

GTA SUITE SOFTWARE



USER'S GUIDE

AGCO®
GTA400 Precision Farming





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GENERAL INFORMATION

INTRODUCTION

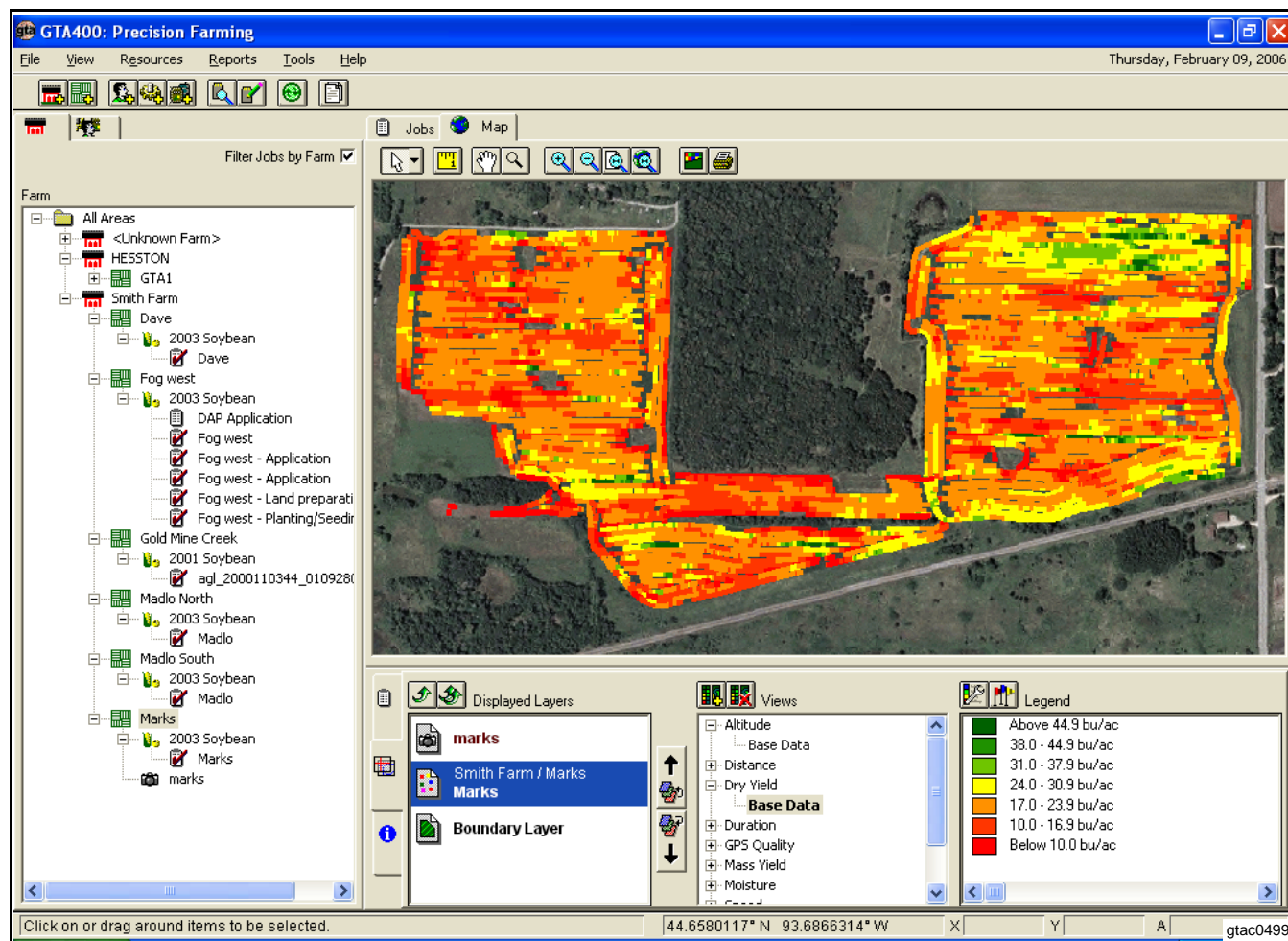


FIG. 1

GTA400 Precision Farming software allows a user to import **soil test data**, display **multiple layers** and create **product application maps**. Importing soil test data allows a user to easily view sample locations as well as various soil test attribute values. The purpose of the layer and application features is to allow a user to easily view field locations, roads, rivers, images, soil types and to create variable or constant rate product application maps. When creating product application maps, the user has the ability to assign rates to grids or polygons using existing data or by creating a user defined layer.

New capabilities include:

- Job Selection
 - Ability to check and view multiple jobs at once
- Import
 - Background Imagery
- Layer Display
 - Add or remove layers
 - Arrange layer order
- Product Application Maps
 - Assign rates
 - View transparent layers
 - Modify Map Rates
 - Base recommendations off soil test information
 - Base recommendations off *.fsa files

NOTES

APPLICATION

RESOURCE MANAGER

Farm Tab

FIG. 2: The **Farm** tab continues to list the farms and fields in a tree structure format. In addition enterprises, jobs, and background images are also listed in the tree structure. This addition will allow the user to view all applicable information at one time. A user may choose what is listed in the tree structure by checking or unchecking options in the **View** menu (1).

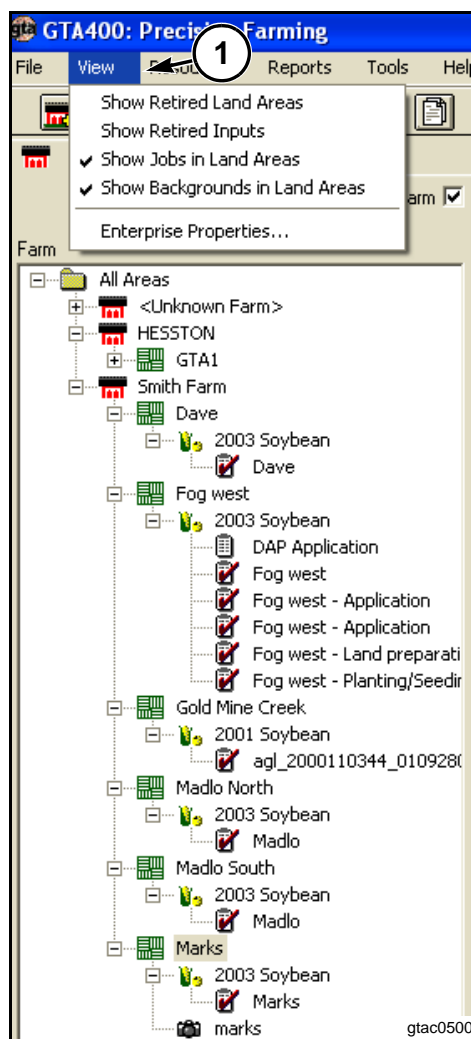


FIG. 2

Application

Import Background Image

FIGS. 3–4: Background imagery and data layers such as roads, rivers, aerial photos and soil types, can be imported into GTA Suite. Right-clicking on a desired level, within the Farm tab, and choosing **Import Background...** allows a user to browse to a file.

The level that an image is imported at will only be available at that particular level, as well as those below it.

Supported images files include: *.tiff, *.jpeg, *.sid, *.bmp, and *.pcx. Images containing geo-referenced information will automatically be displayed. Images not containing geo-referenced information will need to be calibrated. For instructions on calibrating an image, see Appendix C.

GTA Suite will also allow *.shp spatial data formats to be imported. A user may adjust the display properties of these files by applying a legend.



FIG. 3

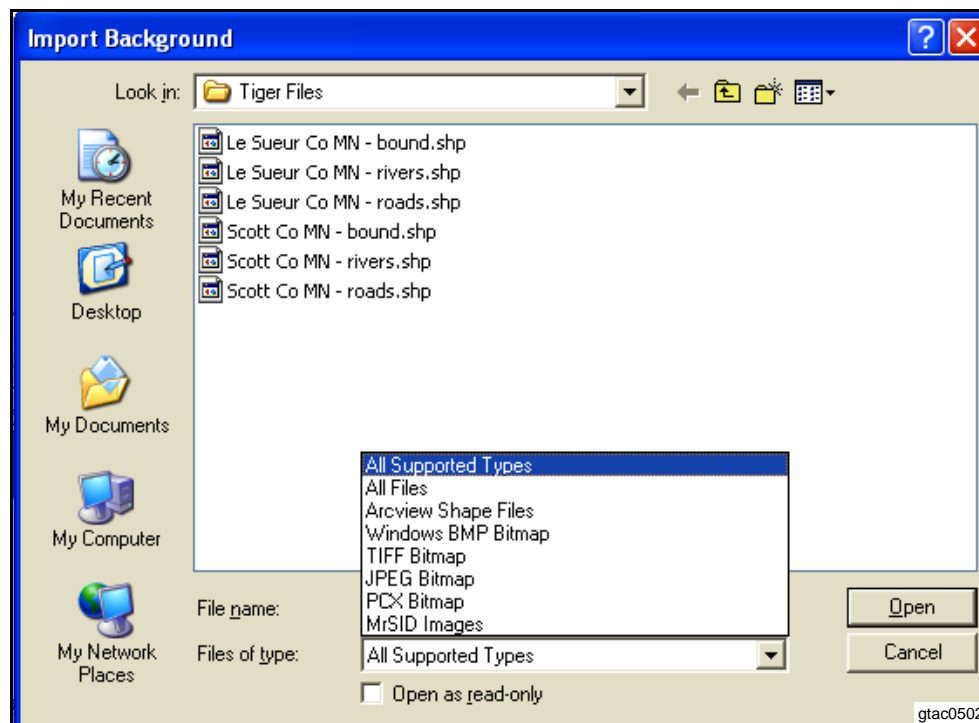


FIG. 4

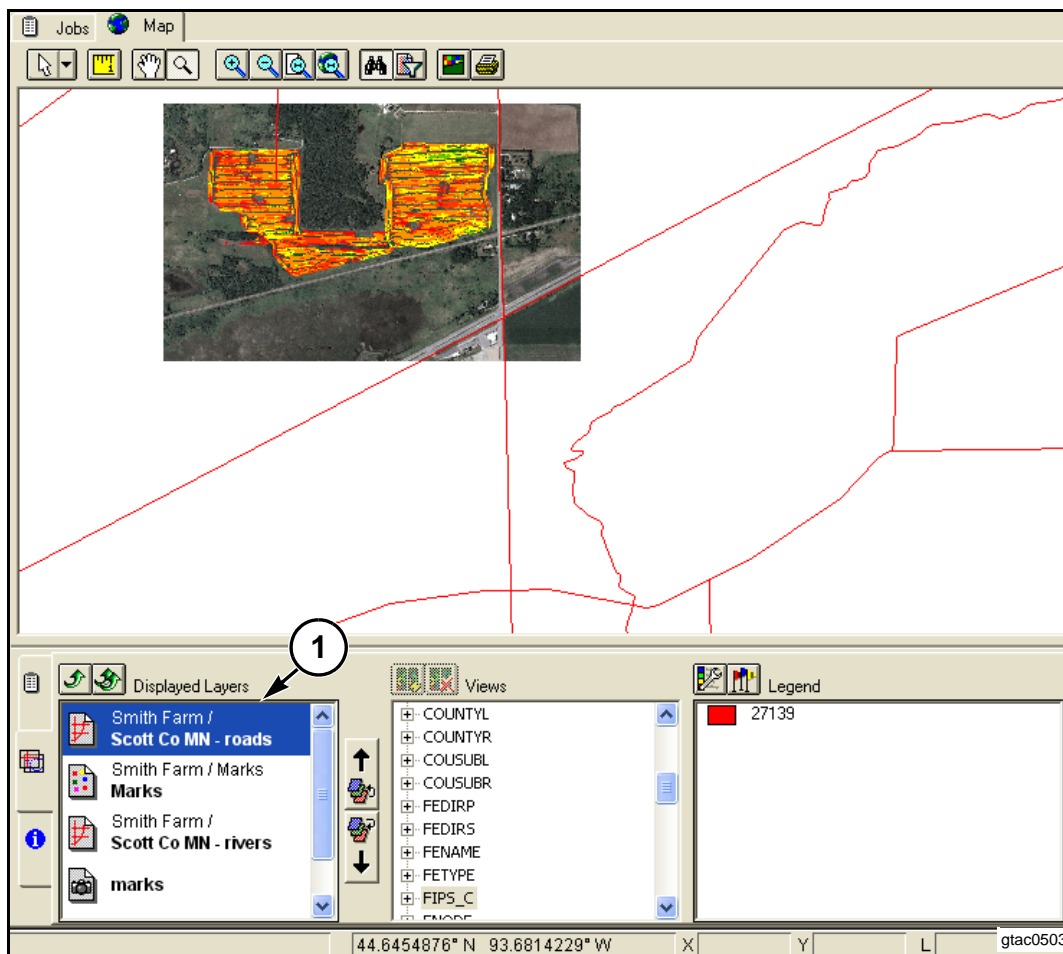
**FIG. 5**

FIG. 5: Once the background image(s) have been imported into GTA Suite, the images can be arranged in the Displayed Layers list (1).

Application

DATA VIEWER

Job Selection Tab

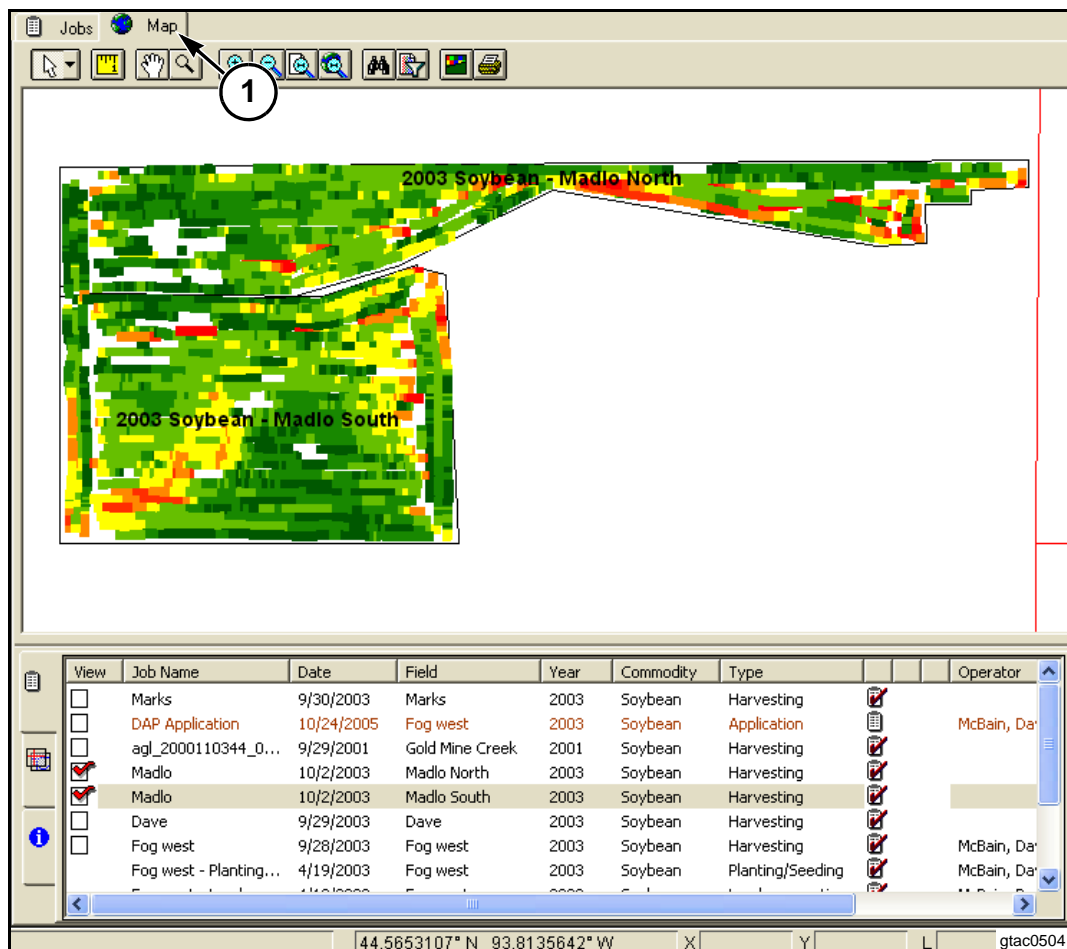


FIG. 6

FIG. 6: The **Jobs** tab continues to list both planned and completed jobs. One additional feature that has been added is the ability to check multiple jobs. A user can check multiple jobs to allow the jobs to be seen collectively on the **Map** tab (1).

Map Properties Tab

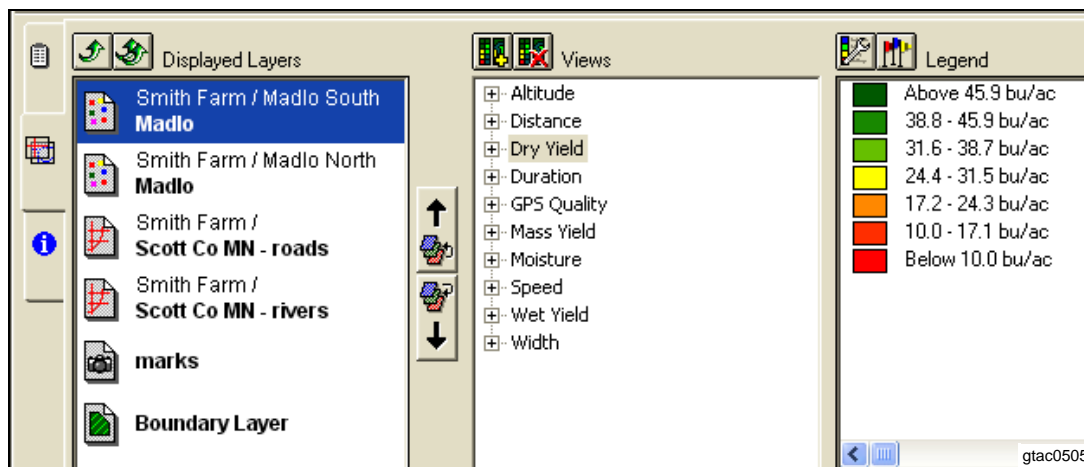


FIG. 7

FIG. 7: The **Map Properties** tab has several new features. The most significant feature that has been added is the ability to display multiple layers. This allows the user to add or remove different types of data such as; polygon, point, line or aerial imagery. Layers present in the **Map Properties** tab are displayed on the **Map** tab. When layers containing names of attributes are imported, a text legend is automatically populated. A user also has the ability to create new views based on point data layers. When views are created on the **Map Properties** tab and inputs are present in the working group, an application plan can be created by right-clicking on the view.

Application

IMPORT JOB DATA

Soil Test Import

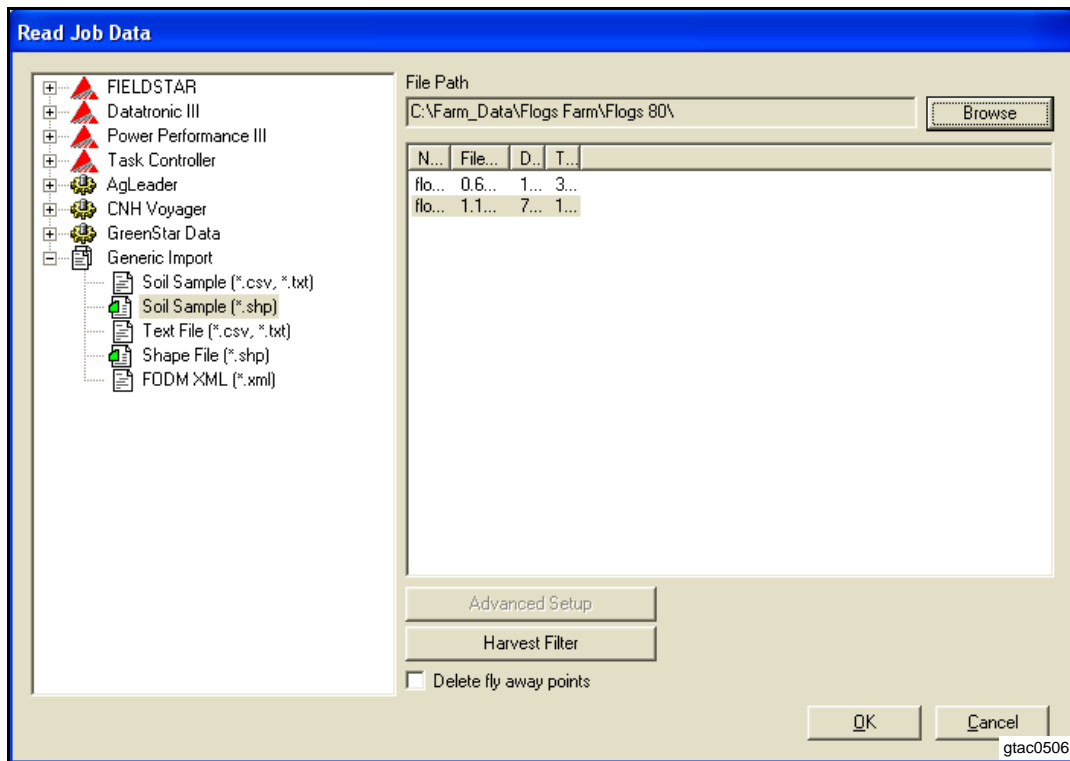


FIG. 8

FIG. 8: A user can use soil test information in the displayed layers and also to create application maps. Soil test information can be imported as a *.csv, *.txt, joined *.shp, or an unjoined *.shp with a *.csv.

Choose the **Import Job Data** button to start the soil test importing process. Once the Import Job Data window is open, the **Generic Import** option should be expanded so the appropriate file type can be chosen. A user should then select the appropriate file type and browse to the soil test file. Clicking OK will open the **Import** window.

Import - flogs80_samples.shp

File/Job Info

☒ File contains coordinates and values
☐ Join file data with an existing shape file

File Format

Template: < New >
 Delimiter: Comma
 Header Rows: 1
 Title Row: 1

Coordinates

System: Latitude/Longitude

Layer/File Join

Shape File Column:
 Text Column:

Used	Title	Type	Units	Minimum	Maximum	No Data
<input checked="" type="checkbox"/>	cec_summ	Cation Exchange Capacity	mEq/100g			
<input checked="" type="checkbox"/>	om_loi	Organic Matter (OM)	%			
<input checked="" type="checkbox"/>	ph_wtr_1_1	Soil pH (pH)	pH			
<input checked="" type="checkbox"/>	b_ph_smp	Buffer pH	pH			
<input type="checkbox"/>	p_brav	Numb				

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FIG. 9

FIG. 9: In the **Import** window, File/Job Information, File Format, Coordinates and Layer/File Join information needs to be completed. The attribute types, units and data will also need to be defined. Placing a check mark (1) in the top row will determine what information is imported. Any unchecked columns will not be imported. Each time soil test information is imported, there will be an option to save the template. When a user saves a template, it can then be used in future soil test imports with the same characteristics. Clicking OK in the **Import** window will bring up the **Farming** window.

NOTE: In the **Import** window, the user will have a list of attribute types to choose from. Any attributes not listed can be added by choosing the 'add' button or by going to **Resources - Other - Attributes**.

Application

FIG. 10: In the **Farming** window the soil test can be assigned a Field Name, Area Farmed and any or all other information available. Clicking OK in the **Farming** window will complete the import process.

Farming

Add

Job Name	flogs80_samples
Field Name	Flogs 80
Crop Enterprise	
Job Type	Soil Test
Console ID	
Area Farmed	80.00
Start Date	2/9/2006
Start Time	
Stop Date	2/9/2006
Stop Time	
Job Hours	4.00
Operator	
Weather Information	
Sky Conditions	
Wind Direction	
Wind Speed (mph)	0
Gusting to (mph)	0
Temperature	0
Relative Humidity %	0

OK

Cancel

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FIG. 10

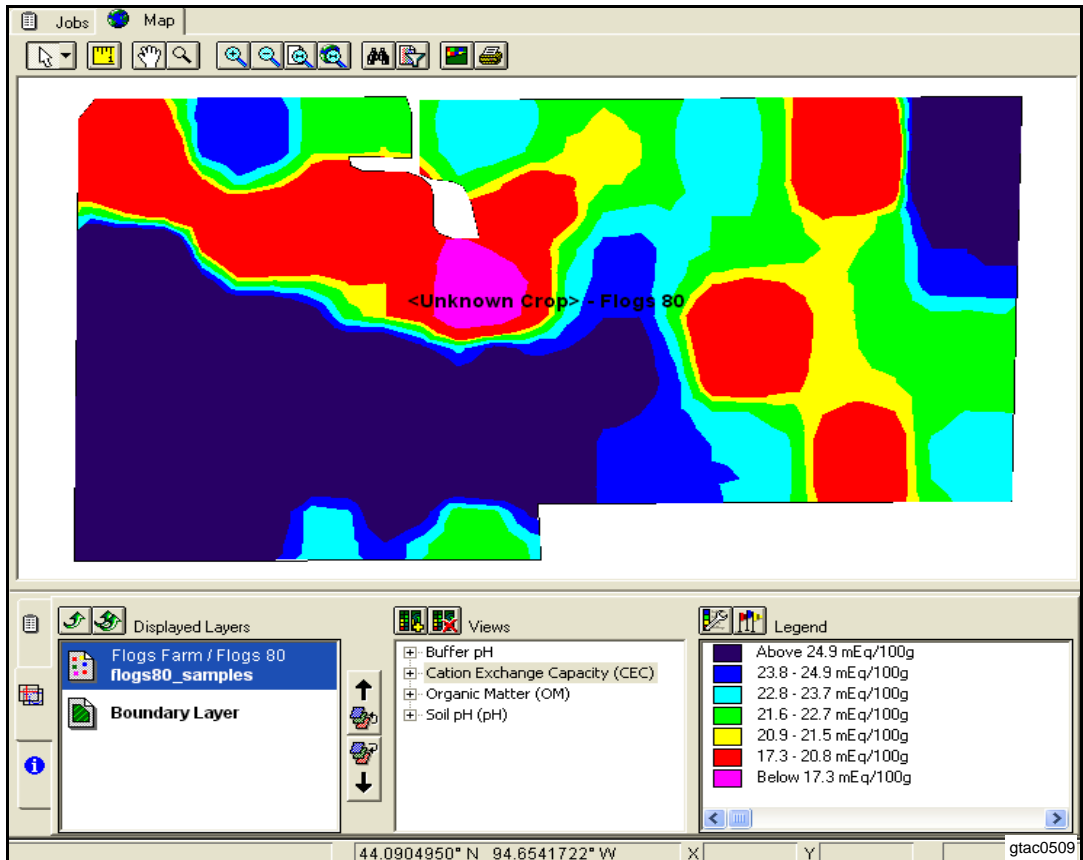


FIG. 11

FIG. 11: Once the soil test has been imported, points can be viewed on the **Map** tab by selecting the job. A user can then create a view, based on the soil test information, and then create an application plan.

*.fsa Import

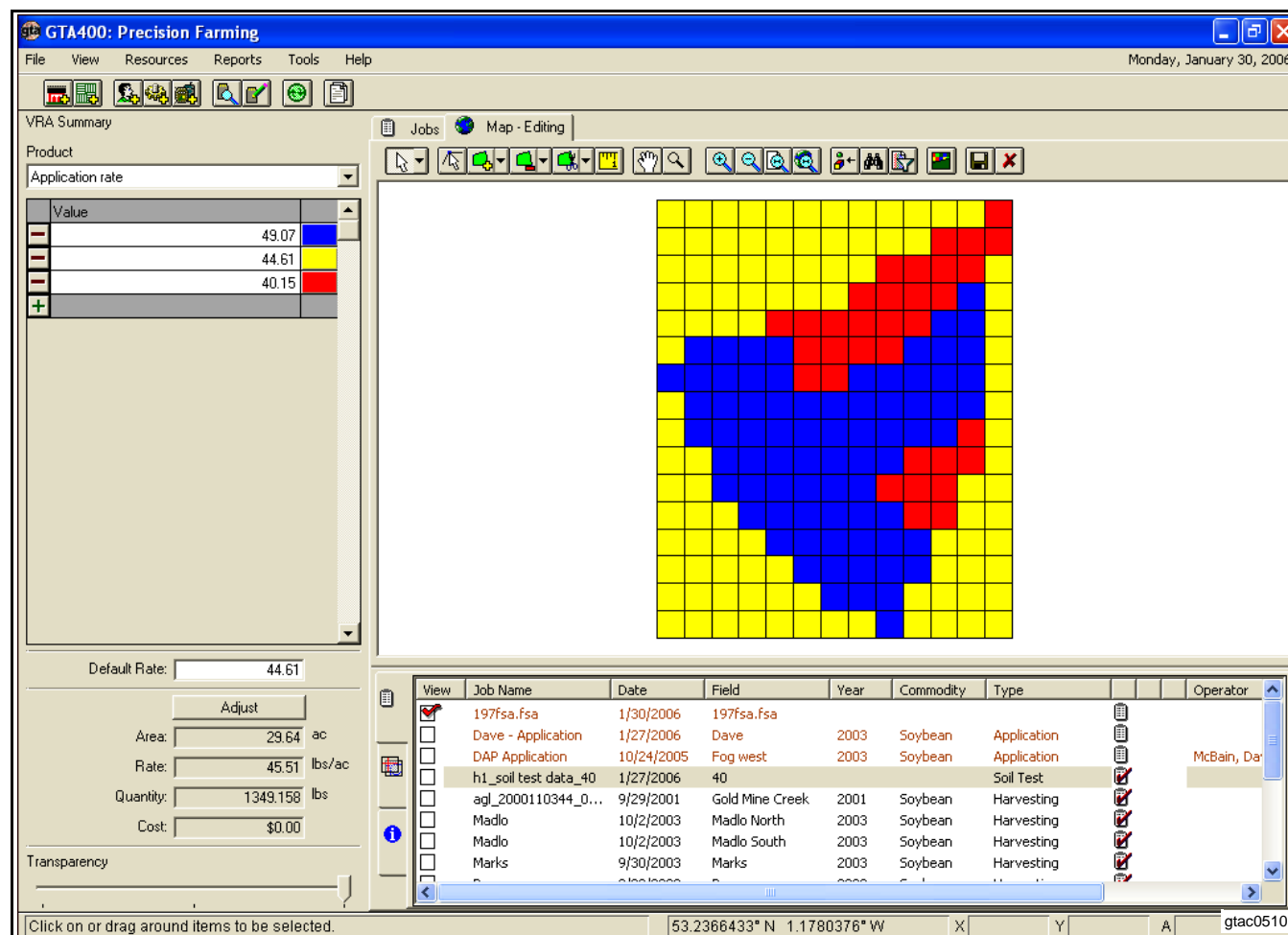


FIG. 12

FIG. 12: A user may want to import a *.fsa file to view the plan within the Displayed Layers list. Once *.fsa files are imported, a user can adjust and edit the rates and legends within the application plan. After the *.fsa file has been adjusted, the rates can be saved and then applied to a field.

Application

LAYER MANAGEMENT

Layer Display

FIG. 13: GTA400 has the ability to display multiple layers within the **Map** tab. The list of displayed layers can be edited by adding or removing layers, as well as arranging the display order, within the **Map Properties** tab. When creating a product application map, the transparency of the application layer can be adjusted to allow a user to view underlying layers.

To add a layer to the Displayed Layers list, double-click on the associated job in the **Farm** tab tree structure. Once layers have been added, they can then be arranged by using the corresponding **up** and **down** arrows. The layer on the top of the list will be displayed above the others, on the **Map** tab. To remove a layer from the displayed layers list, a user can double-click on the layer within the list, or use the arrows above the list. A **single green arrow** (1) will remove only the layer selected. The **double green arrows** (2) will remove all layers within the list.

Layers to be added to the displayed layers list include jobs and imagery. An item must be put into the displayed layers list for the user to view that item. Each layer, containing point data, can have views created for that layer.

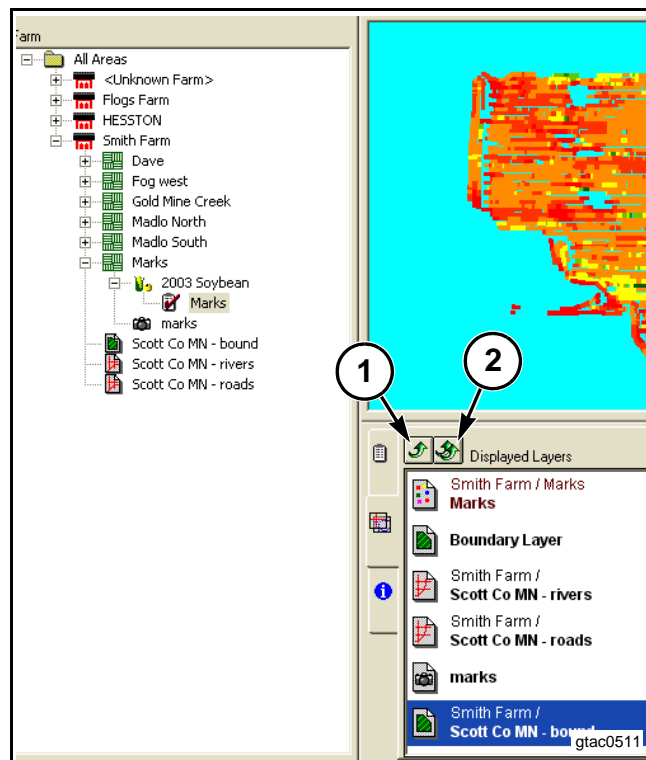


FIG. 13

Displayed Layers Icons



Points - yield data and soil test locations are represented by this type of geometry



Lines - typically used as reference information-may represent tile lines, roads, rivers, etc.



Polygons - used to represent many data layers including field boundaries, soil types, or an application map



Image - represents an aerial photograph or other type of image

PRODUCT APPLICATION MAPS

Creating Product Application Maps

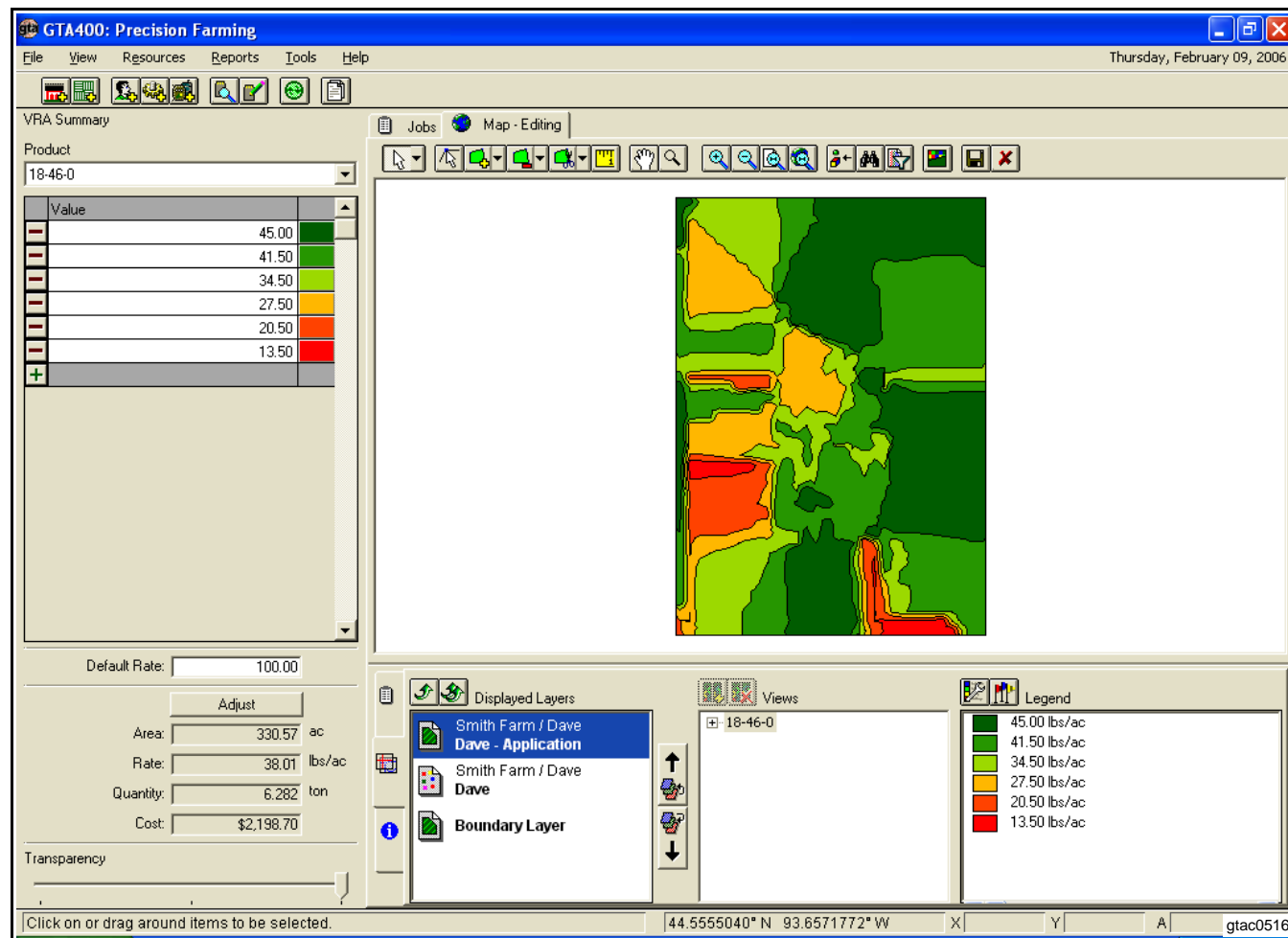


FIG. 14

Product Application Maps (PAMs) can be created to apply different amounts of a specified product throughout a field. To create a new **Product Application Map**, first place the products to be applied to the field into the working group. Next, right-click on either a grid or contour map view, on the **Map Properties** tab and choose **Create Application Plan**. In the **Farming** window click **Ok** to begin an application-edit session.

Rate Assignments

To assign rates, first select a product from the drop down list. By default, GTA400 will choose the same number of classes that were in the base layer. If a user wanted to define their own layers, classes could be manually added or removed by clicking on the **Add (+)** or **Remove (-)** button. Classes can only be removed if there are no field areas currently assigned to that color/rate.

Application rates are based on the class median of the base attribute used for the gridded or contour view. The user may override the application rates by entering a new value in the box provided for each class. This will assign a new rate to the entire class - every map area (polygon or grid cell) bearing that color.

If raising class application rates, the user should work top to bottom and when lowering rates, the user should work from the bottom upward. An individual map area may also be assigned to a new class by selecting the area on the map and clicking on the associated color button in the summary.

The colors assigned to each class are dictated by the map legend. Refer to the GTA300 User's Guide for more information about changing legend color schemes.

Application

Product Application Maps Toolbar Buttons

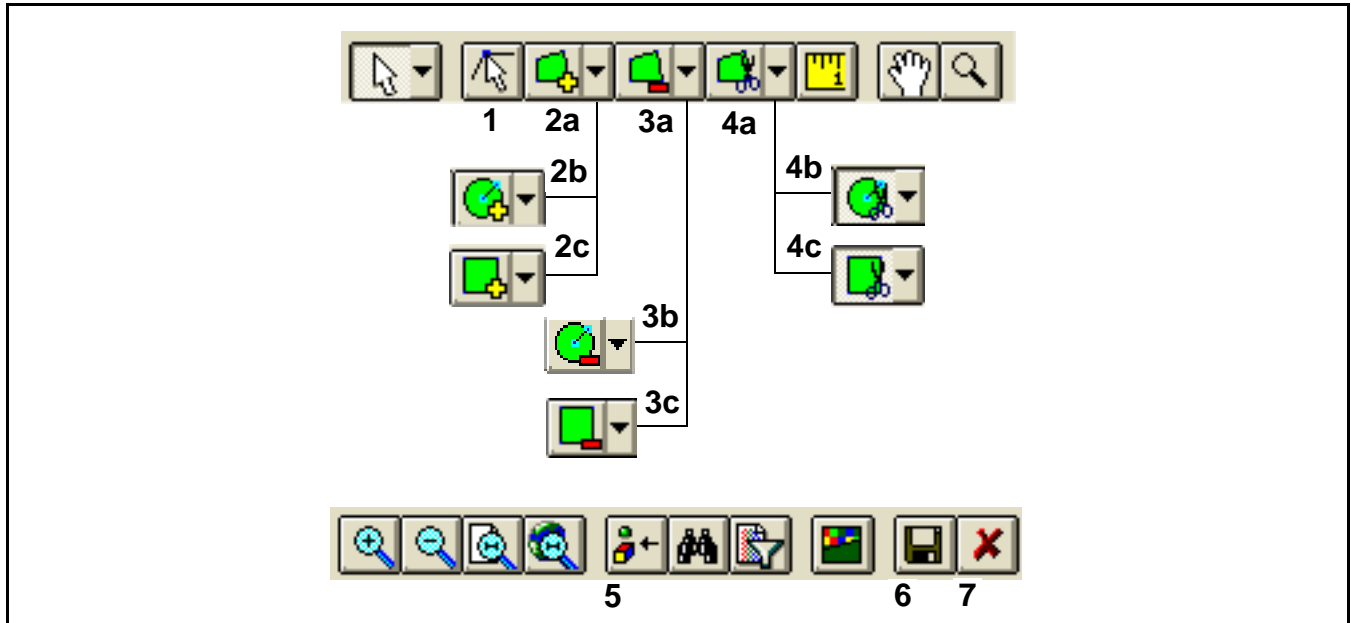


FIG. 15

FIG. 15:

- (1) Node Edit Tool
- (2) Include Tools
 - (2a) Polygon
 - (2b) Circle
 - (2c) Rectangle
- (3) Exclude Tools
 - (2a) Polygon
 - (2b) Circle
 - (2c) Rectangle
- (4) Split Tools
 - (2a) Polygon
 - (2b) Circle
 - (2c) Rectangle
- (5) Import Shape File
- (6) Save and Close Editing
- (7) Cancel Changes and Close Editing

Map Tab Toolbar Buttons

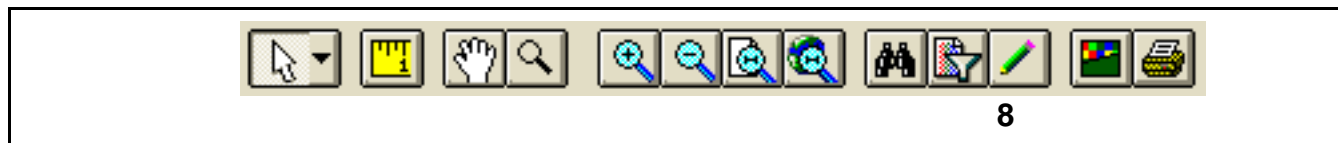


FIG. 16

FIG. 16: Once a user has completed a **Product Application Map**, a new tool button becomes available. Selecting an application job, will allow the Edit Layer button (8) to become available. Clicking on this button will bring the user back to an edit session.

Adjusting Product Application Maps

FIG. 17: The summary provides details about the field area (acreage), the average application rate (units/acre), and total product quantity and cost. The **Adjust** button (1) gives the user the ability to raise or lower all application rates proportionally, based on either quantity or cost.

The **Transparency** feature (2) adjusts the application map layer so that underlying layers may be seen. Moving the slider bar to the left or right increases or decreases the transparency of the application layer.

After an application map has been created, the user may exit the **Product Application Map** editor and return to the **Map** tab by clicking on the **Save** or **Cancel** button.

Changes can be made to a saved application map by selecting the planned jobs view column and clicking the **Edit Layer** button on the Map tab.

NOTE: Once a **Product Application Map** has been created, the **Write Job Data** feature may be used to export the associated **Planned Job** to a data card.

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FIG. 17

APPENDIX C

CALIBRATION TOOL

For software users in North America, geo-referenced aerial photography is readily available. GTA Suite will be able to display this type of data without additional user input. In other parts of the world, users may have to purchase this imagery from a data clearinghouse or use a scanner to digitize printed photographs. In order to use an image that is not geo-referenced, the calibration tool must be used to assign locations on the photograph to absolute geographic locations (specific latitude and longitude). By assigning at least 3 points on the photograph absolute locations, GTA Suite will be able to properly display the image.

Procedure

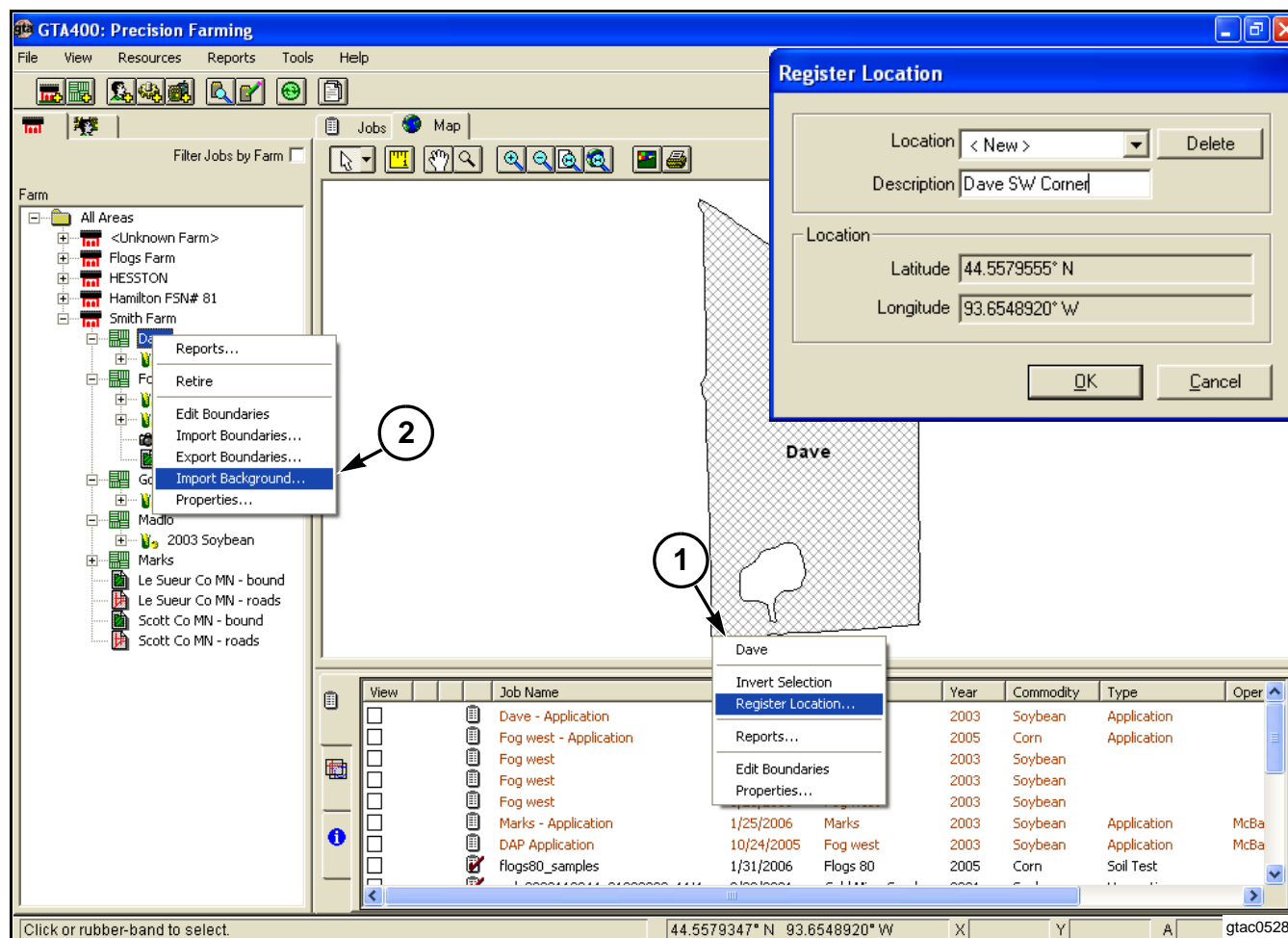


FIG. 18

FIG. 18: Using the calibration tool to geo-reference an image:

1. Register field extent coordinates by right clicking within the map tab (1).
2. Right click on the field and choose the **Import Background...** option (2).

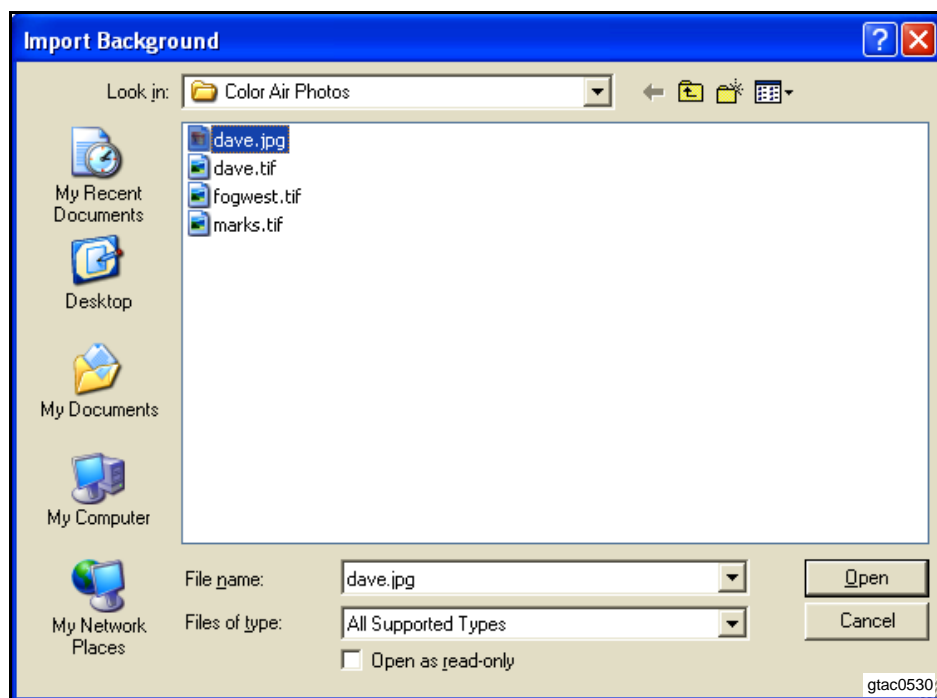


FIG. 19

FIG. 19: Import Background window.

3. Browse to the location of the photo.

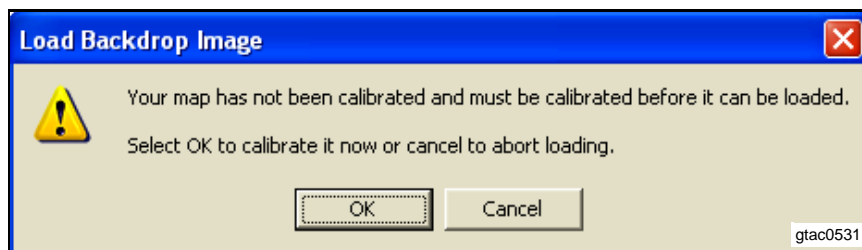


FIG. 20

FIG. 20: Load Backdrop Image window.

4. SGIS will prompt the user to calibrate the image and launch the calibrate tool.

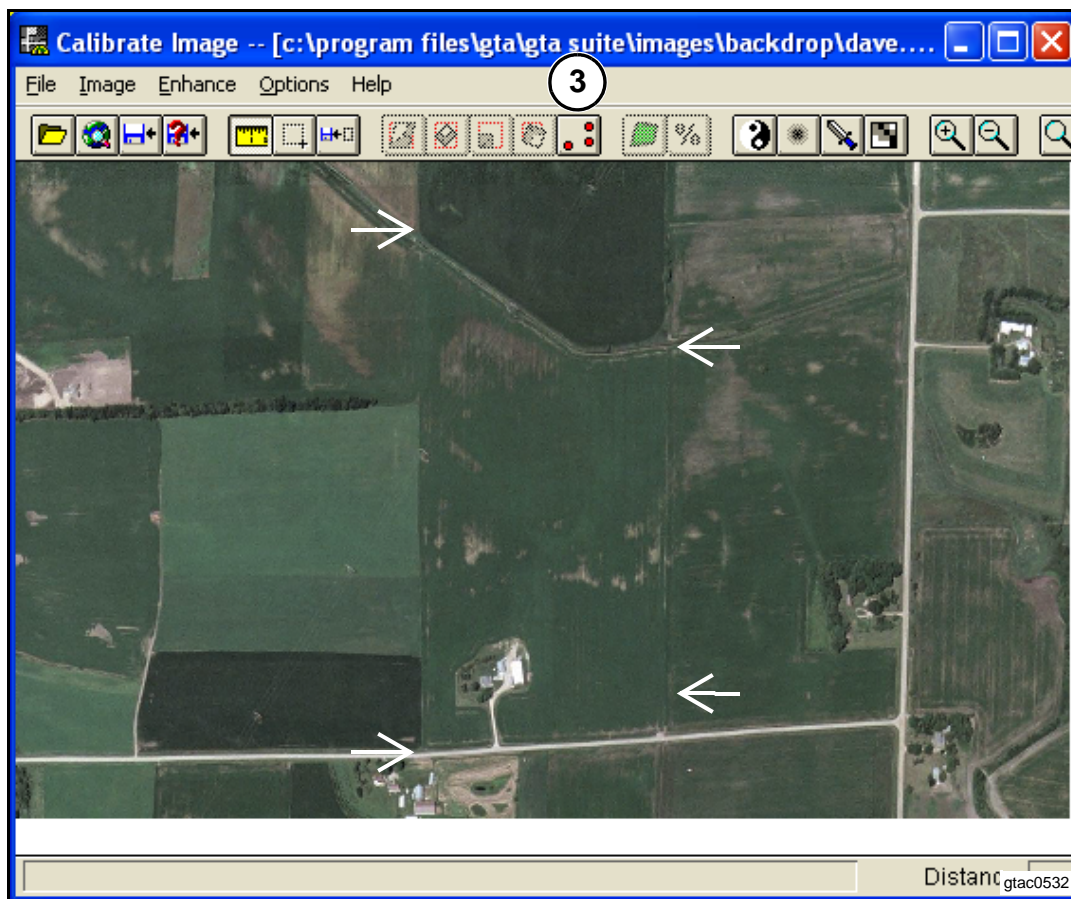


FIG. 21

FIG. 21: Calibrate Image window.

5. Click on the register points button within the calibrate tool (4).
6. Click on the parts of the photograph that correspond with the corners of the field that were registered in step 1.

FIG. 22: Enter Coordinates window.

7. Choose the appropriate corresponding registered point from the list and click OK.

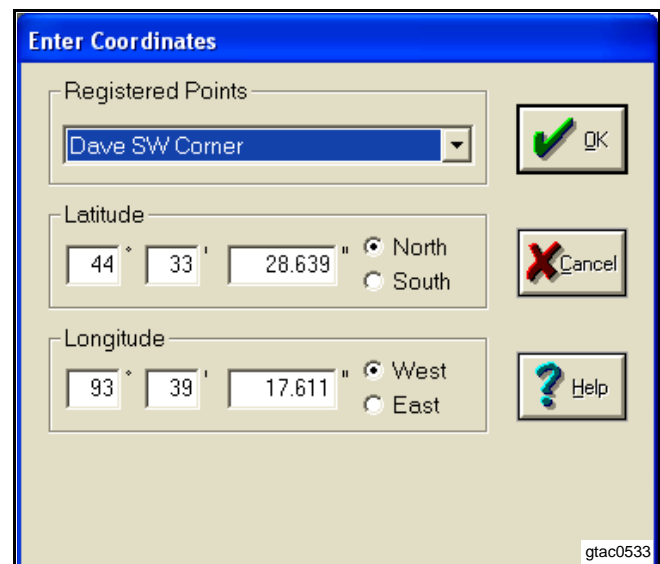


FIG. 22

Appendix C

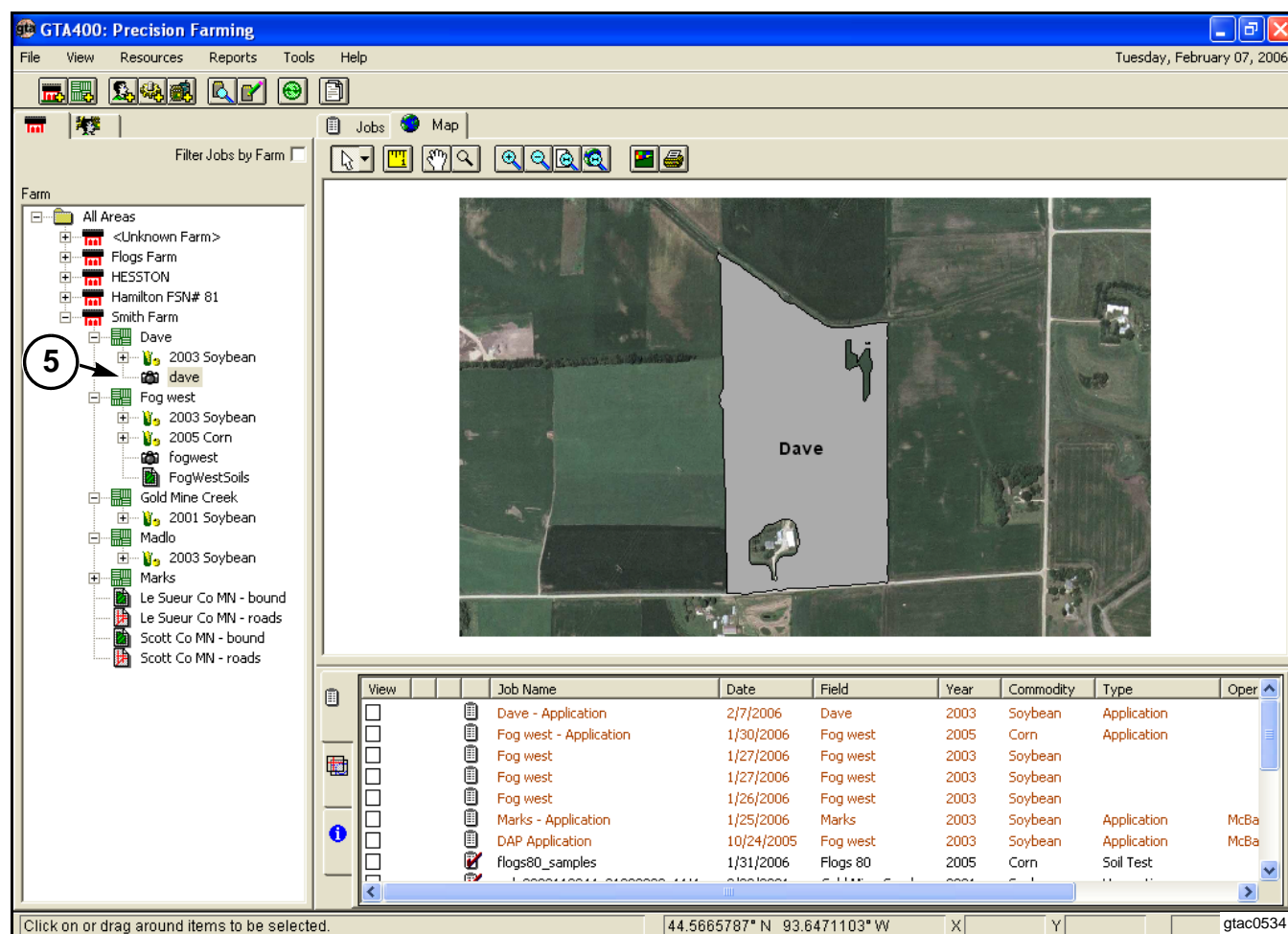


FIG. 23

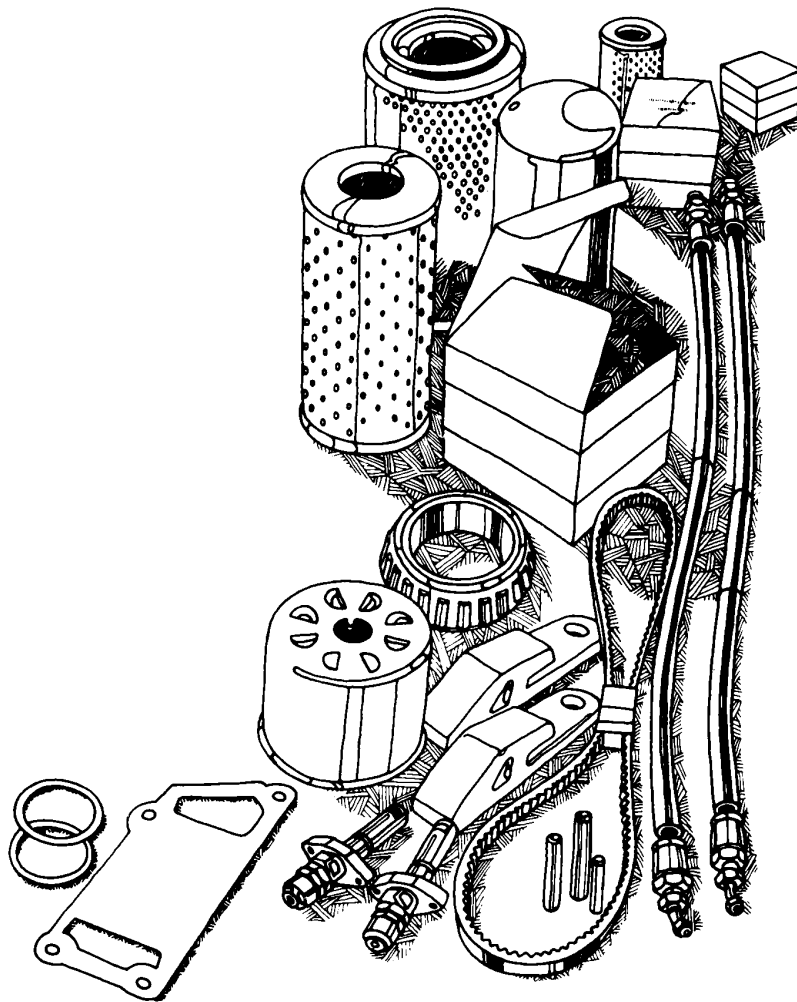
FIG. 23: Map display.

- Once the image has been calibrated, double-click on the image (5) beneath the farm tab to add it to the map display.

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