Soil Fertility, Management and Precision Agriculture

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What Are Soil Management Zones?

• **Areas of the field a relatively homogeneous combination of yield limiting factors**
  – Factors may be manageable (fertility, compaction)
  – Factors may not be manageable (soil texture)

• **Areas of the field where management changes due to other factors**
  – Environmental concerns
  – Aesthetic concerns
What Are Manageable Soil Properties?

• Soil properties that we can directly affect
  – Fertility
  – pH
  – Bulk Density (Compaction)
  – Surface Drainage
  – Erosion
  – Etc.
Non-Manageable Soil Properties

- Soil properties that we have to work around
  - Soil Texture
  - Topography
  - Subsurface Drainage
  - CEC
  - Previous History
  - Etc.
Ways To Use Soil Management Zones

- Manage for limiting factors
  - Variable tillage (compaction)
  - Variable fertility
  - Variable drainage
  - Etc.
Ways To Use Soil Management Zones

• Manage around non-changeable factors
  – Texture (fertility, variety choice, etc)
  – Drainage (irrigation, variety choice, etc)
  – Topography (field operations, irrigation, etc.)
  – Etc.
Why Would Soil Management Zones Be Useful?

• Save time in the field by only treating the areas that need treating
• Save money by reducing inputs
• Increase yield in problem areas???
• Increase Maximum Economic Yield.

• Caution: Soil Management Zones are not the “Silver Bullet”. They must figure into an overall management plan.