

Using Farm Works Software to Create a Corn Maze

Getting Roads, Waterways & Images for your farm

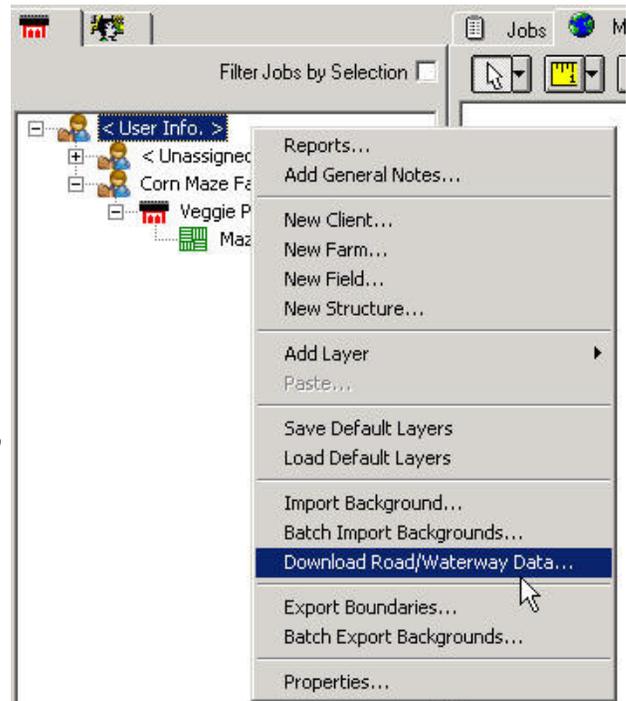
Often times it can be difficult to find the perfect field for your maze. Farm Works Software has the ability to download free government road and waterway data along with imagery for most of the United States. You can view images that have boundaries of all of your fields so you can find the field that is the perfect shape for your maze. You can also trace around these images to find out the dimensions and sizes of any field. Here are the steps for using this data:

Loading Road & Waterway Maps

Geo-referenced maps of roads, waterways, railroads and other significant features are available to you at no cost. To load the maps for your farm:

- 1) In the Farm Works program, right click on the User Info line on the left hand side in the Tree View at the top and select **Download Road/Waterway Data**.

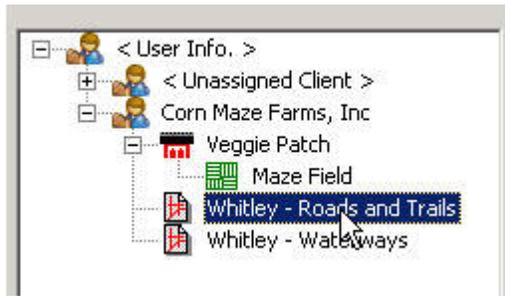
Tip ... Make sure your desktop or laptop computer is connected to the Internet before you click Download Road/Waterway Data.



- 2) Choose your Region and Section. Region is the State and Section is the County. Select which type of information you wish to bring in by marking the boxes next to the type. Select OK.



3) Once the Road and Waterway layers have been downloaded, they will need to be displayed. To display the data double click on the layers on the left hand side in the Tree View.



4) On the toolbar below on the map tab, select the Zoom Tool  toolbar button to turn the cursor into the Zoom Tool, which looks like a magnifying glass.

5) With the Zoom Tool, click on the blue and red roads and waterways several times until they are close enough for you to identify the roads and waterways closest to your farm. Left click with the mouse will zoom in, right click will zoom out.

Note: Keyboard Short Keys for zooming are I=zoom in, O=zoom out, and A=zoom all

Using the Get Aerial Image Feature

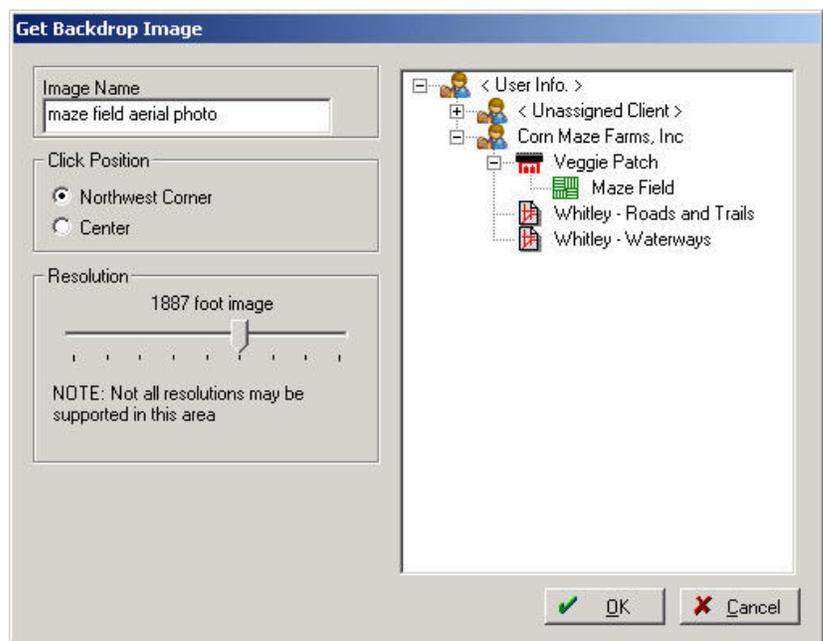
Farm Site includes a method to quickly and easily download free, geo-referenced images from the Internet.

1) With the Farm Works program open; on the Map Tab right click on the location where you want the program to insert the first satellite background image from the Internet, and select Get Aerial Image.

Note: The displayed roads/waterway data layers are used as reference to determine your location.



2) In the Get Backdrop Image dialog box, enter a name you wish to give the first satellite image in the Image Name box. Under Click Position, select Northwest Corner or Center. This will indicate where the selected location should be on the downloaded map. On the right hand side select the farm that this image belongs to. Next click OK button to download the image from the Internet.



3) Farm Site displays an "Opening URL" message as it contacts a Web site to download the satellite background image, and then automatically displays the image.

4) You may use the Zoom Tool once more to bring the image closer into view so you can see your farm, fields, barns and other structures.

5) Repeat the above steps to bring in as many of the satellite background images as you desire (they are roughly a mile square), and be careful to have the images slightly overlap. Choosing the North-west Corner will allow you to easily "tile" the background images.

Drawing a Field - Alternative if you do not have a GPS boundary map

After all of the images are loaded and lined up with the roads and waterways, you can begin drawing your field boundaries.

The field must be created in order to trace (draw) the field boundary. To create the new field, click on the Resources Menu and then select New Field, or right click on the User Info line and select New field, both ways will bring up the Field Properties box. This will ask for details such as the field name, legal acres, tillable acres, landlord and other important information. Once all information is entered select OK.

** See the next section for information on creating GPS boundaries using Site Mate.*

The screenshot shows a 'Field Properties' dialog box with the following fields and options:

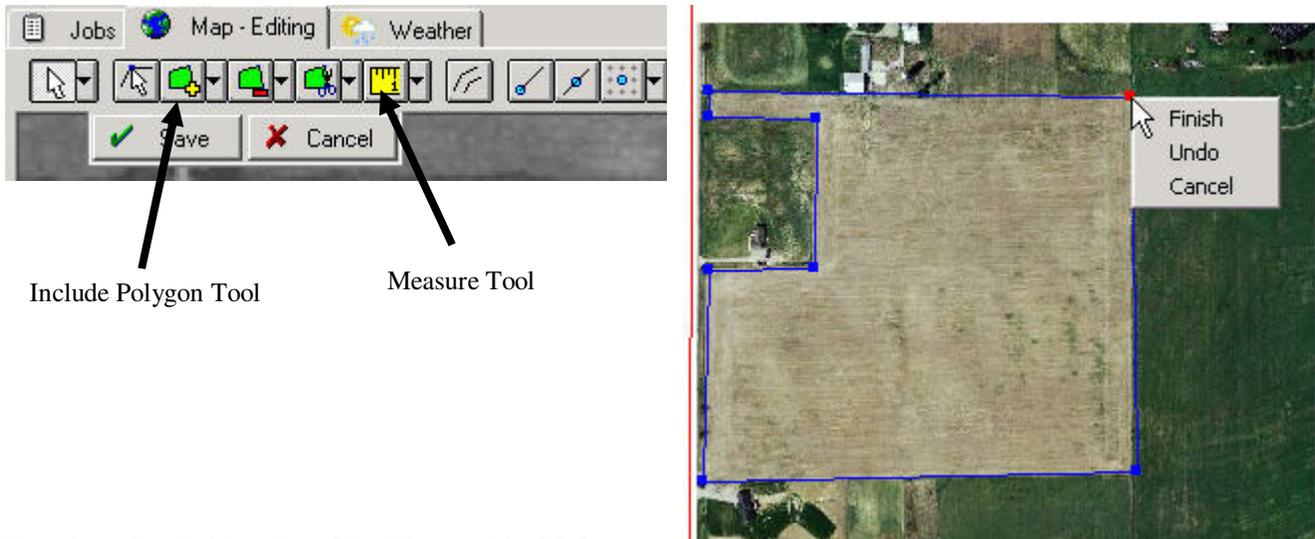
- Field**: Description: Maze Field
- Area**: Mapped: 0.00 acres, Legal: 0.00 acres, Tillable: 0.00 acres
- Owner / Landlord**: Client: Corn Maze Farms, Inc., Farm: Veggie Patch
- Ownership**: Owned, Cash Rent, Share Crop

Buttons: OK, Cancel

*Note: You **do not** need to enter all of the data before continuing. The field Description is the minimum that is required. Information such as Acreage, Owner/Landlord, Legal and FSA Descriptions, Landlords Information, and Photos can be entered/edited at a later time.*

To draw the field boundary right click on the field name in the Tree View and select Edit Boundaries. On the Mapping Toolbar select the Include Polygon, Include Rectangle, Circle Radius or Circle Diameter, depending on the shape of the field. Fields will typically be drawn using the Include Polygon Tool (from the Mapping Toolbar). With the Include Polygon Tool, you will left-click around the corners of each field to trace the boundary. When the boundary is completely drawn, right-click and select Finish. Once the boundary is drawn out select the Save button on the Mapping Toolbar to close the editing.

Note that you can use the “Measure” tool to trace along any boundary to get the distance of that boundary. This can be useful for finding the dimensions of the field.



Mapping the field using Site Mate with GPS

Before you create your corn maze, it would be helpful to have the field boundary mapped with GPS. This boundary can be used for designing the maze (so the maze takes advantage of the full field). Or if someone else has already created the maze, the GPS boundary can be used for geo-referencing the image. Here are the steps for mapping the boundary:

Configuring Farm Site Mate for your GPS

Before you can use your GPS to make a map, Site Mate will need to be configured to communicate with the GPS. To do this:

- 1) Start Farm Site Mate on your Pocket PC or other computer.
- 2) Make sure that your GPS receiver is connected to the Pocket PC or other computer.
- 3) Go to the “File” menu and select “GPS Settings”.
- 4) In the “Source” tab select “GPS on Com Port”.
- 5) Go to the “Com” tab and select the Com Port, Baud Rate and other settings that your GPS is using. If you are unsure of these settings, select the “Auto Baud” button and Site Mate will find your GPS and make the appropriate settings.
- 6) Select the OK button and go to the “Map” tab and you should see your GPS position on the screen.

Mapping the Boundary of a Field

Site Mate makes it easy to map the boundary of a field. Just set the file up and drive. First you will need to synchronize the data that has already been set up to the mobile device.

- Synchronizing data to the mobile device

In Farm Site go to the “File” menu and select “Synchronize Trac Mate”.

- 1) Select the “Synchronization Location”. This will likely be “CE Main Memory” or “CE SD Card”.
- 2) Select the “OK” button.

- Logging the Boundary

Here are the steps to create a boundary with Site Mate and GPS using the automatic file naming:

- 1) Go to the “Job” tab in Site Mate, check the box for automatic file naming, and select the “New Scouting Job” button.
- 2) Verify or select the field. Click OK.
Note: Fields with boundaries will automatically be selected if you are located inside the field.
- 3) The Crop can be left blank, however something must be selected in the Type box. A suggested type would be Scouting. Click OK to return to the map tab.
- 4) Select the Log menu and then the option for “Boundary”.
- 5) Select the “Go” button to start logging.
- 6) Drive around the boundary of the field. Watch the screen every now and then and make sure that the boundary is appearing and looks good. It will be helpful to slow down at the corners of the field and to drive slowly around parts of the field that are contoured.

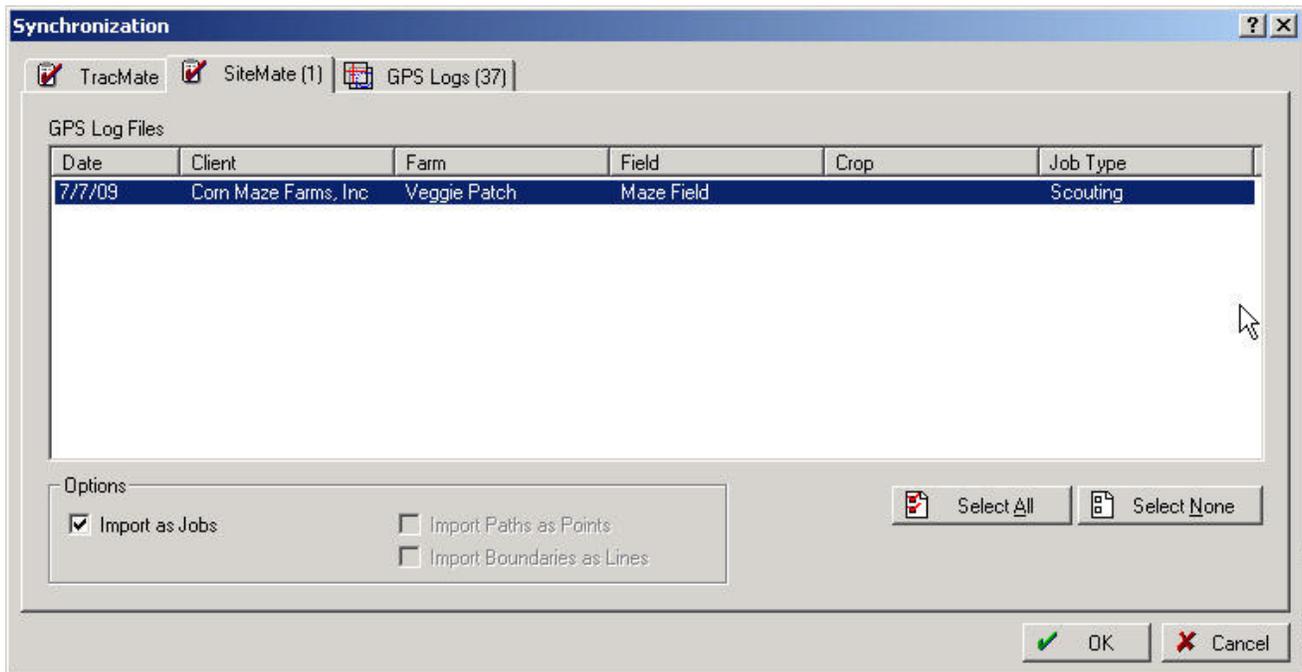
Note: If you are unable to drive on the perimeter, an Offset may be used. Refer to the Site Mate manual for more information on using Offsets.

- 7) When you are finished, select the “Stop” button. Tap on the field boundary and select “Attributes” to see the size of the field.
- 8) You can use the “Measurement Tool” to check the length of any boundary.
- 9) To set the boundary that was just mapped as the default field boundary, tap on the mapped boundary and select “Add to Field Boundary”
- 10) When you are finished, select the “Finish” button at the bottom of the screen, mark the job “Finished”, and click OK.

Loading a Boundary Map from Farm Site Mate into Farm Site

Once you have created a boundary of the field(s), this information will need to be loaded into Farm Works on the desktop. These boundaries can then be used for creating a maze, geo-referencing a previously created maze or printing. To bring a boundary map into Farm Site:

- 1) Start Farm Site on the desktop computer.
- 2) Make sure that your Pocket PC is synchronized with your desktop computer or that the data card from another computer is in a card slot on your desktop computer
- 3) In Farm Works go to the “File” menu and select “Synchronize Trac Mate”.
- 4) Select the “Synchronization Location”. This will likely be “CE Main Memory” or “CD SD Card”.
- 5) Select the tab for “Site Mate”. The logged file will be highlighted.
- 6) Select the “OK” button.
- 7) If you selected to Upload Field Boundaries the map will automatically be added to the boundary layer. In the Tree View on the left, left-click on the field name to display the boundary.



Calibrating a maze

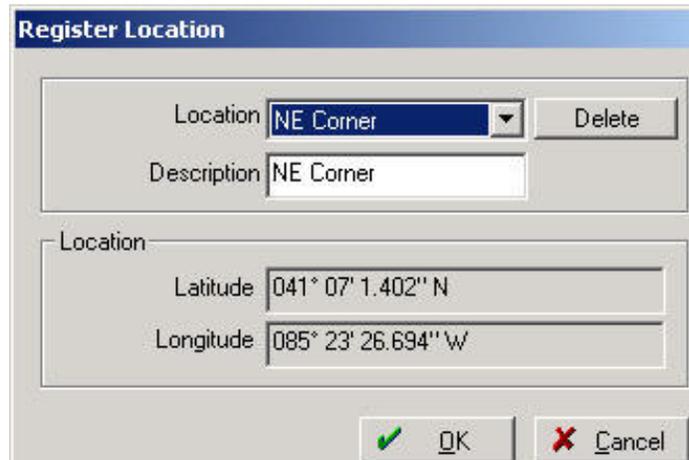
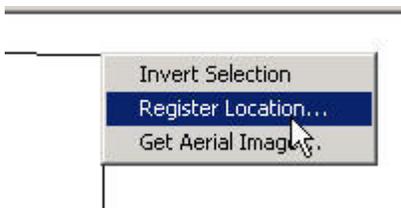
If someone else has designed your maze, Farm Works makes it possible for you to “Calibrate” the image. The process of Calibrating allows you to assign GPS coordinates to the image so it can be used with your GPS receiver for cutting. Here are the steps to Calibrate the image:

1) In Farm Works (on your desktop computer) go into your project.

2) Left-click on the field for the maze in the list of fields on the Farms Tab.  This will display the field boundary on the Map Tab.

3) Find three points on the boundary map that you can find on the maze design. This will typically be three of the corners of the field.

4) Right click on the first point/corner and select “Register Location” A box will appear with the coordinates for that position. Enter a name such as “NW Corner” and click OK.

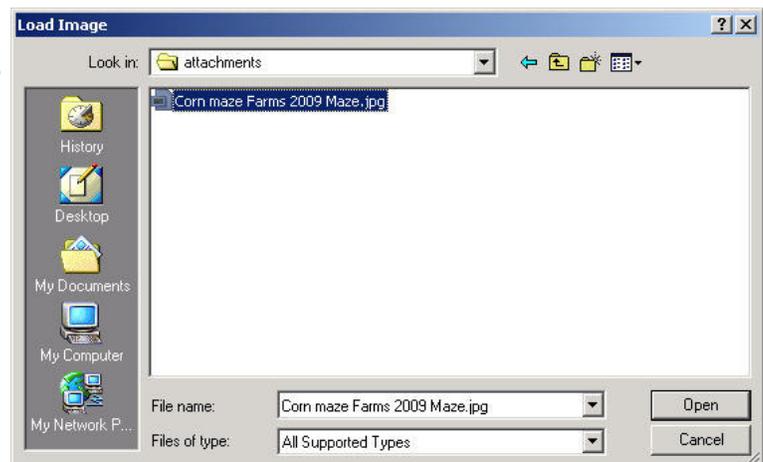


6) Repeat for the other two corners of the field.

7) Open the “Calibrate” program through the “Start Menu” and “Farm Works Software Folder”.

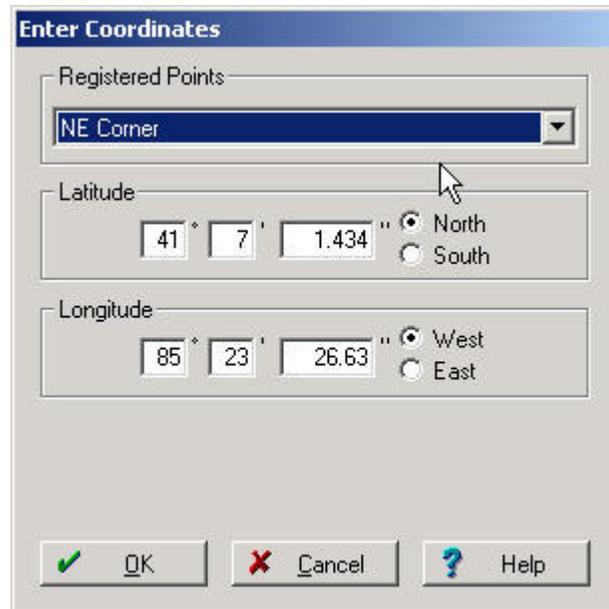


8) Select the “Open” button and open the file that your maze designer has provided to you. This file should be an image file with either a .jpg, .tif or .bmp extension. Select the file and click OK. The image will be displayed on the screen.



9) Select the “Register Points” button  and click on the first corner of the field (that corresponds to one of the points you registered for the field boundary).

10) In the “Enter Coordinates” box, select the correct position from the drop-down list.



11) Repeat for each of the next two corners. After you register the third position/corner, the image will be calibrated as a geo-referenced image.

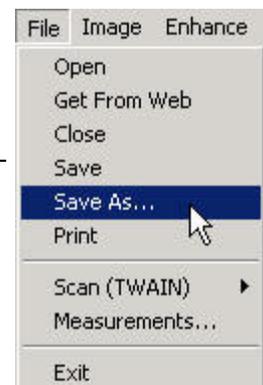
12) Go to the “File Menu” and select “Save As”.

13) Select “Local or Network Drive” then save the image in the “Backdrop” folder with a name such as “2009 Calibrated Maze” and click OK. This will save the calibrated image on your hard drive.

14) Go to the “File Menu” again and select “Save As”.

15) Select “Mobile or Windows CE Device” then save the image in the “My Documents” folder of your Pocket PC or the card of the Pocket PC with a name such as “2009 Calibrated Maze” as a .bmp extension and click OK. This will save the calibrated image to your mobile device.

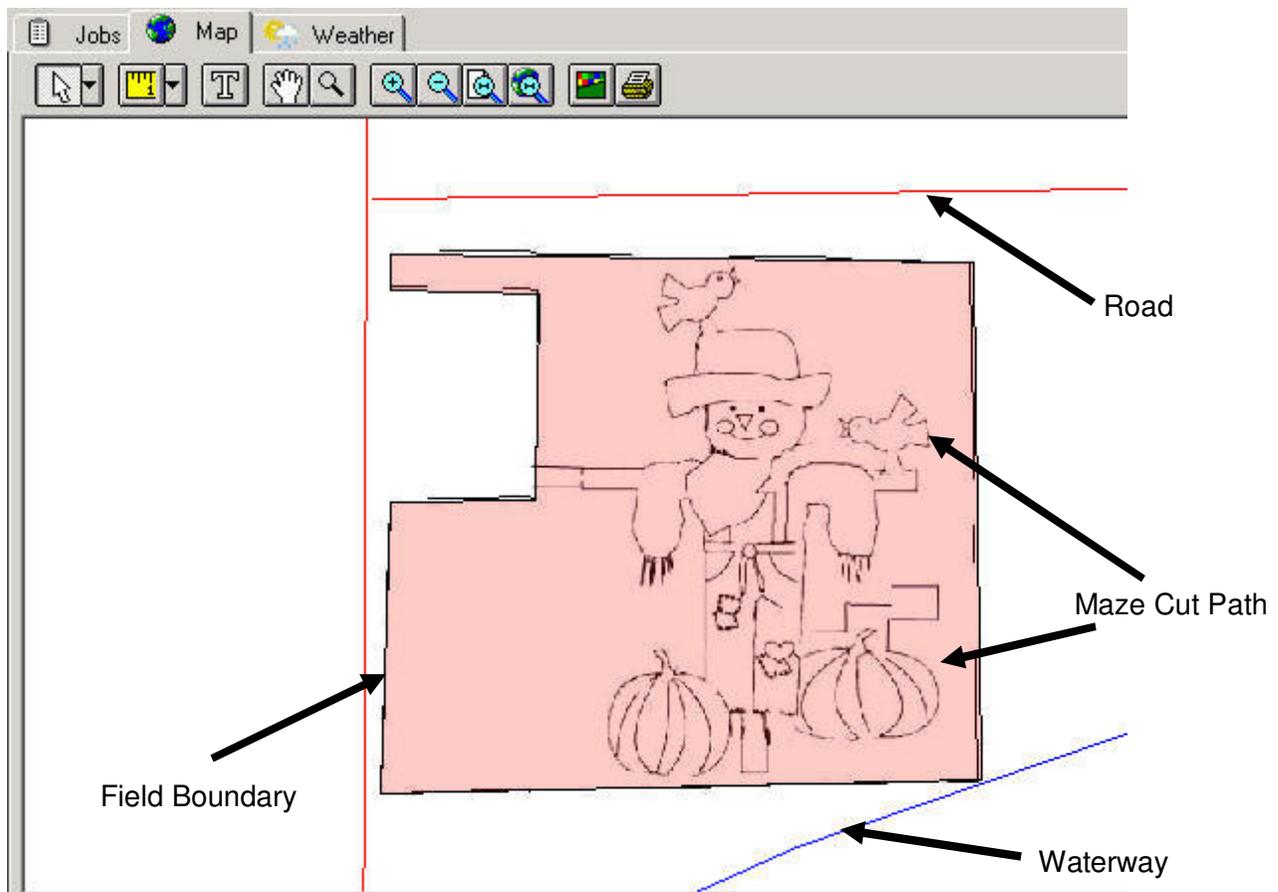
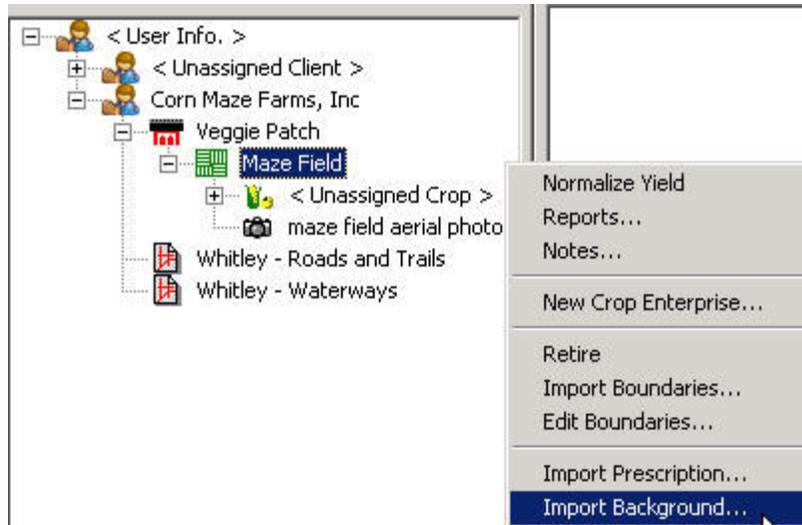
16) Exit Calibrate



Loading a Calibrated Maze into Farm Site

Farm Site allows you to display and print all of the maps you've created. Once you calibrate a maze design image, you will want to load it into Farm Site for future reference. To do this:

- 1) In Farm Site (on your desktop computer) go into your project.
- 2) Right click on the field name in the Tree View on the left, and select "Import Background". Browse to find and select the Calibrated image. (ie: c:/farmproj/inages/backgrounds/....)
- 3) The image should be displayed on the screen and it should line up with your GPS mapped Field Boundary.



Cutting your Maze

Farm Site Mate provides an easy to use GPS mapping tool. This program allows you to load the geo-referenced map of the maze to use as a guideline while cutting the maze. This same process can be used for follow up mowing, to be sure the entire maze has been cut each time. The steps for cutting the maze are:

- 1) Start Farm Site Mate.
- 2) Make sure that you have a GPS position displayed in the “Map” tab. If you can’t see your position, follow the previous instructions for “Configuring Farm Site Mate” for your GPS.
- 3) Go to the “Job” tab in Site Mate and select the “New Scouting Job” button.
*Note: Make sure that the “Automatic File Naming” is **not** checked.*
- 4) Select a location for the file. This should be the “My Documents” folder of a data card or the memory of the device (note that a data card is preferred). If desired a folder under “My Documents” such as “2009 Corn Maze Maps” can be created and used.
- 5) Enter a name for the file such as “050109 Corn Maze Cutting”.
- 6) On the Template screen select “No Attributes”.
- 7) Select the “Background Layers” button and select the maze file to be imported. This will be the image file from your maze designer that you calibrated.
- 8) After you select the OK button you will be returned to the Map tab, the maze will be displayed including the current GPS position.
- 9) Select “Path” from the Log Menu.
- 10) Note that you can go to the “Configure” tab and select “Display” then “Path” to change the color and width of the path that will be displayed as you cut the maze. Typically you will want the width to match your mower width so the displayed width will be what is actually being cut.
- 11) Drive to the position where you want to start cutting the maze. You should see your position on the screen at the appropriate spot. Note that you may want to go to the different corners of the map to make sure that the map matches the GPS positions.
- 12) When you are ready to start cutting the maze, select the “Go” button.
- 13) Follow the maze picture on the screen as you cut the maze. The maze will be drawn on the screen on top of the background image. It is good to have the displayed path set to a different color (see step #10) so you can tell which parts of the maze have been cut and which still need to be cut.
- 14) To stop logging, select the “Stop” button. To review what has been logged, including the distance covered by the maze, tap on the logged path and select attributes.
- 15) Select the “Finish” button at the bottom of the screen and mark the job as finished.

Loading a Maze Map from Farm Site Mate into Farm Site

Once you have cut your maze and mapped it with Site Mate, you will want to bring this information into Farm Site on the desktop. The maze can then be printed and used for other purposes such as flyers and handouts. To bring a maze map into Farm Site:

- 1) Start Farm Site on the desktop computer.
- 2) Make sure that your Pocket PC is synchronized with your desktop computer or that the data card from another computer is in a card slot on your desktop computer
- 3) In Farm Works go to the "File" menu and select "Synchronize Trac Mate".
- 4) Select the "Synchronization Location". This will likely be "CE Main Memory" or "CD SD Card".
- 5) Select the tab for "Log Files" and highlight the desired log files.
- 6) Select the "OK" button.
- 7) Locate the file in the Tree View on the left, double-left-click to display the layer.