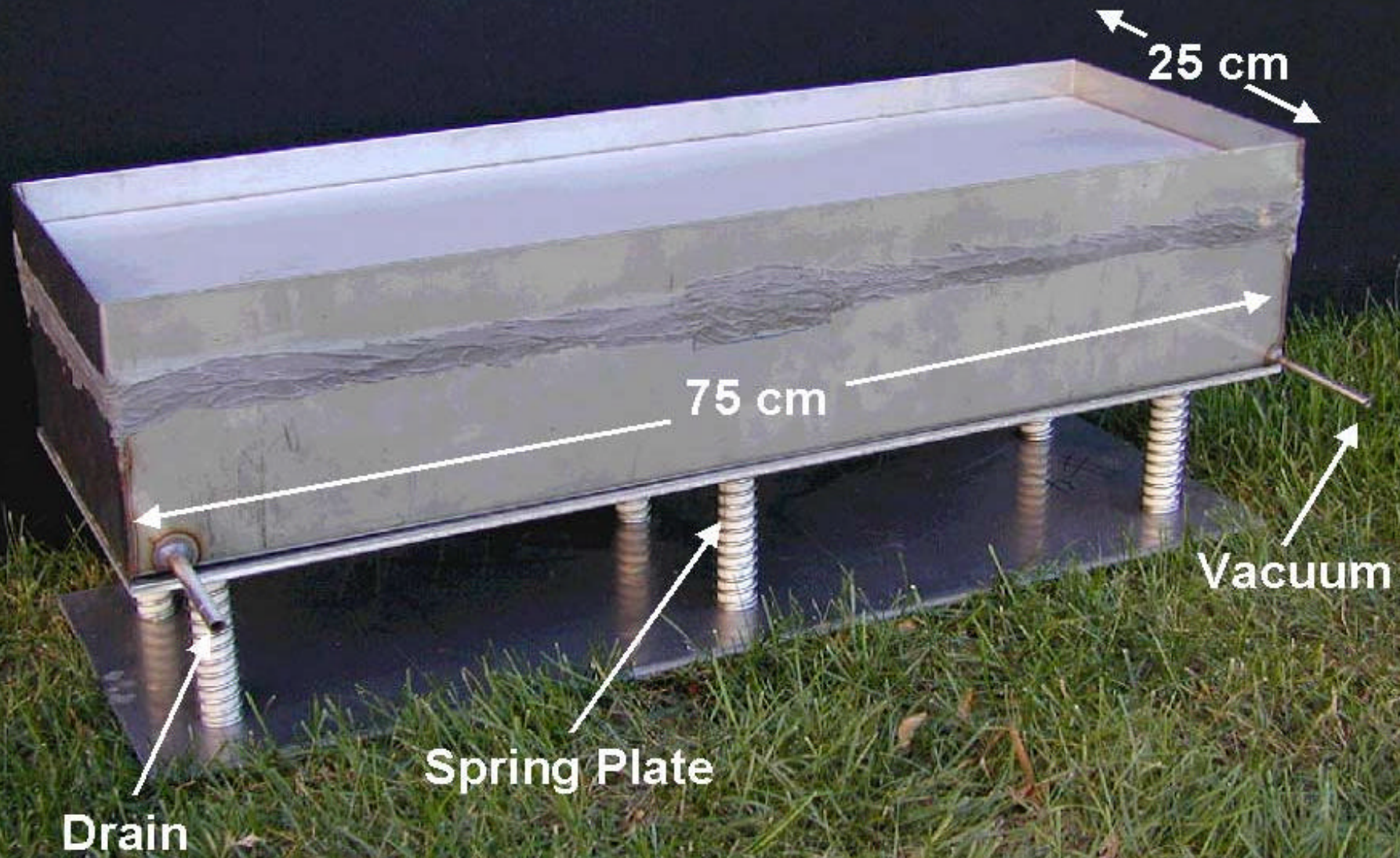
Experimental Plot Setup

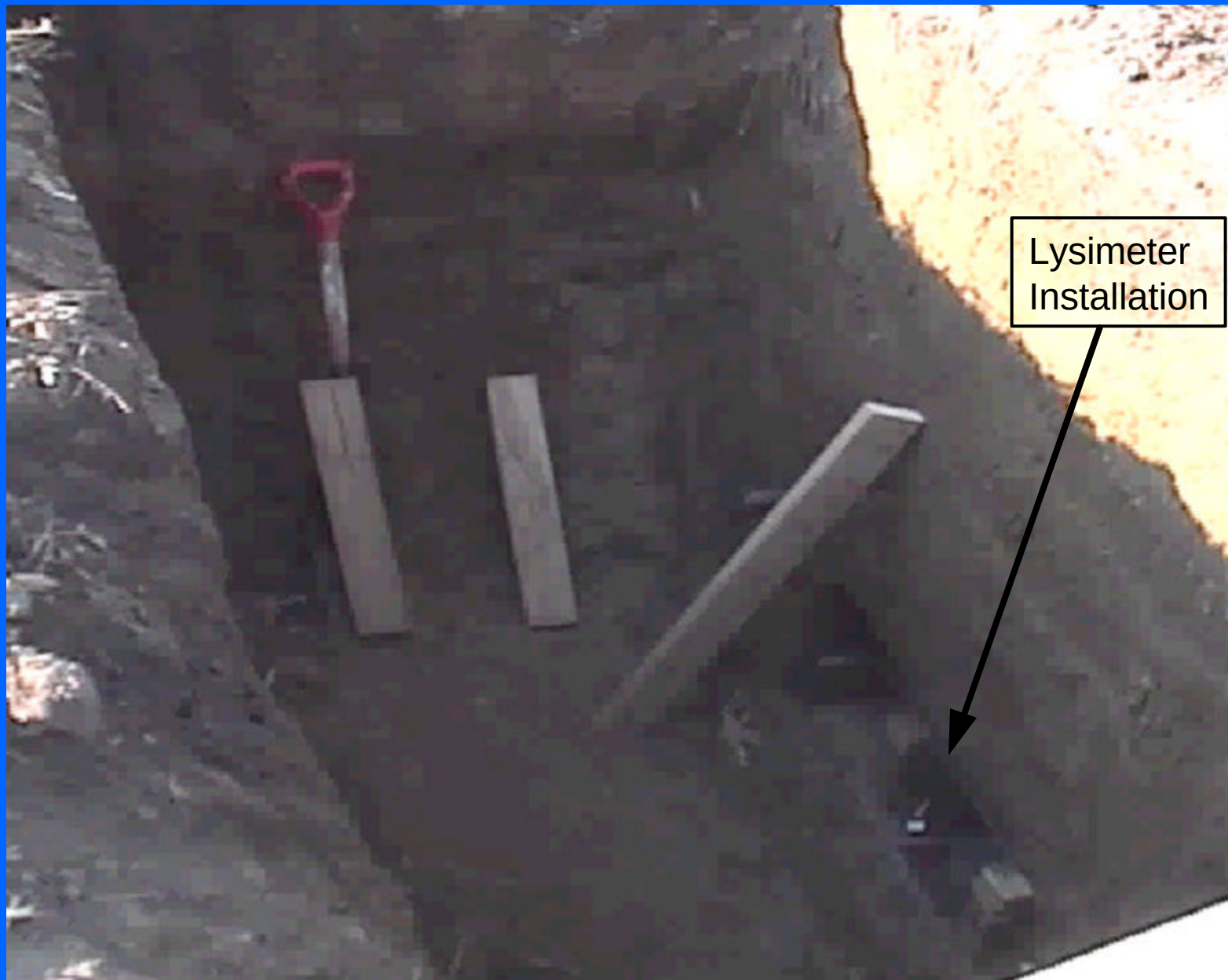
Lysimeter





Equilibrium-Tension Lysimeters



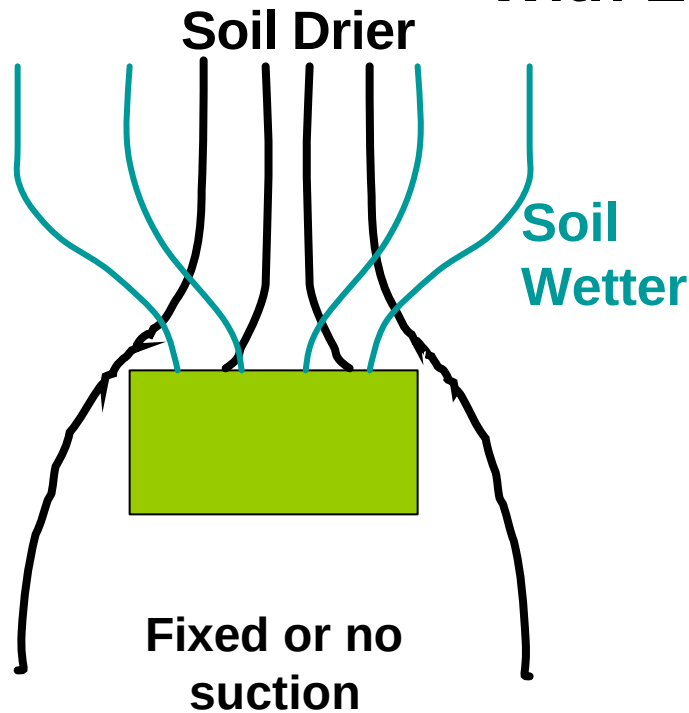


Lysimeter
Installation

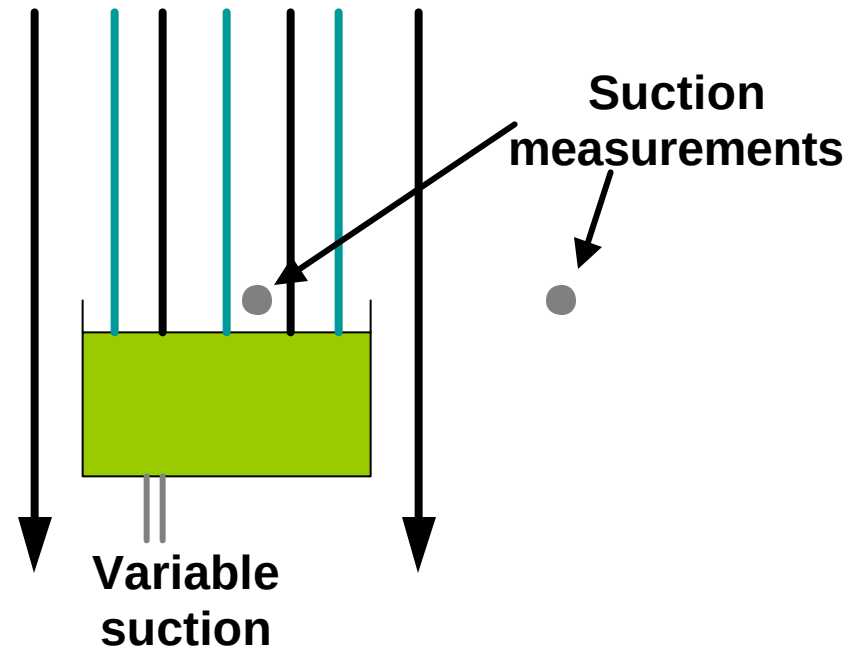




Soil Tension and Lysimeter Tension are Matched With ETL System



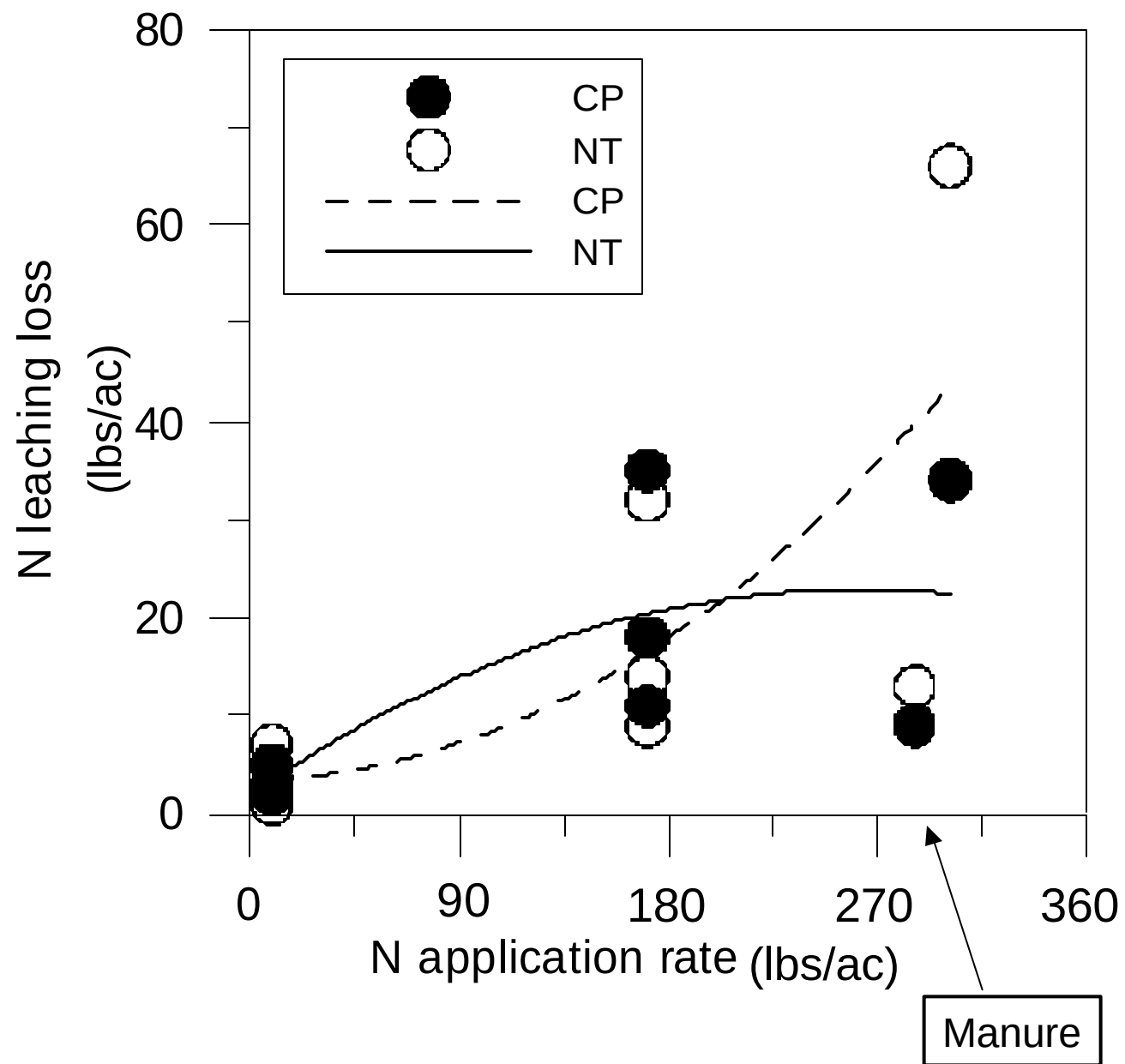
Conventional
Lysimeter

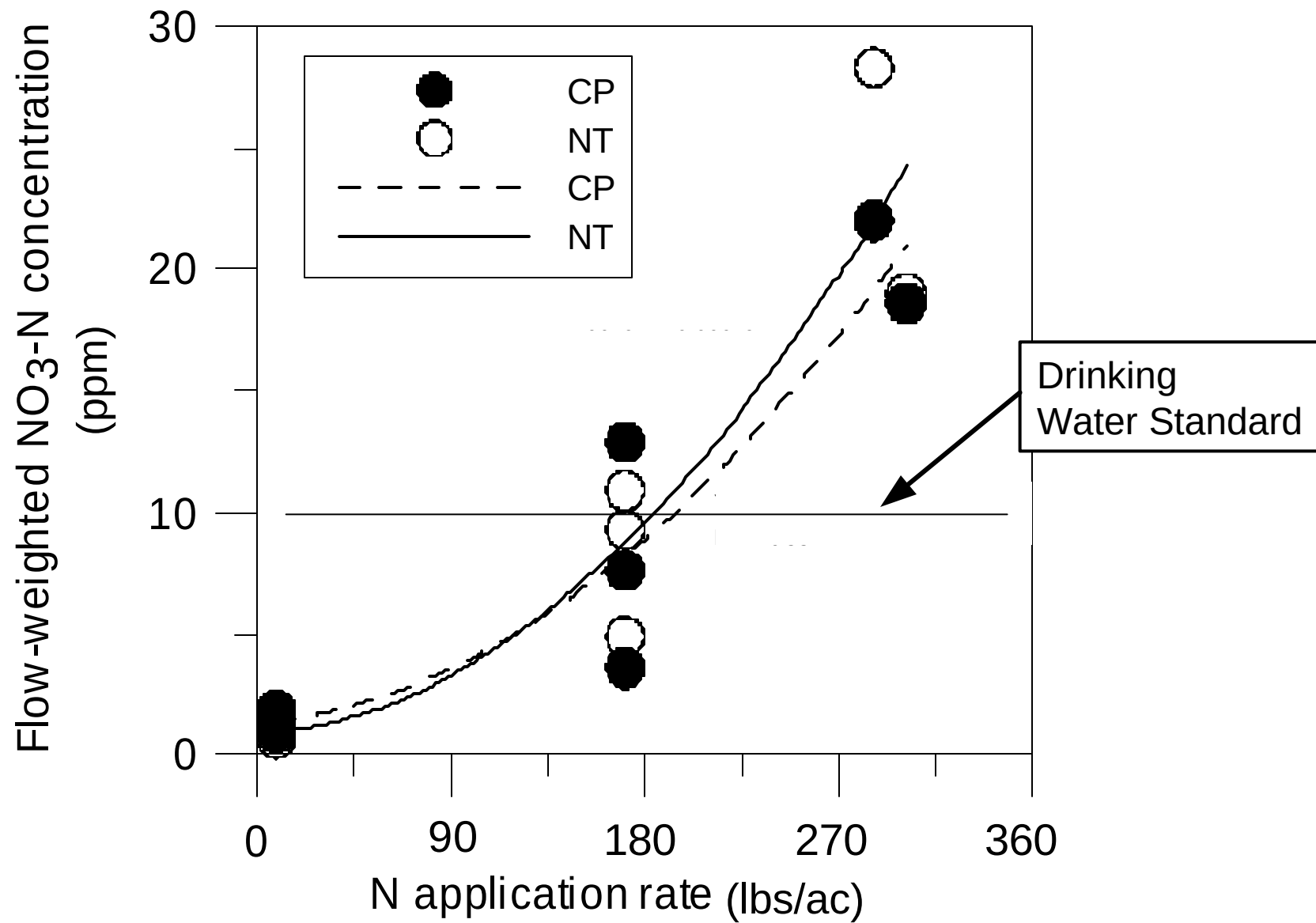


Equilibrium Tension
Lysimeter

Treatments

- Chisel Plow Tillage and No Tillage
 - 10 lb/ac starter fertilizer
 - 160 lb/ac economic optimum mineral fertilizer
 - 160 lb/ac economic optimum mineral fertilizer plus 110 lb/ac semi-solid manure

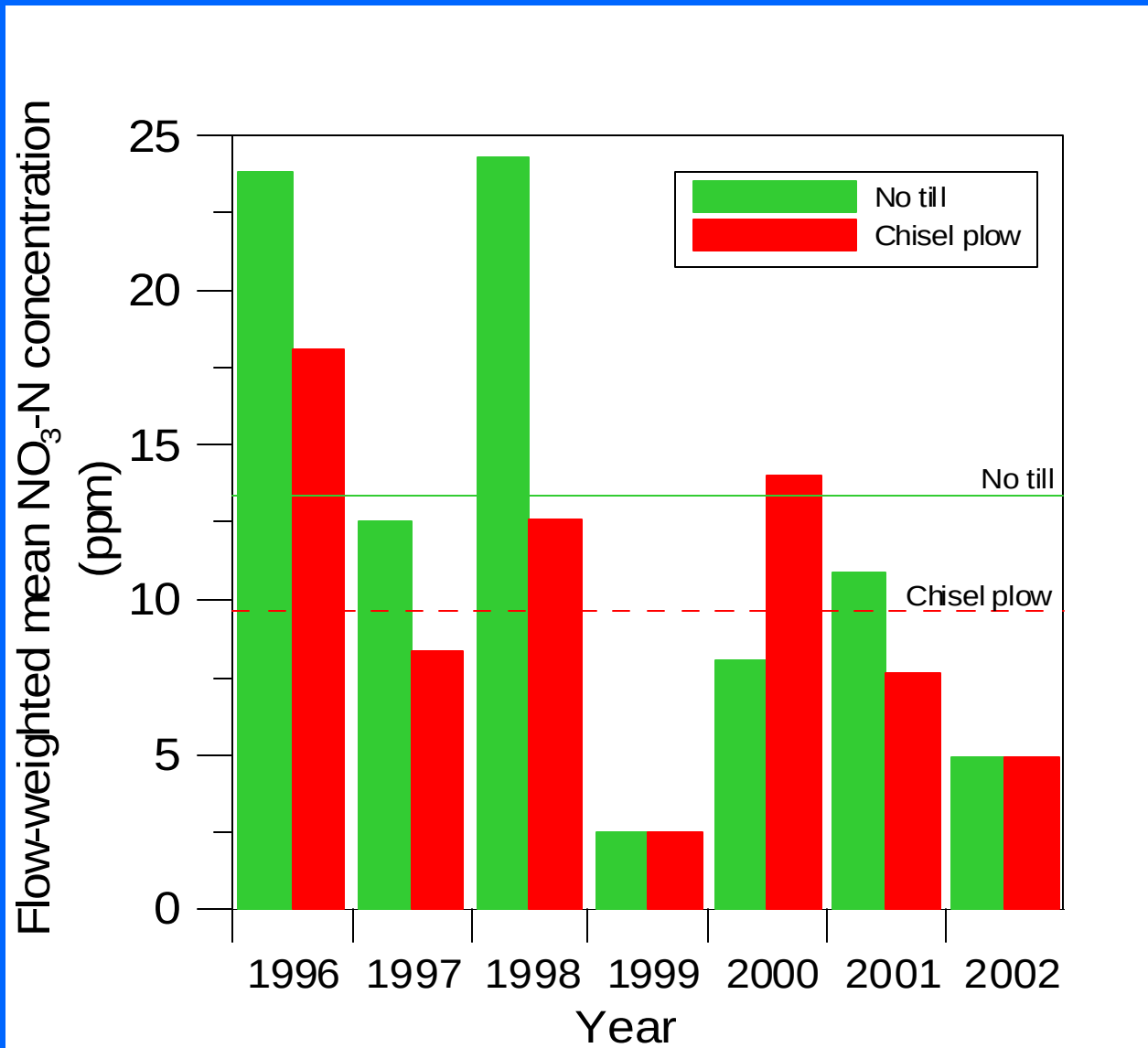




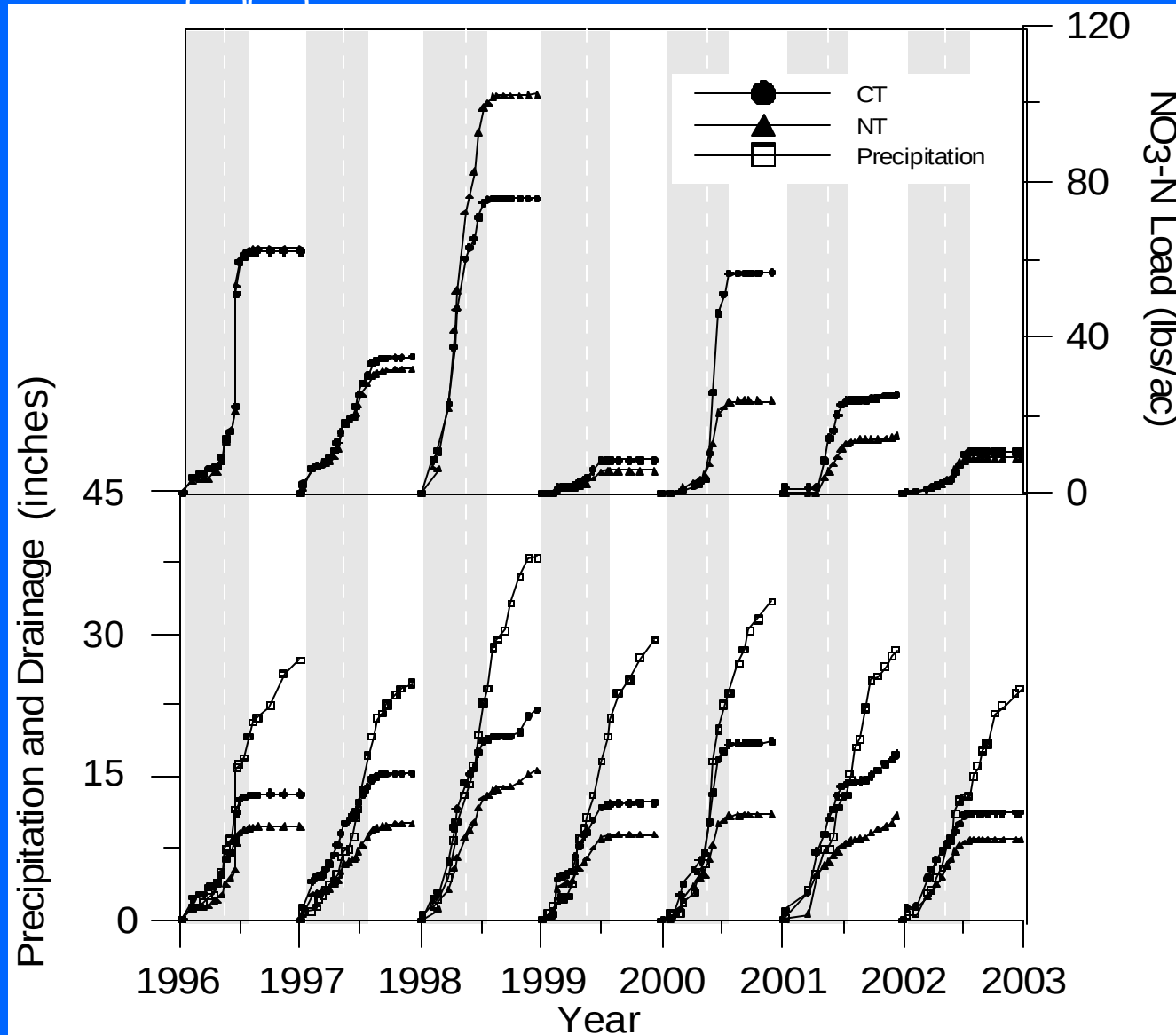
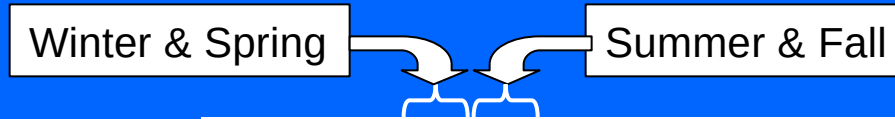
Long-Term Measurement of Nitrate Leaching Below Corn Agroecosystems

Seven Years of Continuous Measurement
of Nitrate Leaching and Drainage

Annual Mean Nitrate-N Concentration



7 Years of Drainage and Leaching Measurements at Arlington Wisconsin

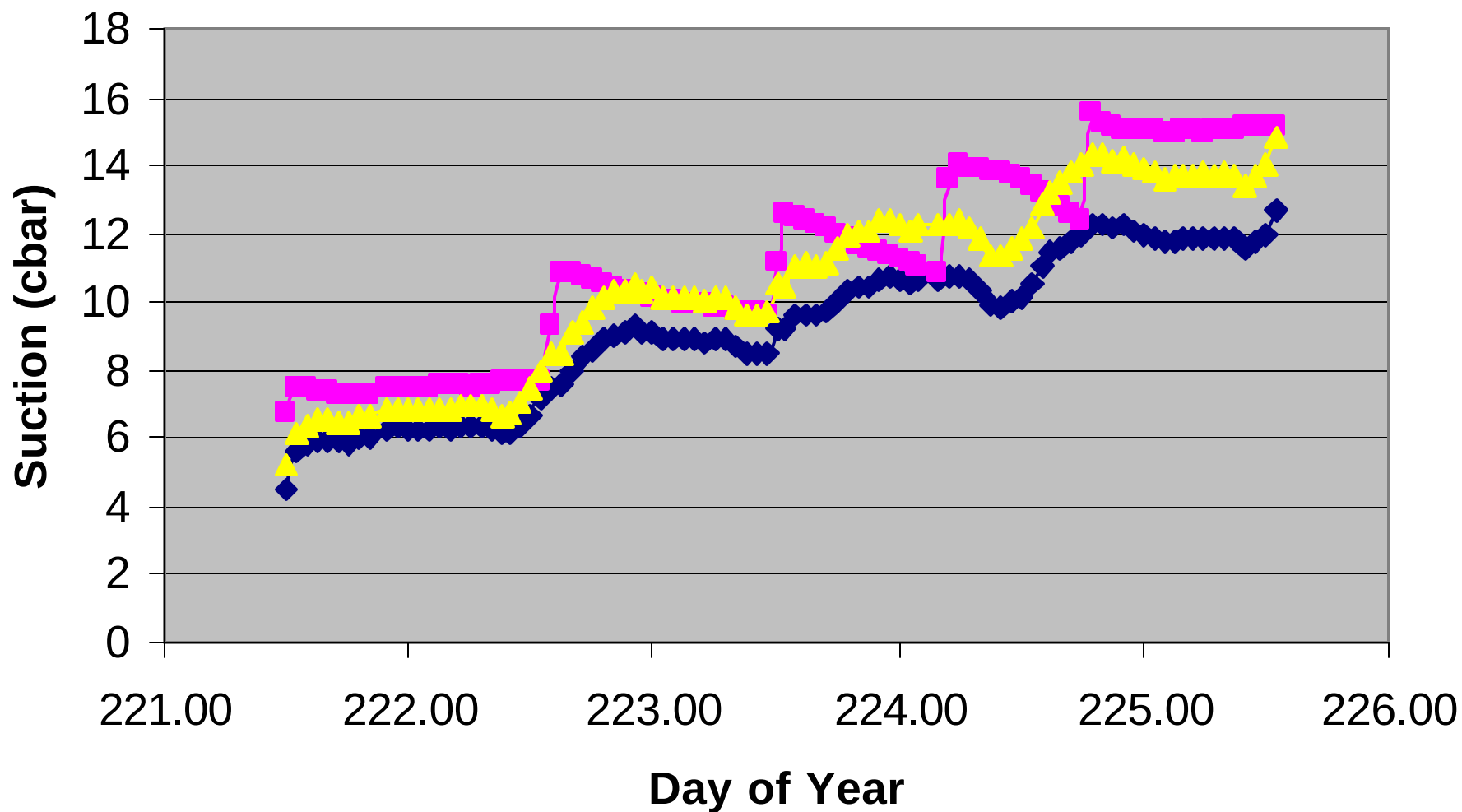


Mean Flow-Weighted Nitrate-N Concentration Over 7 Years

	NO₃-N Concentration (ppm)	NO₃-N Loss (lbs/ac/yr)
Chisel-plow	9.6 (1.6)*	40 (7.3)
No-till	13.3 (2.5)	38 (9.6)

Drinking Water Standard is 10 ppm so with careful management
The EPA standard could be met – may require site specific fertilization

* Standard deviation



—◆— Bulk Soil Suction —■— Lysimeter Suction —▲— Lysim Soil Suction