

Soil Fertility, Management and Precision Agriculture

Michael Cox

Soil Scientist

Department of Plant and Soil Science

What Are Soil Management Zones?

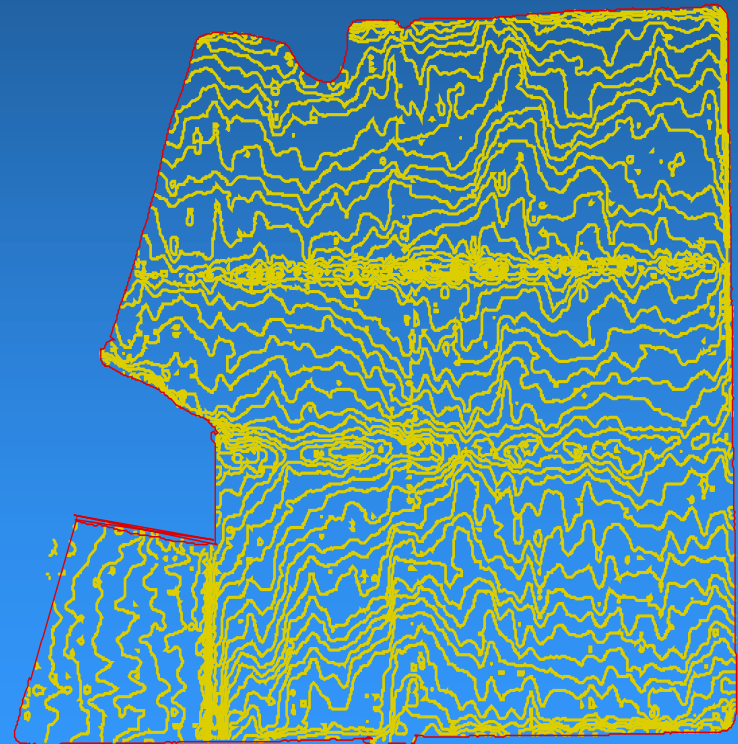
- **Areas of the field a relatively homogeneous combination of yield limiting factors**
 - Factors may be manageable (fertility, compaction)
 - Factors may not be manageable (soil texture)
- **Areas of the field where management changes due to other factors**
 - Environmental concerns
 - Aesthetic concerns

What Are Manageable Soil Properties?

- **Soil properties that we can directly affect**
 - **Fertility**
 - **pH**
 - **Bulk Density (Compaction)**
 - **Surface Drainage**
 - **Erosion**
 - **Etc.**

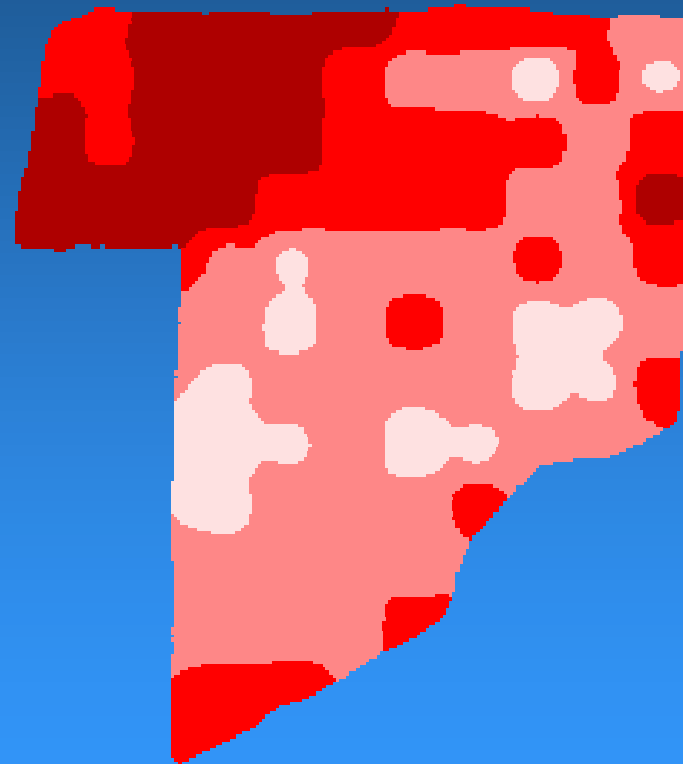
Non-Manageable Soil Properties

- **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.**