

# Comments and Considerations for the EPRI N2O Offset Protocol

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# **General Comments**

- Simple design
- Reasonable data requirements
  - Assuming simple farm records are sufficient
  - Verification audits
- Protocol parameters



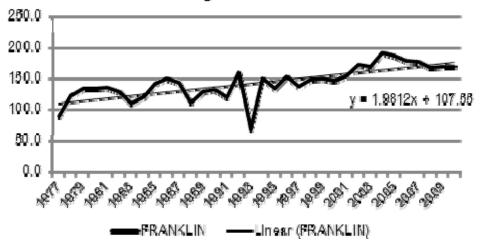
### Issues

- Protocol Parameters
  - Yield variability
  - Yield trend adjustment
  - Land inclusion stability
  - Accounting for manure
  - Nitrogen to Corn price ratio stability
    - How sensitive is the MRTN to a change in the price of corn?
    - Last year corn ranged from \$3.50 to \$7.00

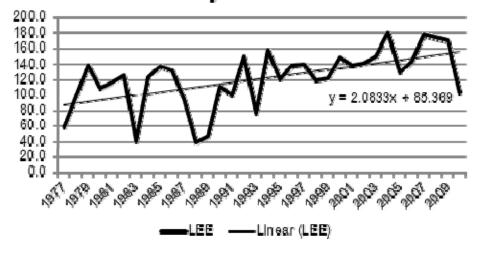


# **Yield Variability**

**County Corn Yield** 



**County Corn Yield** 

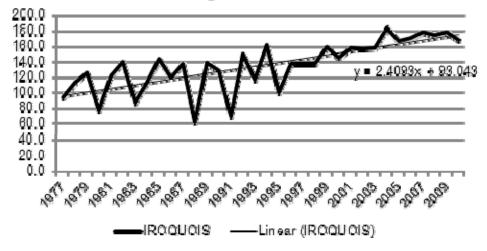


- 1/3 of the time, county yields will be more than 5% below 5-yr average
- Estimated that farm yield deviation is more than 40% of the time.
- This variability is with relatively stable N application



### Yield Trend

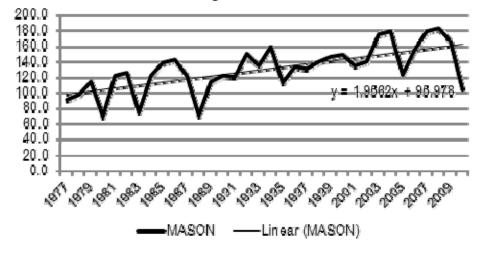
#### **County Corn Yield**



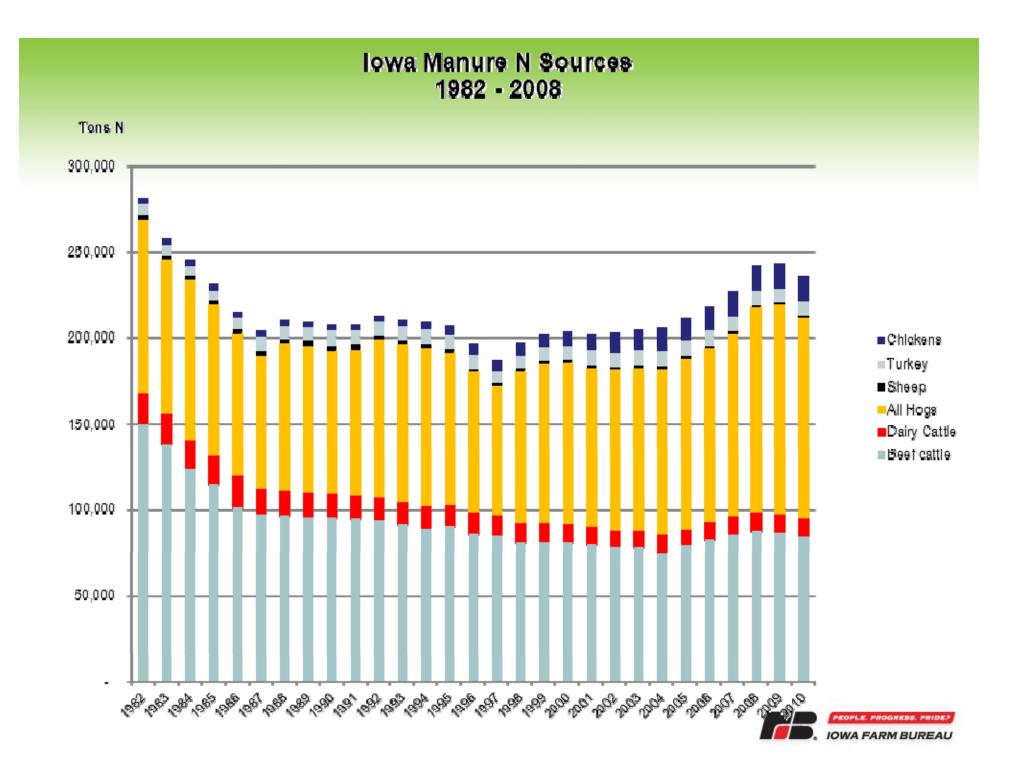
• Adjustment for yield trend.

 With 2 bu yield trend, 5-yr average already lags current yield by 3% to 5%

County Corn Yield

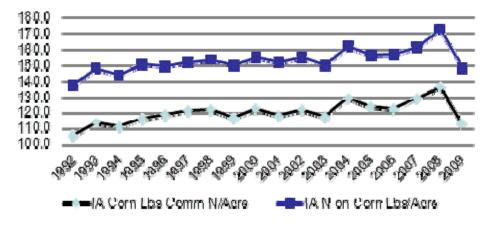




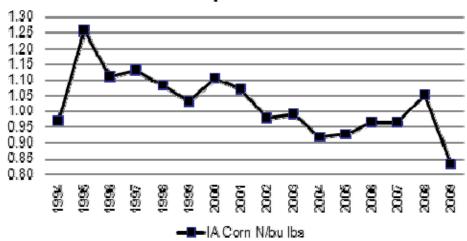


## Nitrogen Use

#### Nitrogen Applied to Corn Acres Total versus Commercial



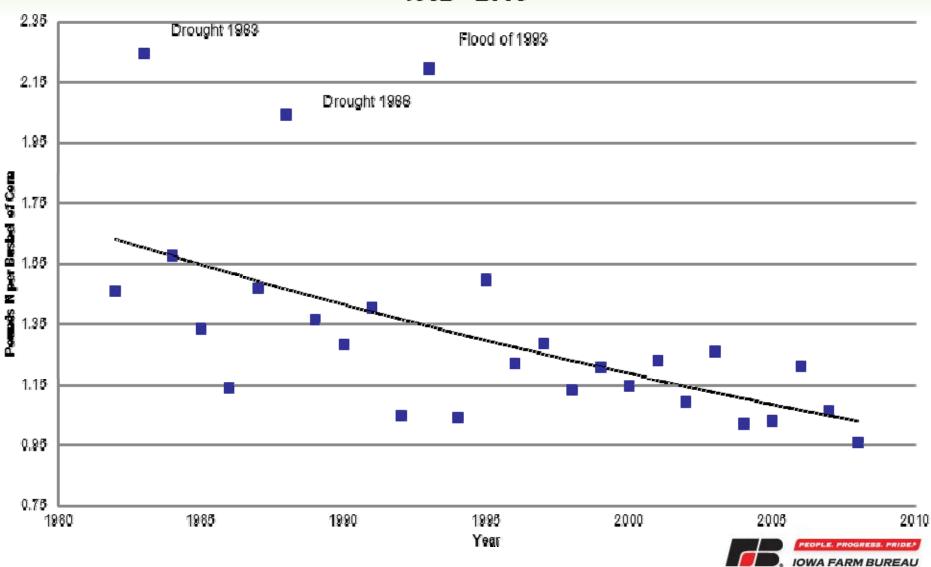
Lbs N per Bushel



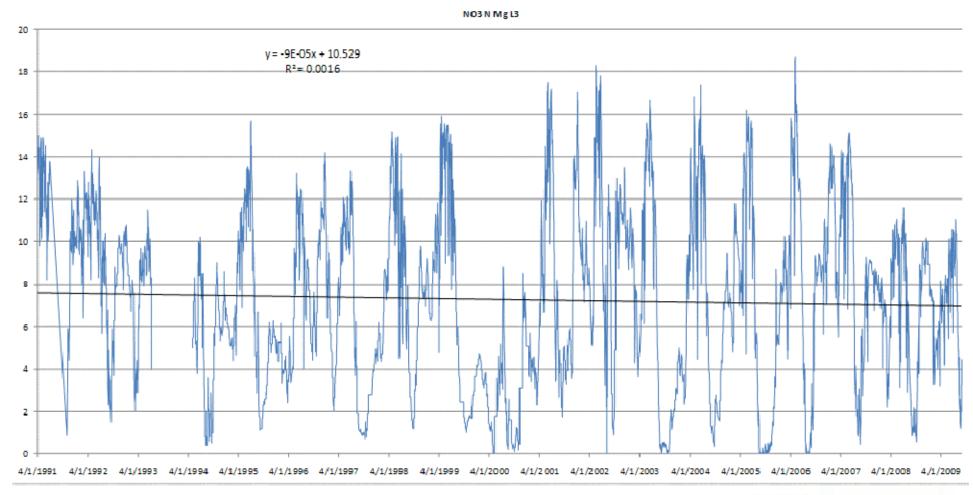
- N per acre is increasing, but total N per acre in Iowa (including manure) peaked at 170 lbs per acre. And, about 22% of the total N in the state is from manure.
- N use efficiency was improving until 2005. Recently, higher corn prices have stimulated increased N application per acre. But this increased N use may be quite economical. See how N use declined with the decline in corn price for 2009.



#### Total Nitrogen per Bushel Purchased & Manure Iowa Corn 1982 - 2008

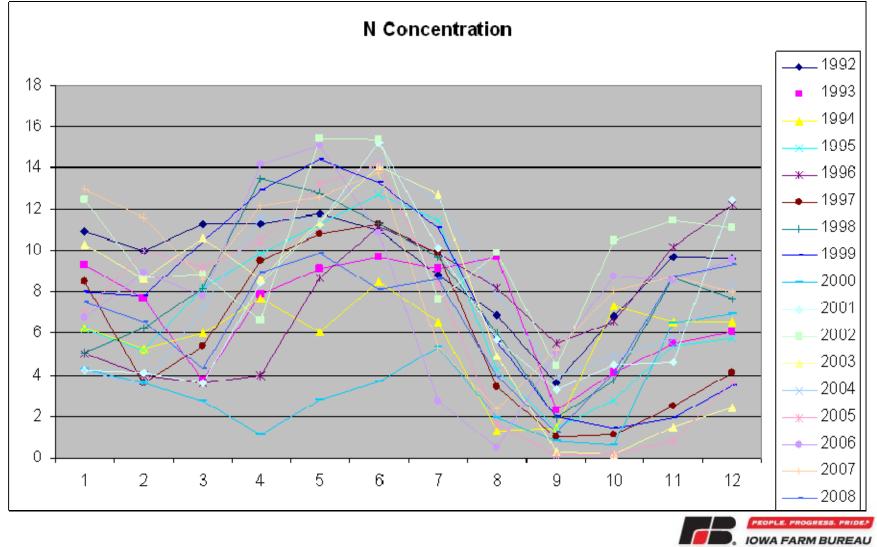


# Raccoon River N concentration Since 1991

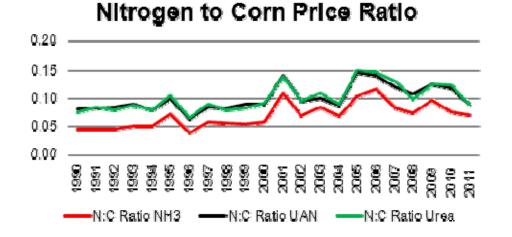




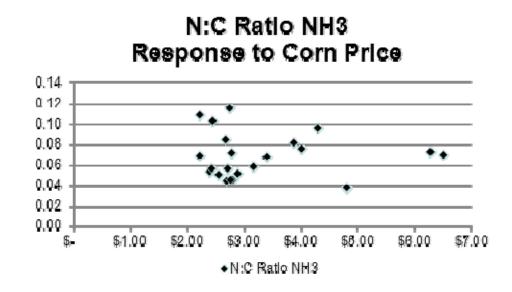
# Raccoon River N concentration Seasonal Pattern

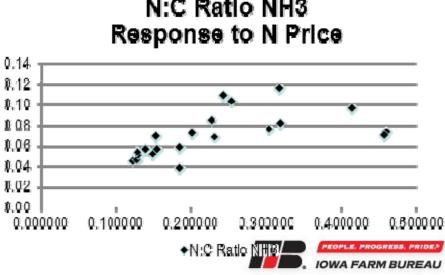


### Nitrogen to Corn Price Ratio



The ratio of the price of nitrogen to the price of corn is somewhat stable over time, but has been slightly increasing over time making N fertilizer more expensive on a relative basis compared to corn.





### N:C Ratio NH3

# Is it worth It?

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In Franklin County Iowa, a 20% reduction in N application (167 lbs/acre to 133 lbs/ac) only generates 0.16 mt of CO2 eq per year.

On a 1,000 acre farm with 500 acres of corn, this is 80 credits per year.

At \$20 Carbon & \$5 corn, if average corn yield declines by 2.64 bu/ac, then there is no net value to the farmer even if administrative costs are zero and accounting for reduced N costs.



# **Aggregation Issues**

- Verifiable records & audits
  - N inputs; Production;
    - Farm versus field records
    - Tax & Crop Insurance records
    - Cash accounting versus accrual records
- Carbon market stability
- Aggregation model
  - Build it & they will come?
  - Forward contracts?





## Thank You

