

# ARM Tablet Data Collector

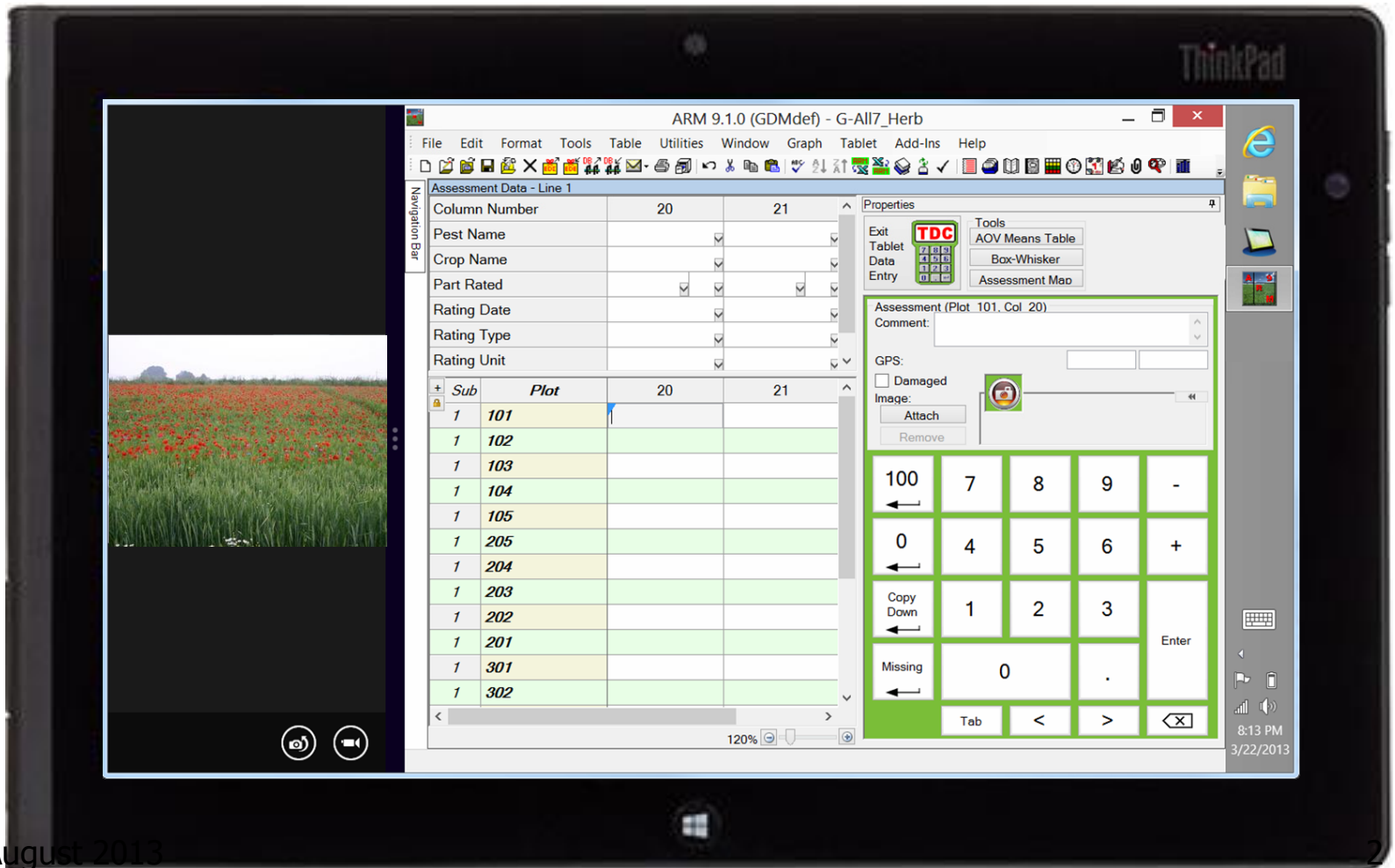
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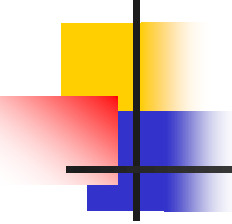


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# ARM Tablet Data Collector

Win 8 Pro  
tablet  
+  
ARM  
+  
special  
ARM  
tablet  
features





# Actions that will Improve Assessment Quality

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- Enter data only once to avoid transcription errors
- Employ appropriate range checking for assessed values
- Perform data quality checks before leaving trial site (analyze, graph)
- Include photographs that illustrate or support measurements & observations



# Benefits of Using ARM Tablet Data Collector (TDC)

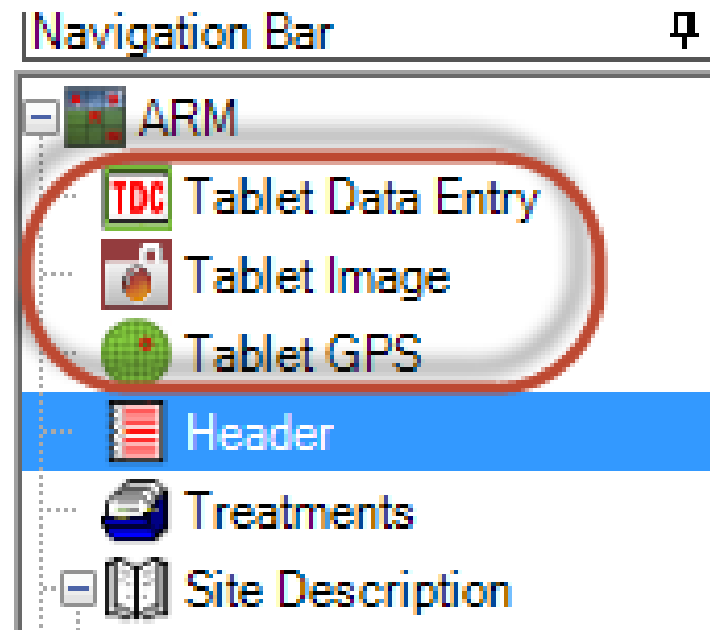
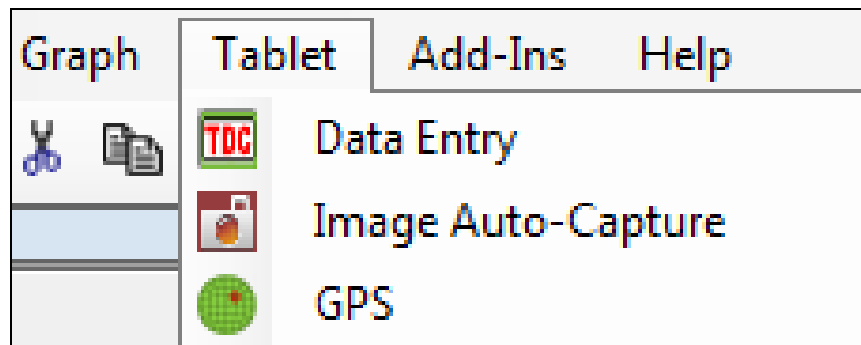
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Use full ARM software at trial site on conveniently sized hardware that is readable in direct sunlight, plus:

- Optimized for collecting data
- Take photos directly into ARM trial file
- Record GPS coordinates into trial
- Perform data quality checks on-site
- Eliminates data transcription errors

# Special TDC Features

- Tablet Data Entry
- Tablet Image Capture
- Tablet GPS



# Tablet Data Entry

- Component of Assessment Data editor
- Optimizes editor use on a small touch tablet computer

The screenshot displays the 'Assessment Data - Line 5' editor. It features a table with columns for 'Sub', 'Rp', 'Bk', and 'Col'. Below the table is a 'Properties' panel with buttons for 'View Options...', 'Ignore Match', and 'Refresh'. A 'Views' section lists various display options. A red circle highlights a 'Tablet Data Entry' widget with a numeric keypad and the 'TDC' logo.

+	Sub	Rp	Bk	Col
🔒	1	1	1	5
	1	2	2	4
	1	3	3	3
	1	4	4	4
	1	1	1	2
	1	2	2	5
	1	3	3	2
	1	4	4	5

Assessment Data - Line 5

Column Number

Pest Type

Pest Code

Pest Scientific Name

Pest Name

Crop Code

BBCH Scale

Crop Scientific Name

Crop Name

Crop Variety

Description

Properties

Assessment View

View Options...

Ignore Match

Refresh

Hidden: Row

Views

Original

All fields

Hidden fields with information

Hide empty fields

Default - All visible

Default - Brief fields visible

Default - Data entry mode

Default - Fertilizer fields visible

Default - Non-pest fields visible

My view

Tablet Data Entry

TDC

7 8 9

4 5 6

1 2 3

0

Tools

AO

As

The screenshot shows a data entry application interface. On the left, a table titled "Assessment Data - Line 1" has columns for "Column Number" (20, 21), "Rating Date", "Rating Type", "Rating Unit" (1-6ICR), and "Number of Subsamples" (1). Below this is a table with columns "Sub", "Plot", and "Column Number" (20, 21), with rows for plots 101, 102, and 103. On the right, a "Properties" panel includes a "TDC" keypad, "Tools" (AOV Means Table, Box-Whisker, Assessment Map), and an "Image" capture section with a camera icon. A large green touch keypad is overlaid at the bottom right, containing numeric keys (0-9, 100, 0, Copy Down, Missing), a decimal key, and navigation keys (Tab, <, >, <X>). A zoom control at the bottom center shows "150%" with zoom in/out buttons. Red arrows point from a list of features to these specific elements.

- Optimized screen
- Start image capture
- Shortcut keys
- Touch keypad
- Zoom

# Tablet Data Entry Options

- Set plot order
- Enter 1 or more data columns
- Visible header rows
- “Blind” assessment
- Performance & screen optimized for tablet

Tablet Data Entry Options

Sort order

'Plot' experimental unit       Assessment (Serpentine within blocks)

Treatment       Harvest (Serpentine across blocks)

Cursor order

By column across 'Plot'

Across columns within 'Plot'

Across columns within treatment

Starting column: 20      Columns: 3

View

Default - Tablet Data Entry

Display treatment

Automatically recalculate after edits

Optimize screen layout

Show shortcut keys on tablet data entry keypad

OK      Cancel      Help



# Tablet Data Entry Features

- Automatically reads valid data range from assessment unit field
- For 1 digit scales from 0-9, cursor moves automatically to next assessment data cell (no pressing Enter)

Assessment Data - Line 2		
Column Number		20
Rating Type		DAMINS
Rating Unit		1-6ICR
Number of Subsamples		1
+ Sub	Plot	20
🔒		
1	101	3
1	102	

# Tablet Data Entry Features

- Automatic limit dialog displays for out-of-range data, for immediately correcting an entry mistake

Rating Type	DAMINS	
Rating Unit	1-6ICR	
+ Sub	Plot	20
1	101	7
1	102	
1	103	
1	104	
1	105	
1	205	
1	204	
1	203	
1	302	
1	303	
1	304	
1	305	
1	405	
1	404	

ARM Request

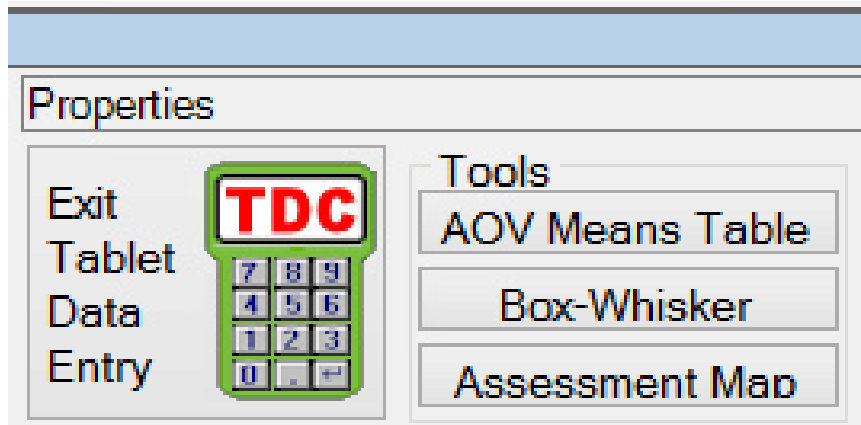
Data out of bounds 1-6

7

7	8	9	-
.	E	C	.
0		.	Enter
Tab	<	>	<X

OK Cancel

# Tablet Data Review Tools



- Data analysis (Analysis of Variance)
- Box-Whisker Graph
- Assessment Map

# AOV Means Table

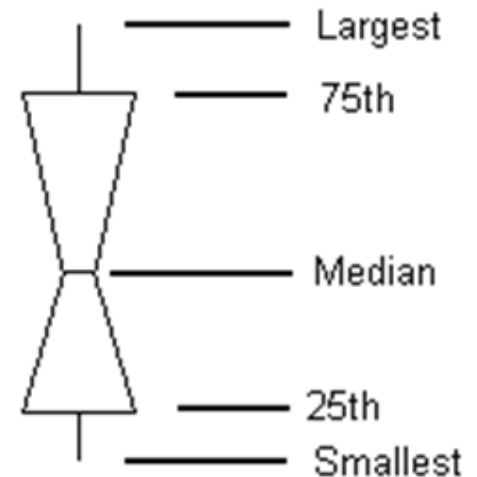
Rating Type ARM Action Codes	COUINS APC		
Trt No.	Treatment Name	Rate Rate Unit	1
1	Untreated Check		106.3 a (0.0%)
2	Sure Kill NIS	250 g ai/ha 0.5 % v/v	13.5 bc (87.3%)
3	Super Stomp NIS	250 g ai/ha 0.5 % v/v	17.0 bc (84.0%)
4	Sure Kill NIS	375 g ai/ha 0.5 % v/v	9.5 c (91.1%)
5	Super Stomp NIS	375 g ai/ha 0.5 % v/v	24.0 b (77.4%)
LSD (P=.05)			8.93
Standard Deviation			5.80
CV			17.03
Bartlett's X2			12.244
P(Bartlett's X2)			0.016*
Skewness			1.6078*
Kurtosis			1.0506
Replicate F			6.201
Replicate Prob(F)			0.0087
Treatment F			197.210
Treatment Prob(F)			0.0001

- AOV=Analysis of Variance
- Treatment means
- Mean comparison test
- Descriptive statistics
- AOV assumption violations
- Evidence of significant treatment/rep. differences

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)  
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL

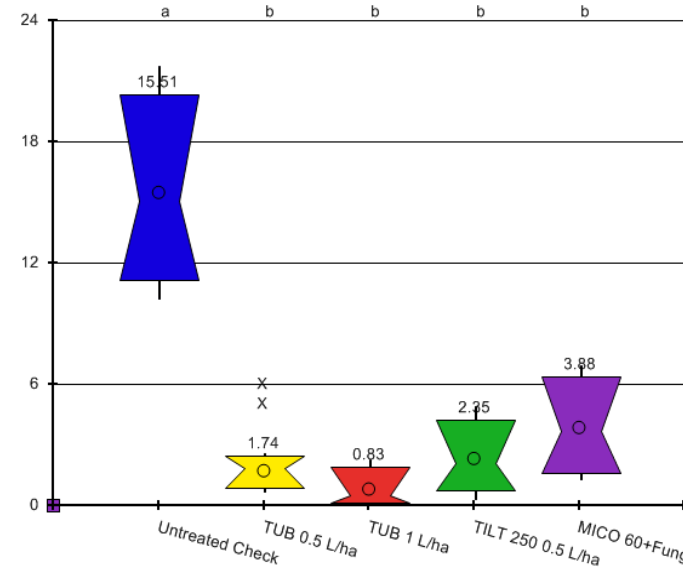
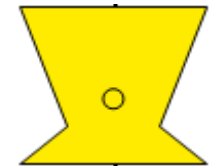
# Box-Whisker Description

- Shows treatment "spread" around median
- **Box** is from 25th to 75th percentile, around median
- **Whiskers** extend to largest and smallest non-outlier values
- **Outliers** (X) are points outside of the box by more than 1.5 times box height



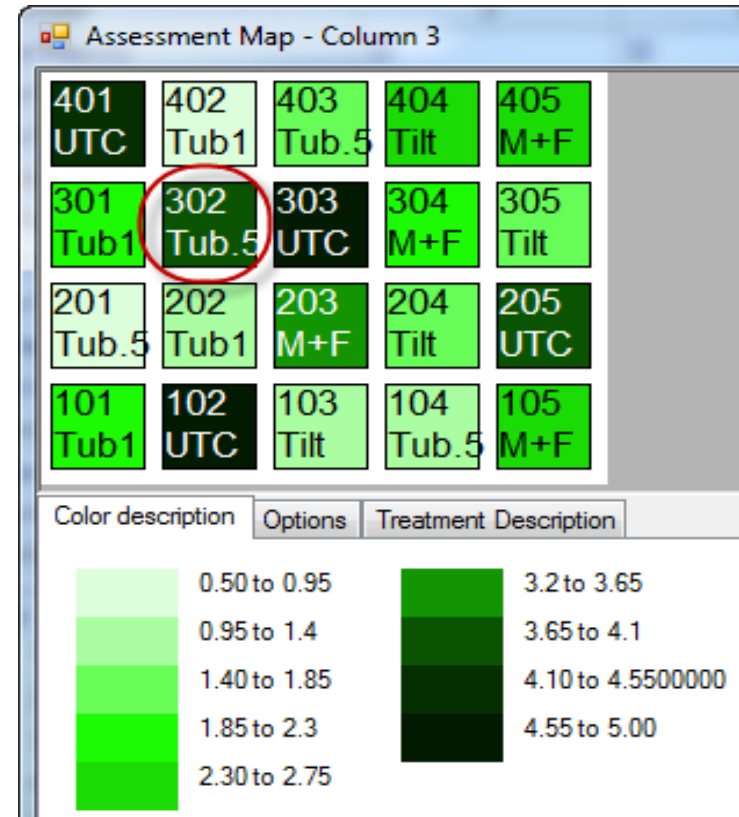
# Box-Whisker Graph

- Box height shows treatment stability across replicates
- Skewed waist position shows a replicate difference
- Simplest method to view treatment variance(s)



# Assessment Map

- Displays assessment values on trial map
- Values are indicated by color intensity
- Lower values display in lighter colors
- Color description is key to value colors



# Tablet Image Auto-Capture

- Take a picture. ARM "captures" the image and links it to the current plot

The screenshot shows the 'Tablet Image Import Preview' window. It includes settings for 'Direction' (radio buttons for 'By column across Plot' and 'Across columns within Plot'), 'Sort order' (radio buttons for 'Plot', 'Assessment', 'Treatment', 'Harvest'), and 'Number of images per assessment' (checkboxes for 'Copy to trial folder' and 'Rename image'). A 'File name convention' section has checkboxes for 'Trial ID', 'Trt', and 'Plot', with a text field containing 'G-All7\_Herb...'. A red instruction box says 'Drag an image to a new cell to change the Plot and data column linkage.' Below is a table with columns Sub, Rp, Col, Plot, Trt, and image thumbnails.

Sub	Rp	Col	Plot	Trt	20	21
1	1	1	101	4		
1	1	2	102	2		





# Tablet Image Auto-Capture

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- Continue taking pictures, and images are added to the next open cell in Tablet Image Import Preview dialog
- Drag-and-drop to move images
- Set “Columns” to 1 for 1 image per plot
- Right-click (press and hold) and choose “Remove image” to delete
- Images are backed up into ARMbackup

# Suggested "Camera" Position

The screenshot displays the ARM 9.1.0 (GDMdef) - G-All7\_Herb software interface. The main window shows a data table for 'Assessment Data - Line 1' with columns for Column Number (20, 21), Pest Name, Crop Name, Part Rated, Rating Date, Rating Type, and Rating Unit. Below this is a table with columns for Sub, Plot, and two empty columns.

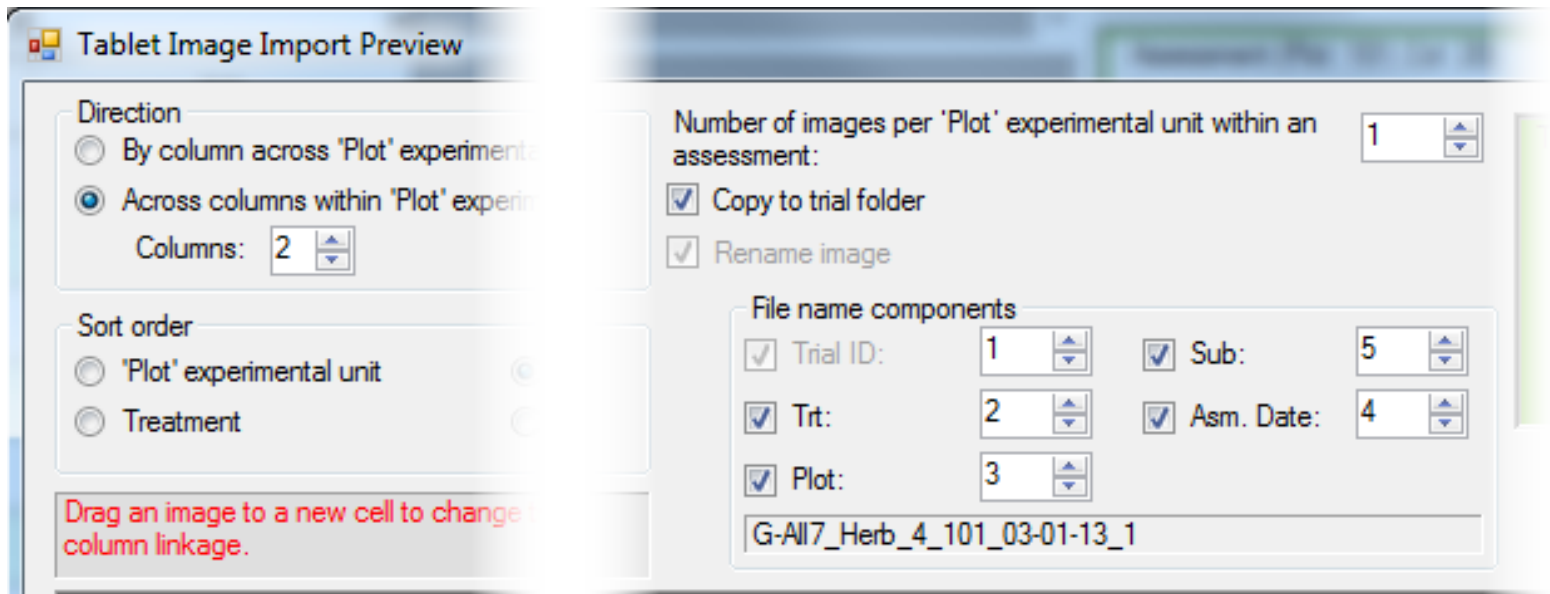
Sub	Plot		
1	101		
1	102		
1	103		
1	104		
1	105		
1	205		
1	204		
1	203		
1	202		
1	201		
1	301		
1	302		

The Properties panel on the right includes a 'Tools' section with buttons for 'AOV Means Table', 'Box-Whisker', and 'Assessment Map'. Below this is the 'Assessment (Plot 101, Col 20)' section, which includes a 'Comment' field, a 'GPS' section with a 'Damaged' checkbox, and an 'Image' section with an 'Attach' button and a camera icon. At the bottom right is a virtual keypad with numbers 0-9, a decimal point, and an 'Enter' key.

On the left side of the interface, there is a vertical navigation bar and a large image of a field of red poppies. At the bottom left, there are icons for a camera and a microphone. The system tray at the bottom right shows the time as 8:13 PM on 3/22/2013.

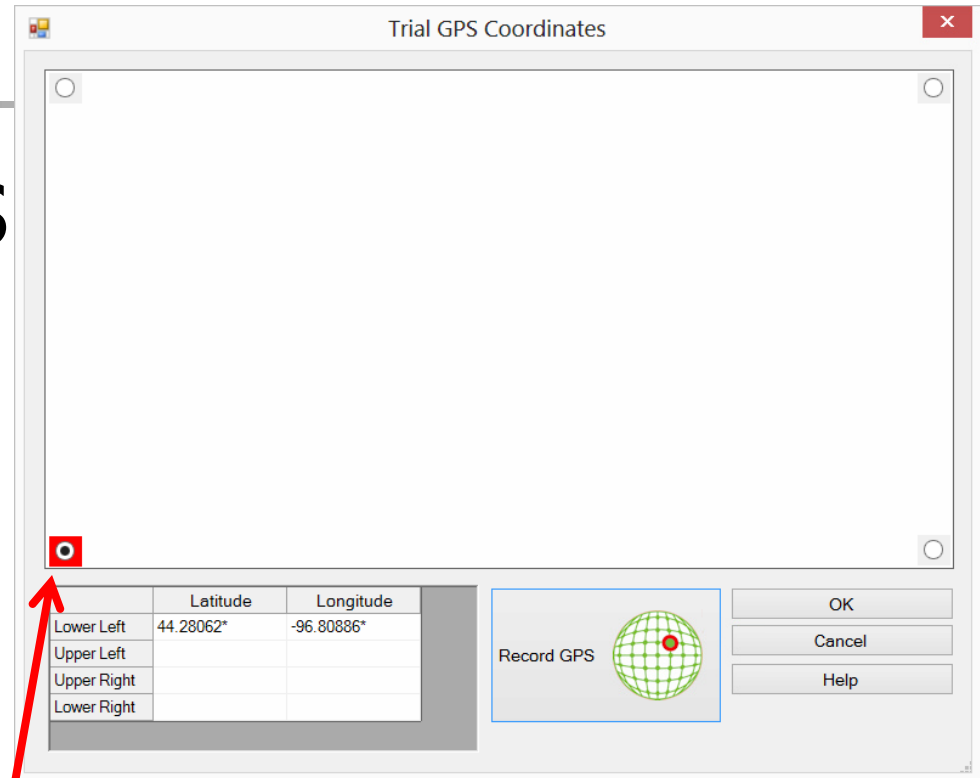
# Tablet Image Auto-Capture

- Automatically rename attached image
- Copy image to folder where trial is saved



# Tablet GPS

- Reads current GPS coordinates from tablet hardware into Latitude and Longitude site description fields
- Touch Tablet GPS button to read current position for indicated corner (e.g. LL)





# Tablet Data Collector Inquiries

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- Email your local GDM Representative, see <http://gdmdata.com/distributors.htm> or [fran@gdmdata.com](mailto:fran@gdmdata.com)

