



Biological Systems Engineering

UNIVERSITY OF WISCONSIN-MADISON

Introduction to Ag. Data Management Software AgLeader SMS

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Agriculture Advancement 100 yrs



Technology Advancement

- Computing power available to us?
- Apollo Guidance Computer = 64 KB memory/0.043 MHz
- Samsung Galaxy S7 = 4 GB memory/2x1.59 GHz and 2x2.15 GHz
→ More than 2 Million times faster

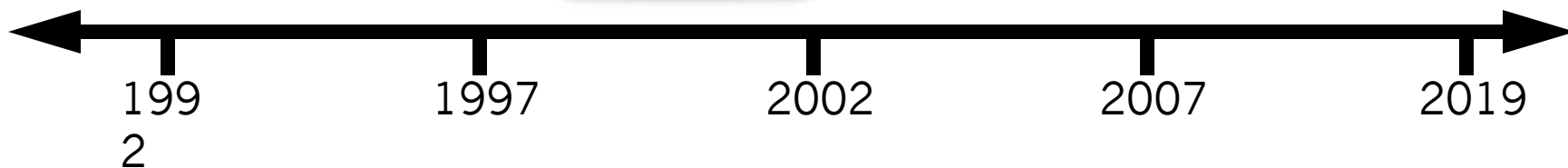
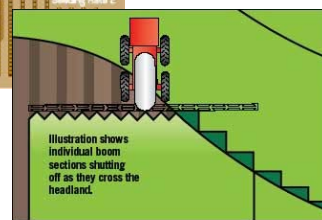
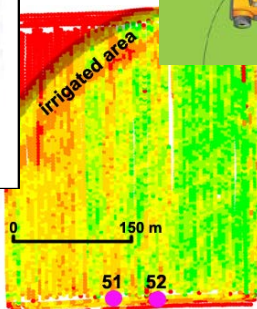
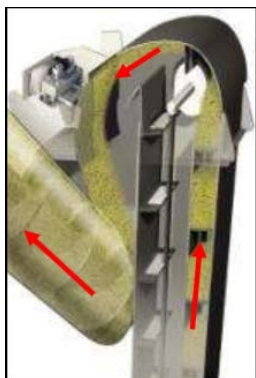


Is this your tractor cab?

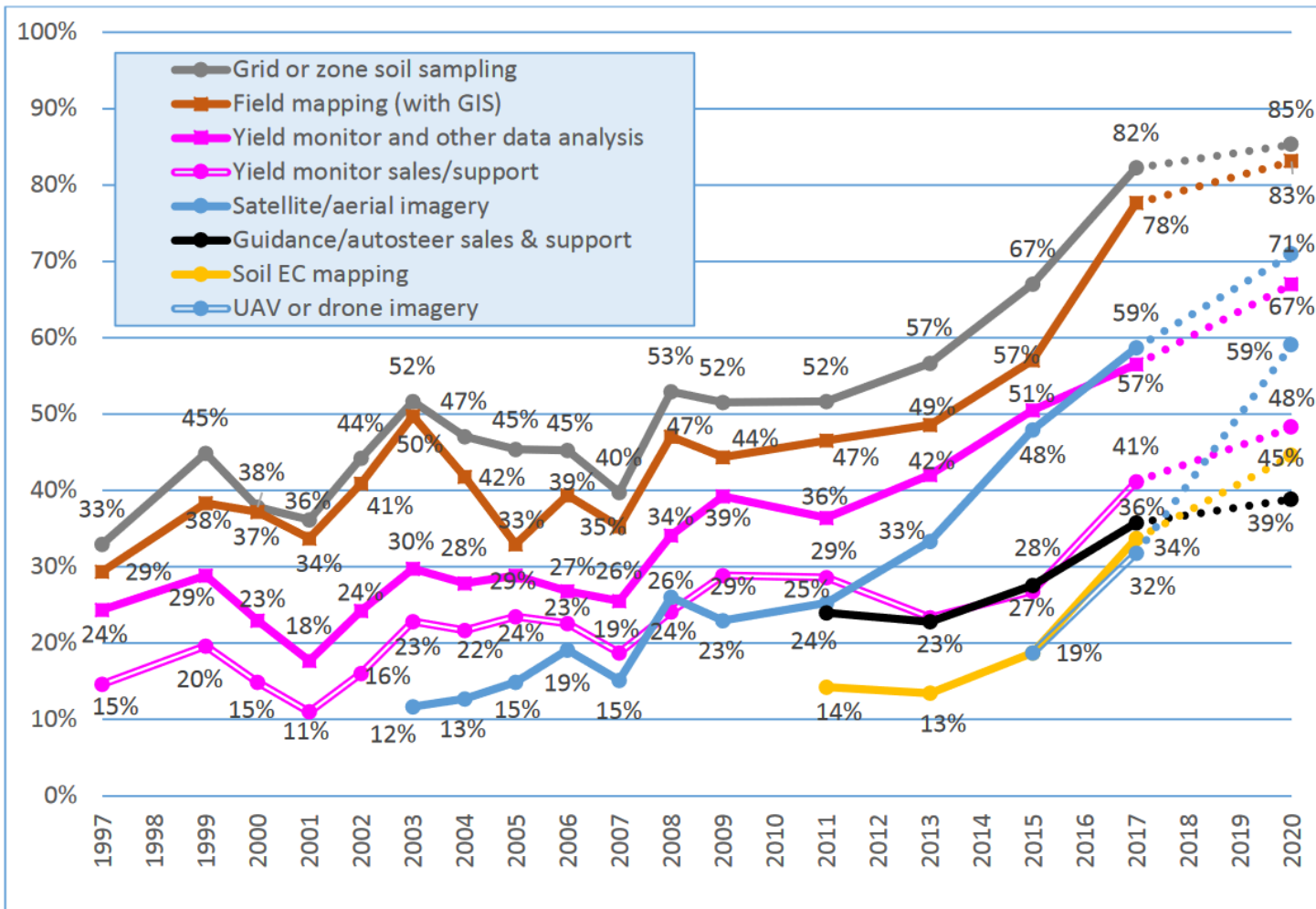


Precision Agriculture History

- | | | | |
|--|--|---|--|
| <ul style="list-style-type: none"> • Data Collection <ul style="list-style-type: none"> • GPS • Yield Monitoring • Spatial Measurements | <ul style="list-style-type: none"> • Steering Control/ Variable Rate <ul style="list-style-type: none"> – Light Bar – Auto-Steer – VRA Nutrient Application | <ul style="list-style-type: none"> • Implement Control <ul style="list-style-type: none"> – Nozzle on/off – Planter Row Unit on/off – Implement Steering | <ul style="list-style-type: none"> • Data/Control Refined <ul style="list-style-type: none"> – Variable Rate Seeding – Continuous Monitoring – Unmanned Aerial Vehicles – Data Collection and Management |
|--|--|---|--|



Technology Adoption Rates



B.Erickson, J. Lowenberg-DeBoer, and J. Bradford (2017)

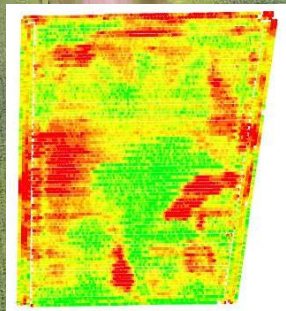


Data Analysis:

Data Collection:

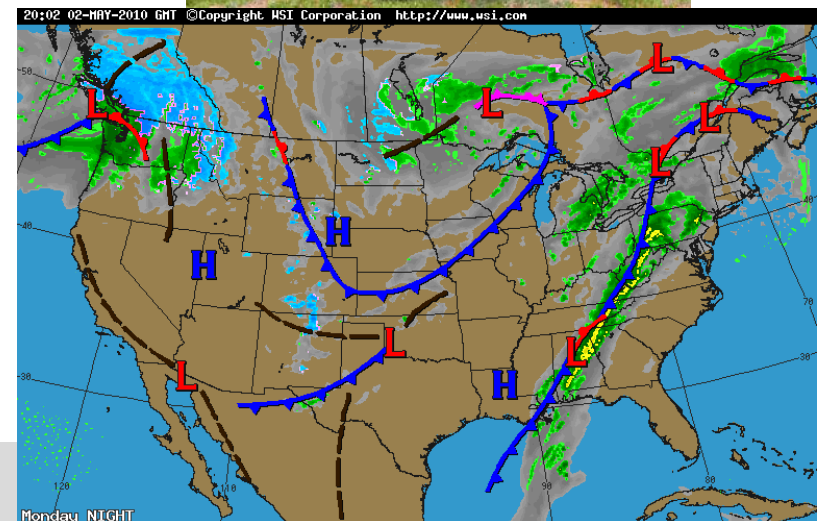
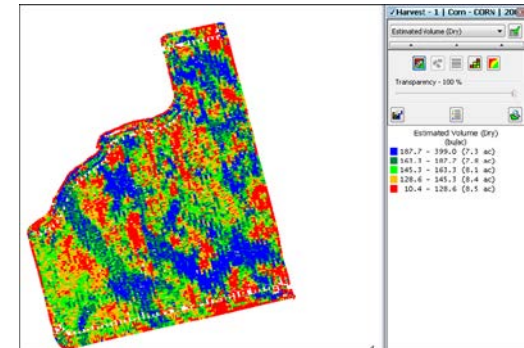
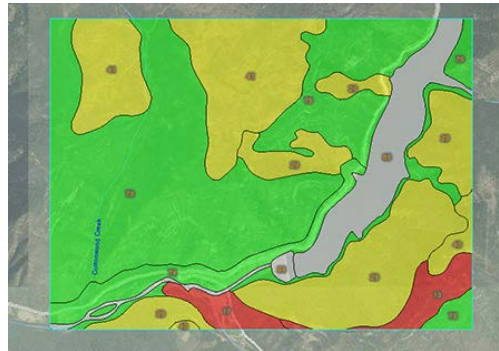
Decision Making:

Implementation:



Ag. Data of Interest

- Yield
- Soil data
 - Soil Fertility
 - Soil Type
 - Soil Water Holding Capacity
- As Applied Data
 - Fertilizer
 - Seed
 - Water – if irrigated
- Weather





AgLeader SMS

- SMS = Spatial Management Software
- Capabilities include (straight from website):
 - Soil sampling
 - Field tile plans
 - Soil survey and road overlays
 - Plan and document
 - Crop
 - Tillage
 - “Other activities”

AgLeader SMS

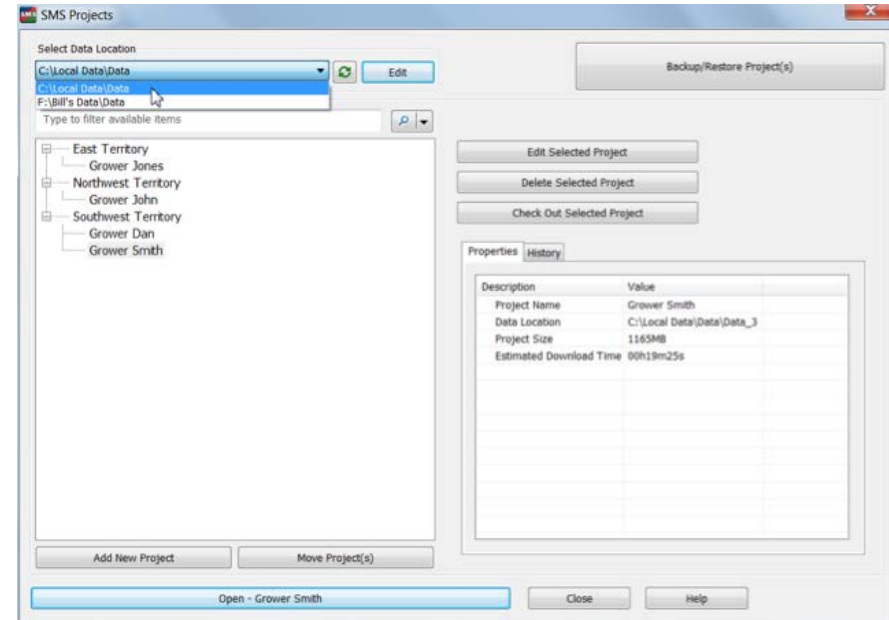
- Capabilities include (cont'd):
 - Planting
 - Seed selection based on historical yield
 - Reports and charts on planter performance
 - Precision data for government reporting
 - Application
 - Track application operations
 - Record applications (recordkeeping)
 - Create variable rate application maps and prescriptions

AgLeader SMS

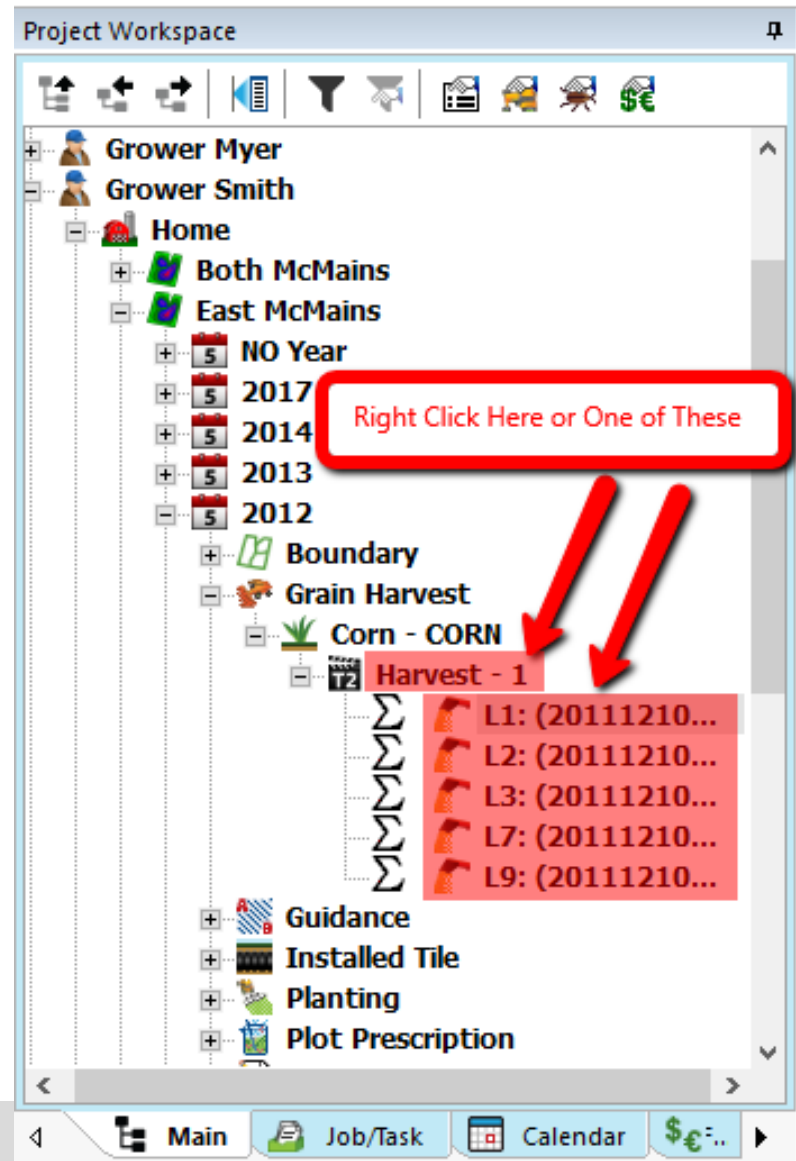
- Capabilities include (cont'd x2):
 - Harvest
 - Analysis of harvest data
 - Discover yield trends
 - Harvest reports and charts w/query tools

AgLeader SMS

- First and foremost SMS = Database
- Hierarchy built in and designed for Ag. Data
 - Grower
 - Year
 - Farm
 - Field
 - Operation
 - Data values



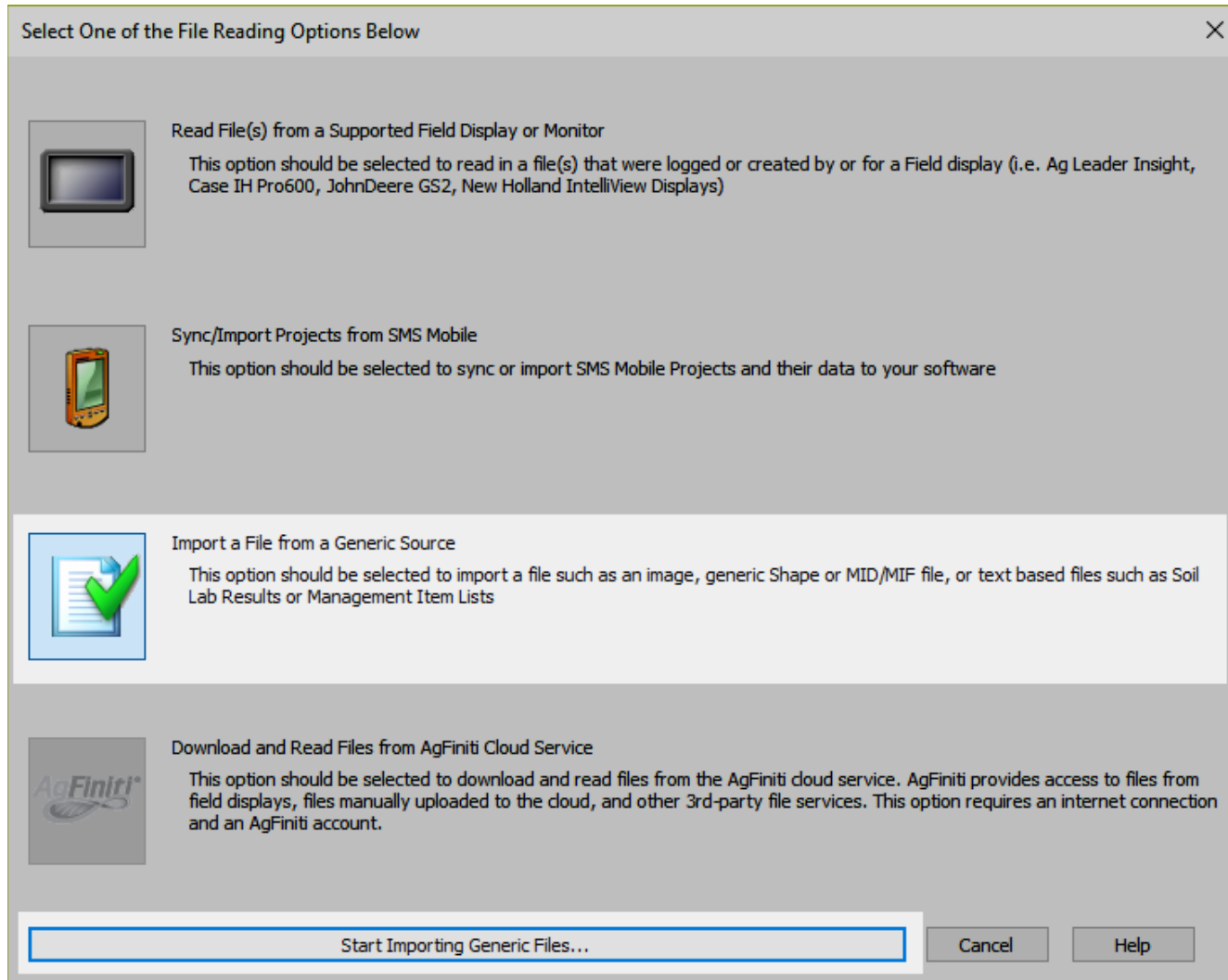
AgLeader SMS



AgLeader SMS

- Data import
 - Many file type options
 - Many different data sources
 - Projections and mapping handled by the software

AgLeader SMS




AgLeader SMS

Select File Import Method ✕

☒ Select a File Format/Type to Import

3D Surface Files

 **Images** >>

Management Items Files (Product Lists)

MapInfo MID/MIF File

Non-Spatial Files (Lab Results)

Shape File

Text Files


TIGER Files

Search for ALL File Formats Below

- Graphic Interchange Format (*.gif)
- JPEG (*.jpg;*.jpeg)
- JPEG 2000 (*.jp2)
- MrSID (*.sid)
- Portable Network Graphics (*.png)
- Tagged Image Format (*.tiff;*.tif)
- Windows Bitmap (*.bmp)
- Windows Metafile (*.wmf)

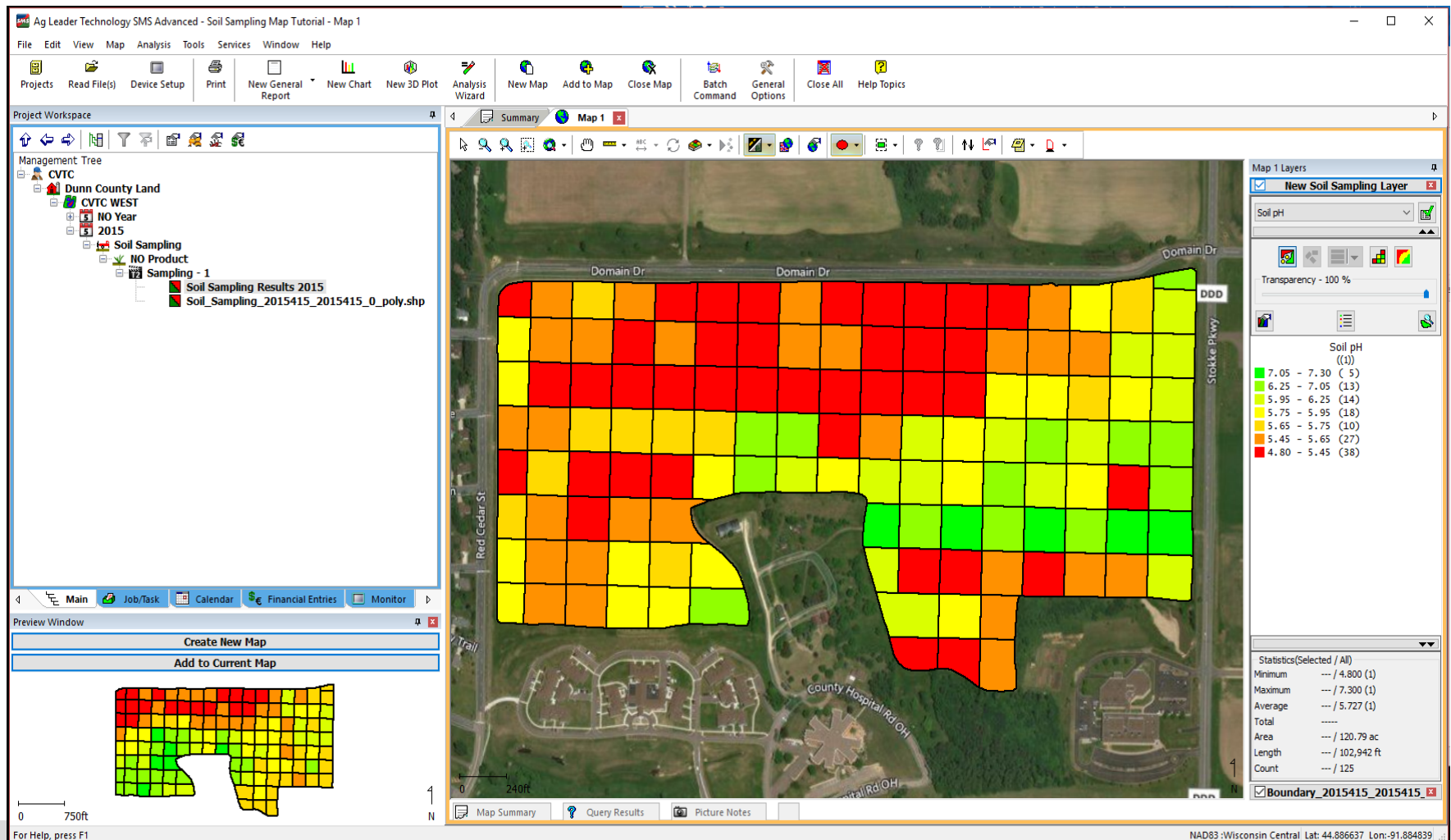
☐ Import a File Using a Saved Template

Browse...

 Cancel Help

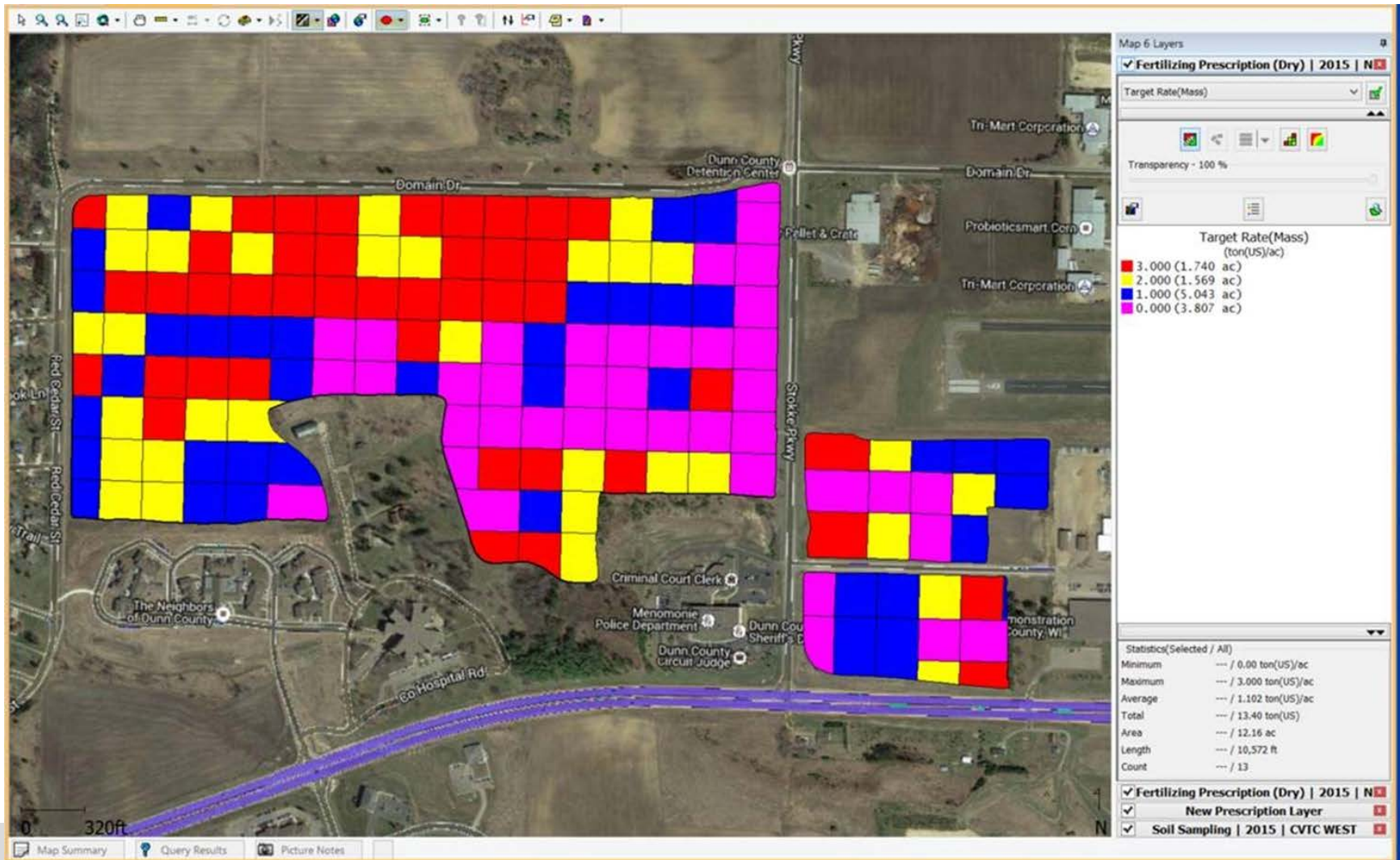
AgLeader SMS

- Soil Sampling Tutorial...



AgLeader SMS

• Generating Prescription Maps



AgLeader SMS

- Equation-based analysis

Define Result Equation(s)

Select Output Attribute or Temp Variable to Build Equation For

Analysis Result 1 - Potash Recommendation -
Analysis Result 2 - MAP Recommendation -
Analysis Result 3 - Lime Recommendation -

Equation Functions

IF AND OR NOT == !=
ELSE < <= > >=
ELSE IF + - * / ^
THEN ()
RESULT= BEGIN END
Range Wizard Logic Wizard

Constant Values

Data Format
Decimal Number
Enter Value
Add To Equation

Variables/Spatial Functions

Yield Goal - [Prompt]
Soil K - [Soil Sampling.Soil Kppm]
Edit List... Add Prompt

Comment

Add To Equation

```

If ( [Soil K] < 200.00 ) Then
Begin
RESULT= ( ( 200.00 - [Soil K] ) * 5.000 ) * 1.660
End
If ( [Soil K] >= 200.00 ) Then
Begin
RESULT= 0.00
End

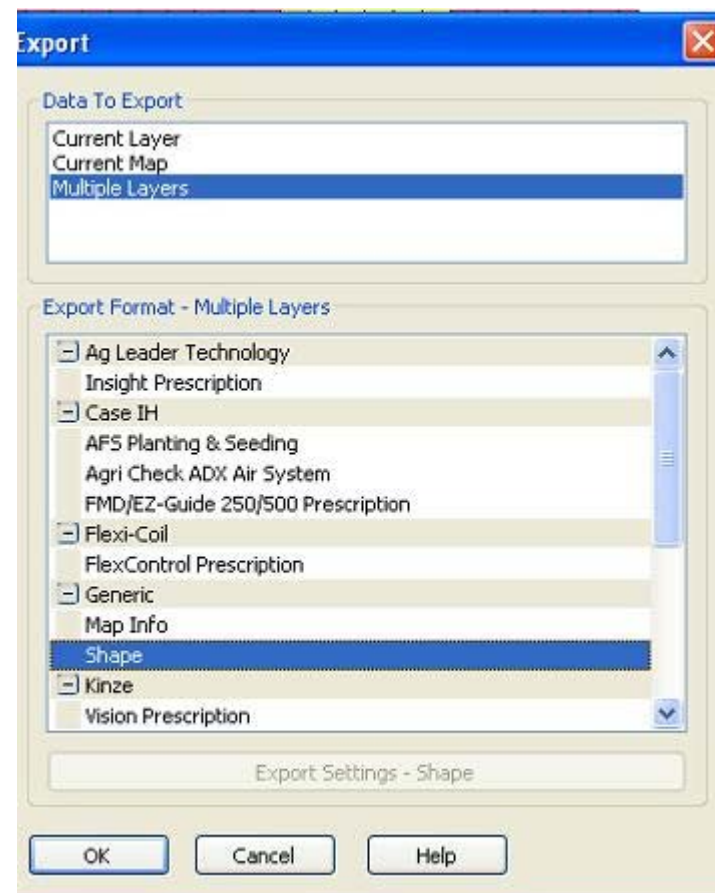
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** 5 = number of lbs of pure Potassium Chloride to move 1 ppm**
1.66= conversion of pure Potassium Chloride to Potash

< Back Finish Cancel Help

AgLeader SMS

- Export prescriptions to displays
- Accommodates many machines and file types
- Sets GPS boundaries and application rates for machine controllers
- Look-ahead settings on the machine account for speed and adjust application rates accordingly



AgFiniti

- Online tool
- <https://www.youtube.com/watch?v=Eh83IWoy308>
- <https://www.agfiniti.com>





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