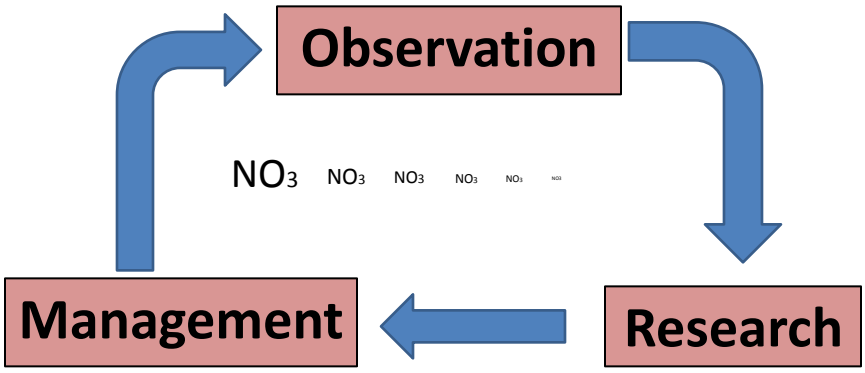

Symbiosis of Scientific Research and Management

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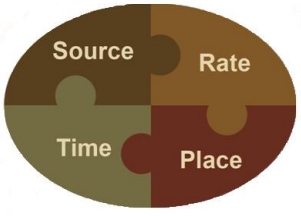
The science and practice of **Soil N Fertility**.



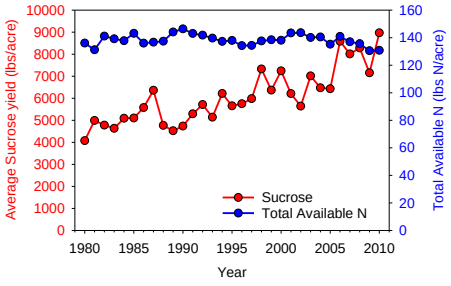
Goal:

- Optimize crop yields
- Maximize producer profits
- Maximize N use efficiency
- Minimize NO_3 leaching

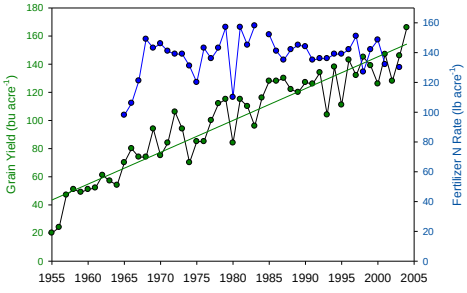
Research and Management Collaboration

USDA Agricultural Research Service
Northwest Irrigation and Soils Research Laboratory

- Research has led to many breakthroughs to help meet these goals. **Crop production and fertilizer data supports improvement claims**.



Sugarbeets – North Central US



Corn – Nebraska

Yield vs N Rate

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- **However**, there is a need for more research and implementation of proven practices to continue improving.

Research and Management Collaboration

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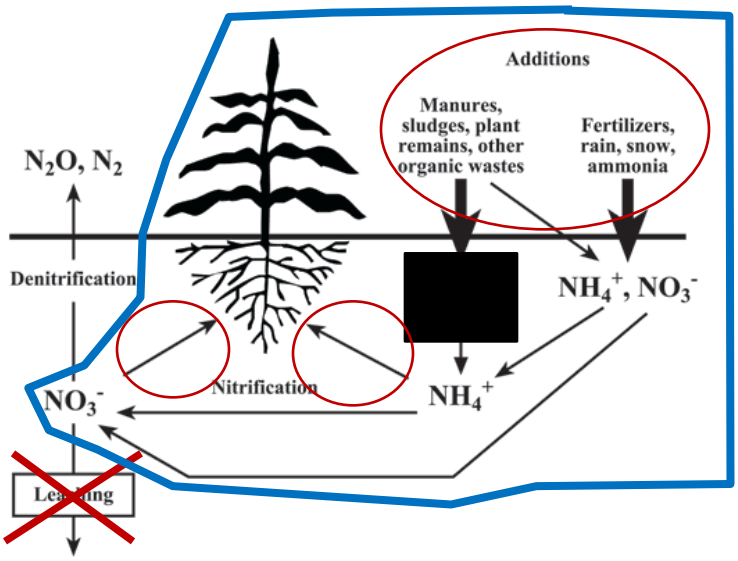

Nitrogen Cycle

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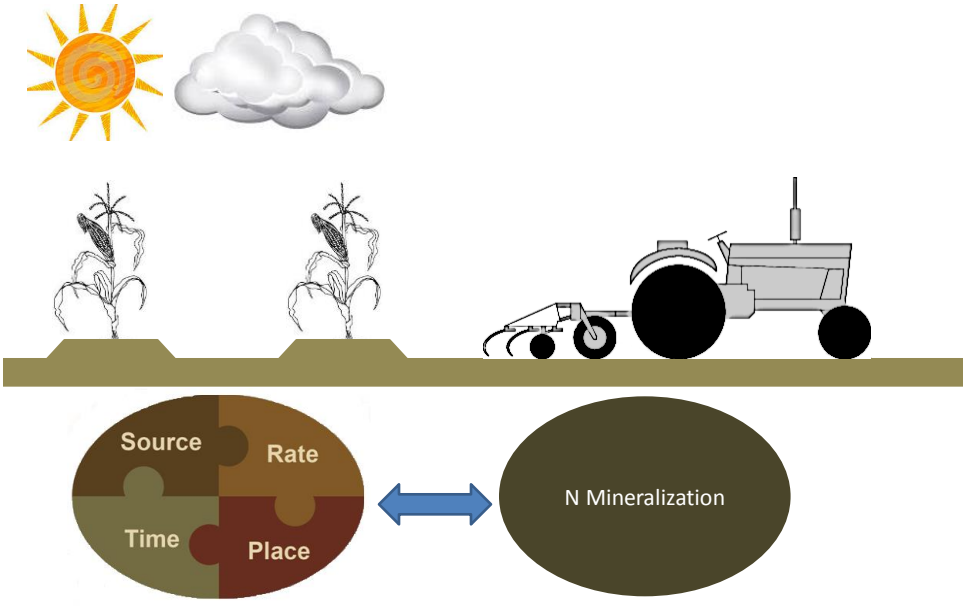

N Mineralization is Significant in Idaho

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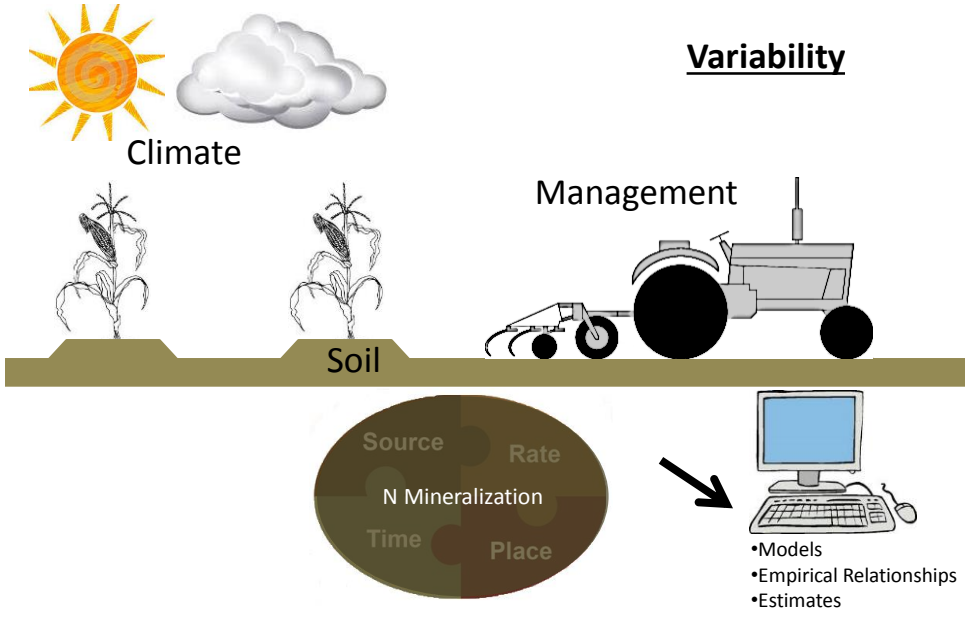

N Mineralization is Significant in Idaho

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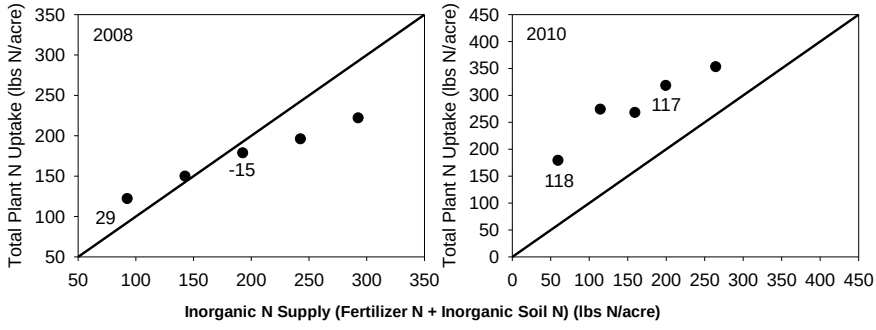

Mineralization Variability

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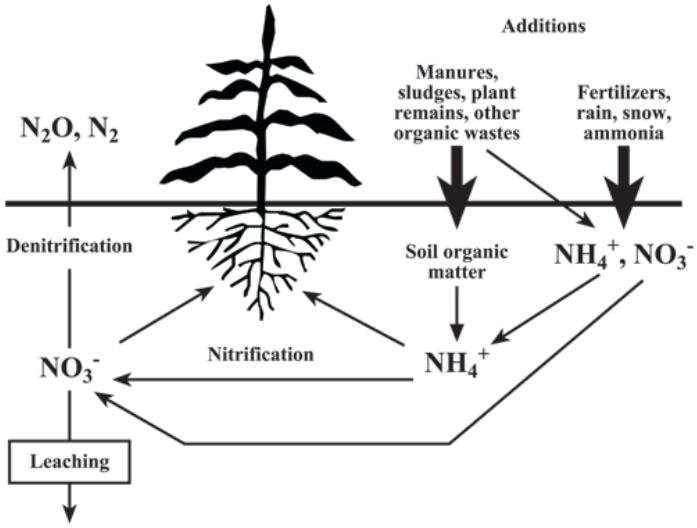

Nitrogen Cycle

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- Right source
  - Conventional sources – Urea, UAN, etc.
  - Slow and controlled release (ESN, Super U, etc.)
  - Manure, compost
- Right time
  - Fall, spring, split applications, irrigation injection, etc.
- Right place
  - Broadcast, band, band location (surface or sub-surface, rate relative to seed), foliar, etc.
- Right rate
  - Can vary based on source, time, and place
  - **linked to MINERALIZATION**

Research and Management Opportunities

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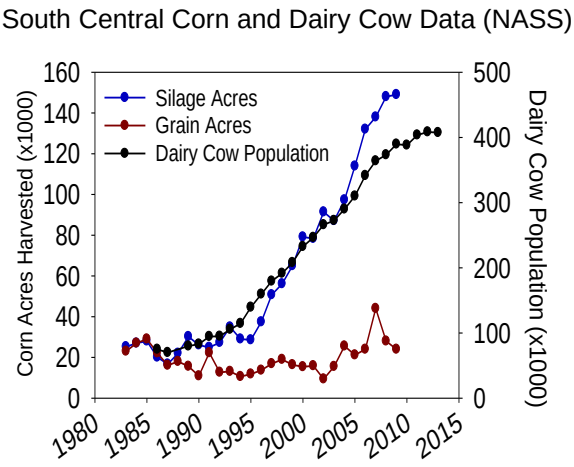
- Corn N recommendation – Focus on rate

13 site years

113 site years



Research is needed- eg. Right Rate

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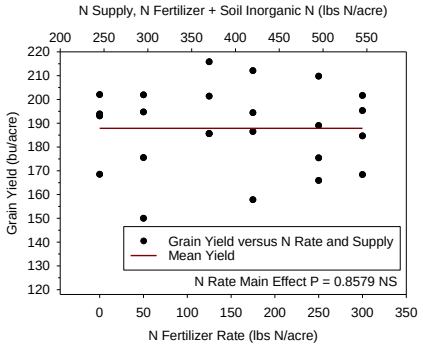

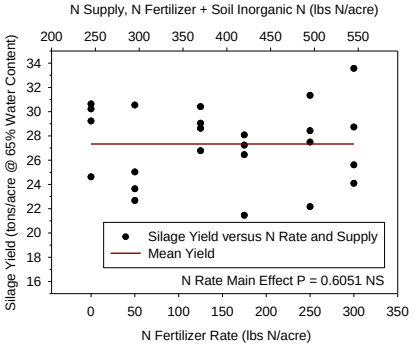

Site	Kimberly, ID
Soil	Portneuf silt loam
Year	2014
Soil Test N, 0-24 in	45 ppm
Inland Pacific Northwest Grain Fertilizer Recs	120-130 lbs N/acre
Inland Pacific Northwest Silage Fertilizer Recs	90 lbs N/acre

Corn Response to Nitrogen

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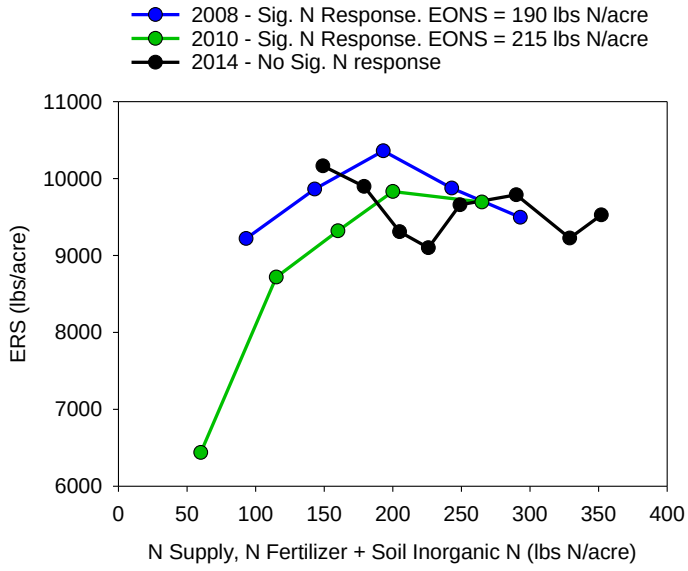

Sugarbeet Response to Nitrogen

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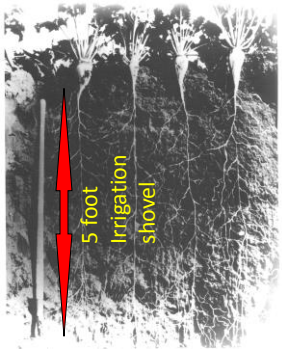
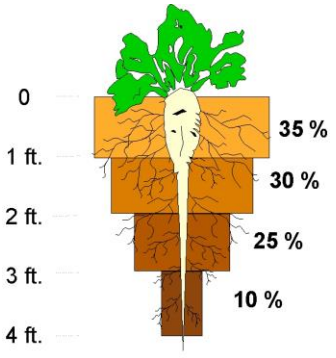
- Soil sampling depth
  - Capture the amount of N available at the beginning of the season.
  - DEPTH of sampling!!!!





1 Example of management improvements we can implement now

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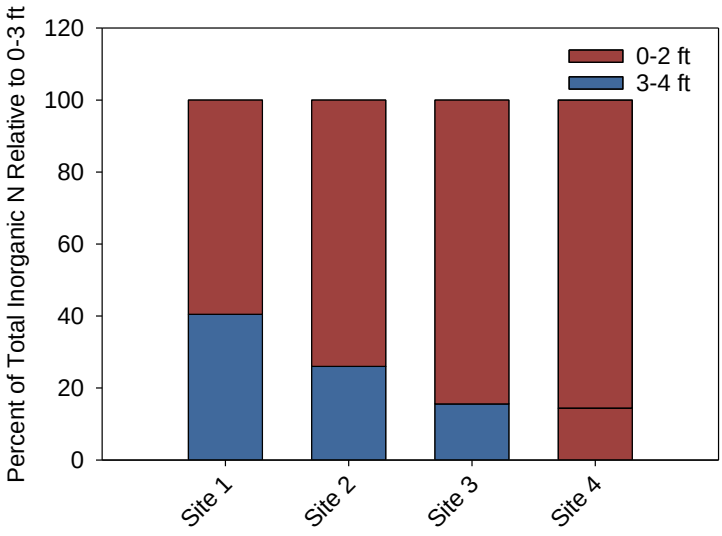

Amount of Residual N Over Soil Depth

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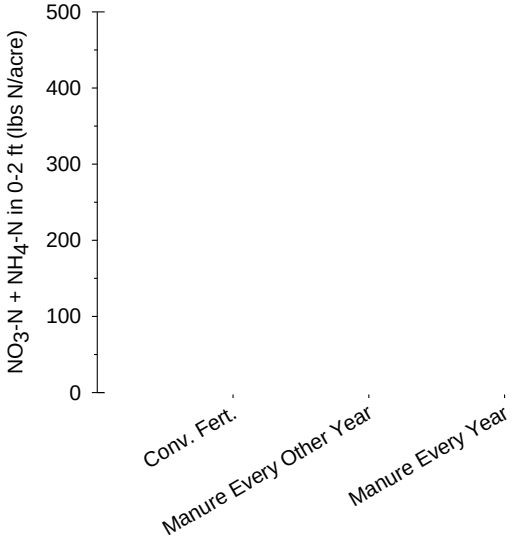

Effect of Past Manure on N Mineralization

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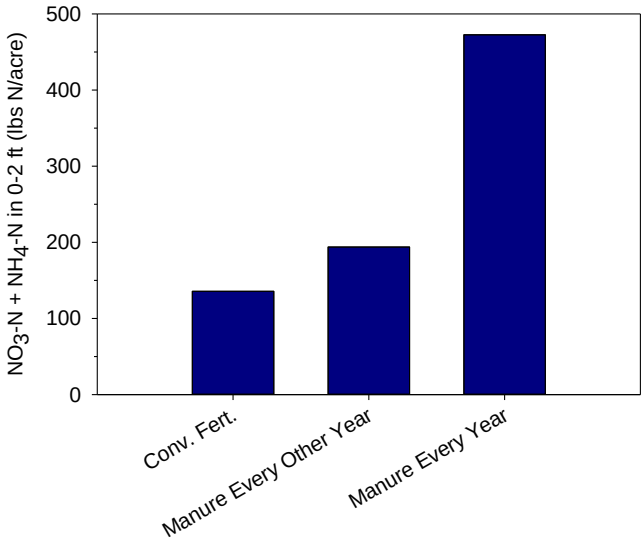

Effect of Past Manure on N Mineralization

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Research Will Continue to Improve N Management in Idaho Cropping Systems

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