

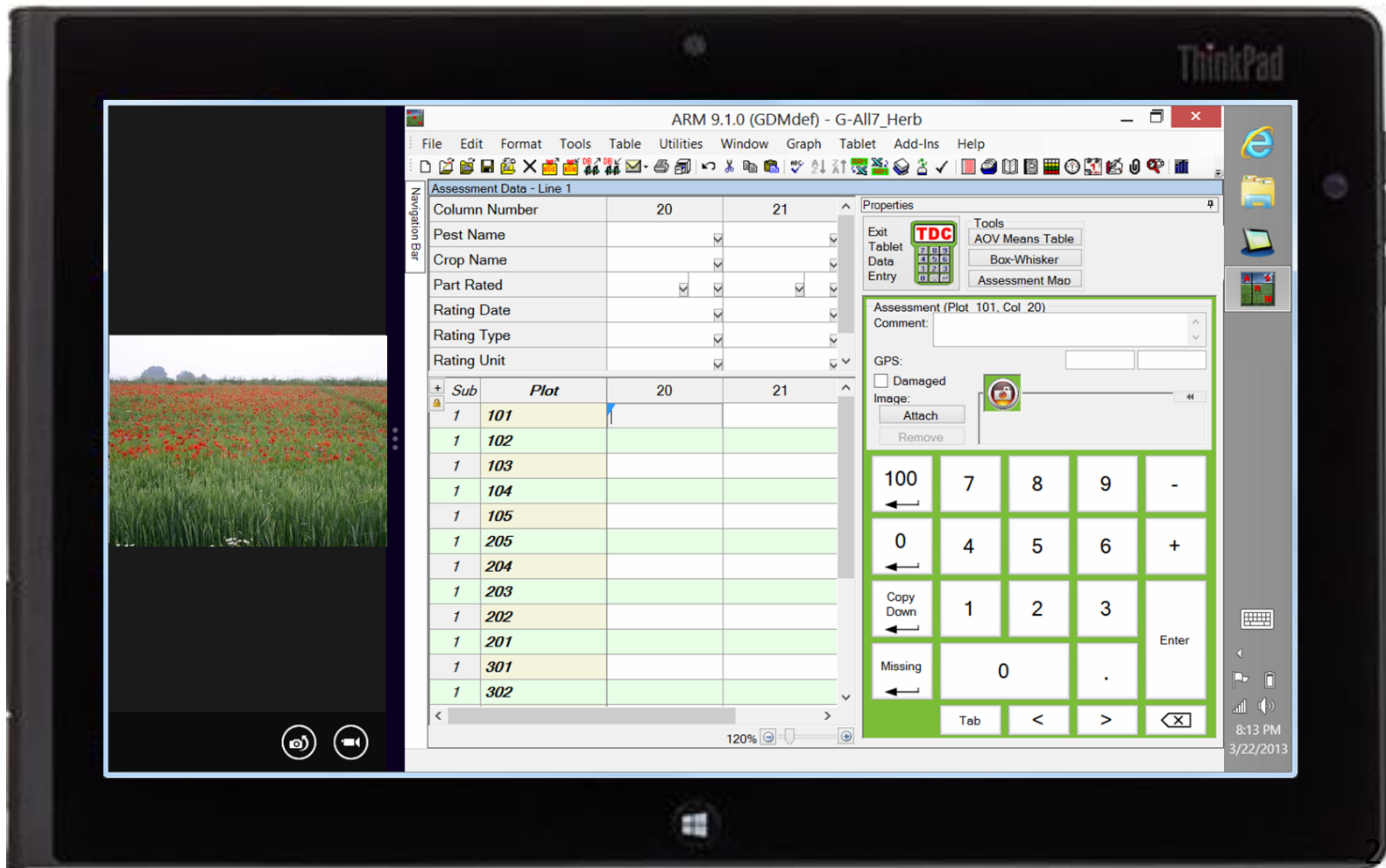
ARM Tablet Data Collector



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ARM Tablet Data Collector

Win 8 Pro
tablet
+
ARM
+
special
ARM
tablet
features



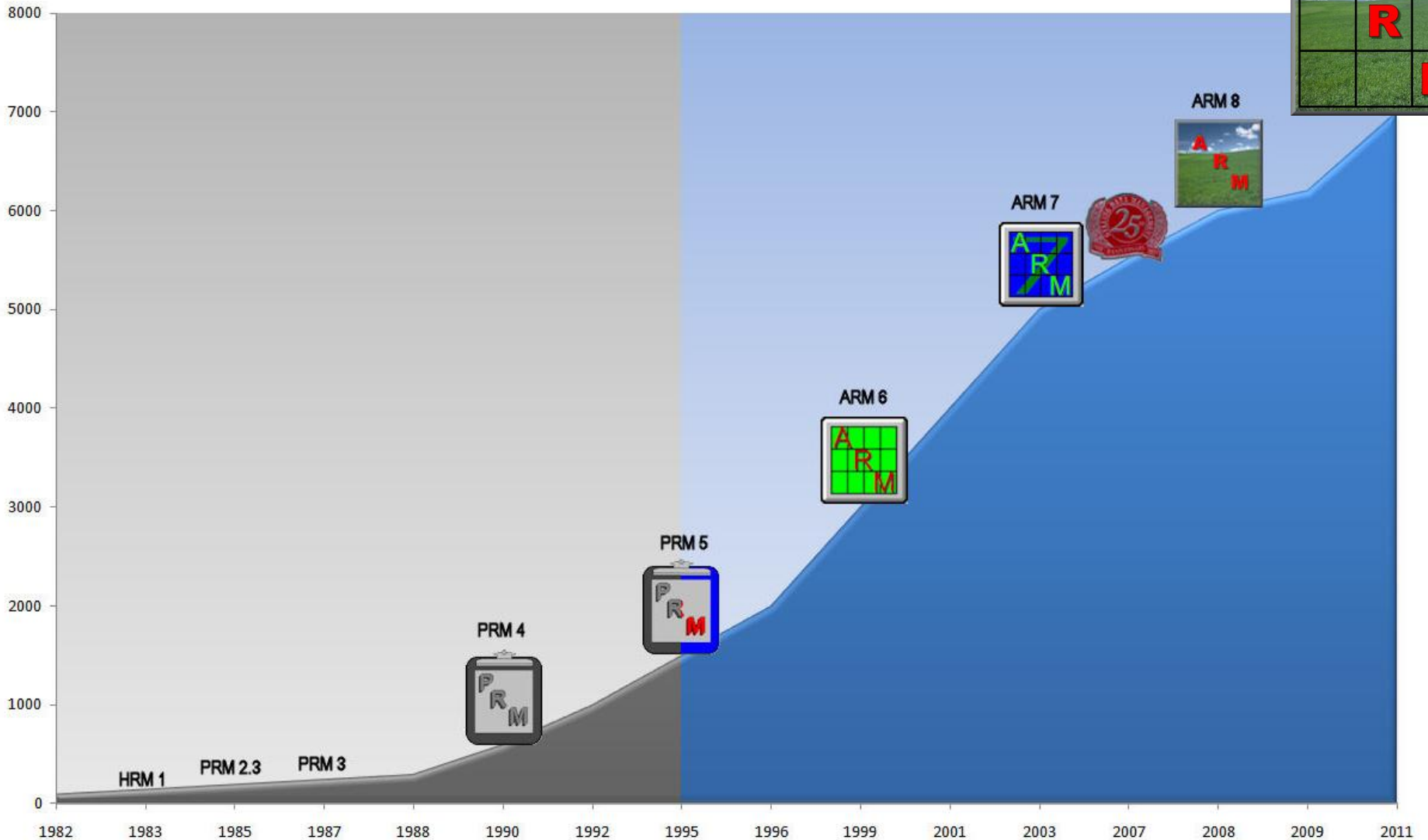


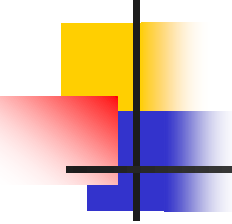
What is 'ARM'?

- Windows software for trial management
 - Enter treatments of interest, select design (RCB, CRD, Latin Square, 4 Lattices, Factorial RCB, Split-Plot, Strip-Block)
 - Randomize trial appropriately for design
 - Print trial management reports
 - Enter assessments and site information in structured format
 - Transform, statistically analyze, report, & graph results

ARM 9 – Evolution of ARM Software

Total ARM User Licenses Over Time





Actions that will Improve Assessment Quality

- 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



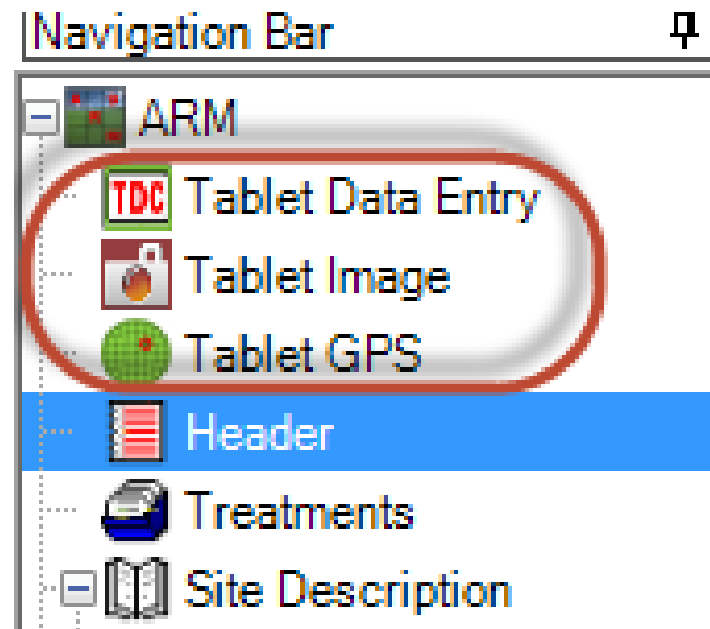
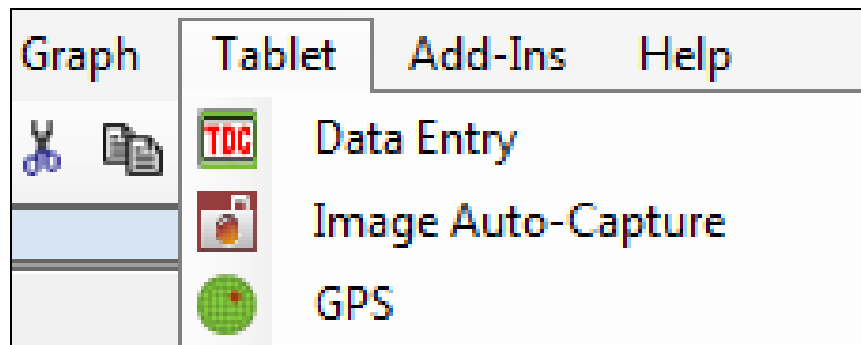
Benefits of Using ARM Tablet Data Collector (TDC)

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 'Tablet Data Entry' interface. On the left, a table titled 'Assessment Data - Line 5' lists various fields for data entry. Below the list is a table with columns 'Sub', 'Rp', 'Bk', and 'Col'. The right panel, titled 'Properties', contains buttons for 'View Options...', 'Ignore Match', and 'Refresh', along with a 'Hidden: Row' dropdown. Below these are 'Views' including 'Original', 'All fields', 'Hidden fields with information', 'Hide empty fields', and several 'Default' views. At the bottom right, a 'Tools' section includes a 'Tablet Data Entry' button with a 'TDC' icon and a numeric keypad.

Column Number	Pest Type	Pest Code	Pest Scientific Name	Pest Name	Crop Code	BBCH Scale	Crop Scientific Name	Crop Name	Crop Variety	Description
+	Sub	Rp	Bk	Col						
1	1	1	5	1						
1	2	2	4	2						
1	3	3	3	3						
1	4	4	4	4						
1	1	1	2	1						
1	2	2	5	2						
1	3	3	2	3						
1	4	4	5	4						

The screenshot shows a software interface with a main data table, a properties panel, and a keypad. Red annotations highlight the following features:

- Navigation Bar:** A vertical bar on the left side of the main table.
- Optimized screen:** The main data table with columns for Sub, Plot, and data values.
- Start image capture:** A camera icon in the properties panel.
- Shortcut keys:** A keypad with various function keys like 'Copy Down' and 'Missing'.
- Touch keypad:** A numeric keypad with digits 0-9 and symbols like '+', '-', 'Enter', and 'Tab'.
- Zoom:** A zoom control at the bottom of the screen showing '150%'.

Assessment Data - Line 1

Column Number	20	21
Rating Date		
Rating Type		
Rating Unit		1-6ICR
Number of Subsamples		1

Sub Plot

Sub	Plot	20	21
1	101		
1	102		
1	103		

Properties

Tools: AOV Means Table, Box-Whisker, Assessment Map

Exit, Tablet, Data, Entry

Assessment (Plot 101, Col 20)

Comment:

GPS:

☐ Damaged

Image:

Attach, Remove



Keypad:

100	7	8	9	-
0	4	5	6	+
Copy Down	1	2	3	Enter
Missing	0	.		
Tab	<	>	<X>	

Zoom: 150%

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

8

9

-

1

2

3

.

0

.

Enter

Tab

<

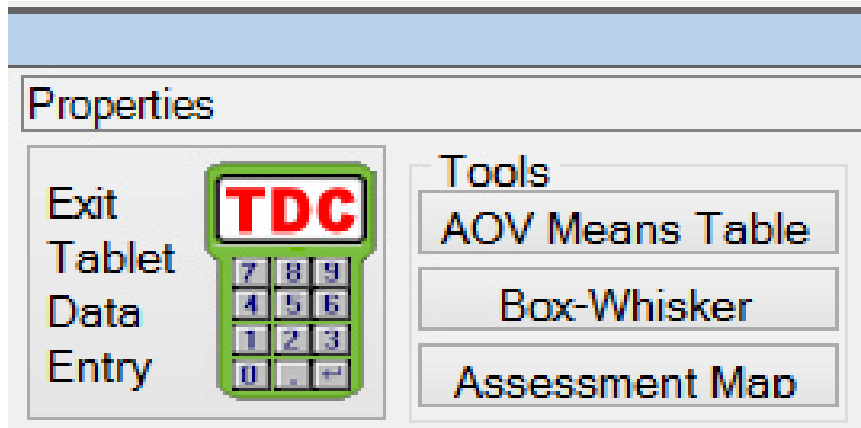
>

<X

OK

Cancel

Tablet Data Review Tools



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

AOV Means Table

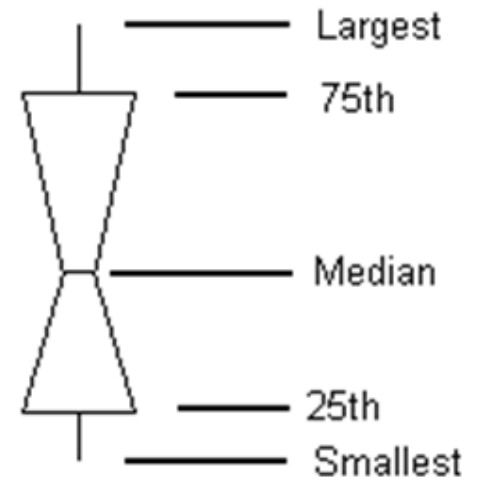
Rating Type ARM Action Codes	COUINS APC	
Trt Treatment No. Name	Rate Rate Unit	1
1 Untreated Check		106.3 a (0.0%)
2 Sure Kill NIS	250 g ai/ha 0.5 % v/v	13.5 bc (87.3%)
3 Super Stomp NIS	250 g ai/ha 0.5 % v/v	17.0 bc (84.0%)
4 Sure Kill NIS	375 g ai/ha 0.5 % v/v	9.5 c (91.1%)
5 Super Stomp NIS	375 g 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

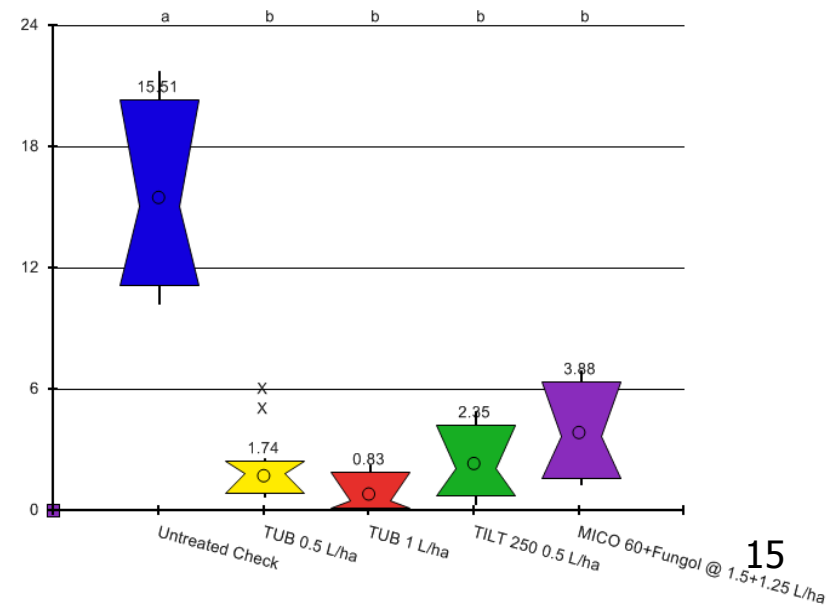
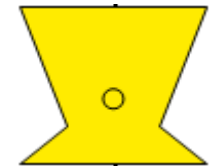
Box-Whisker Description

- 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



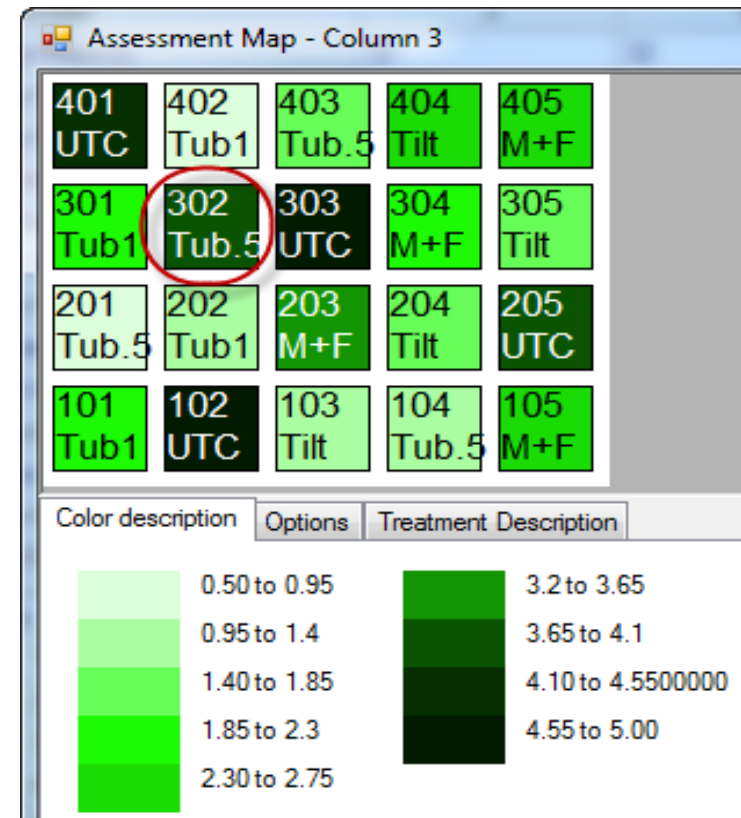
Box-Whisker Graph

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



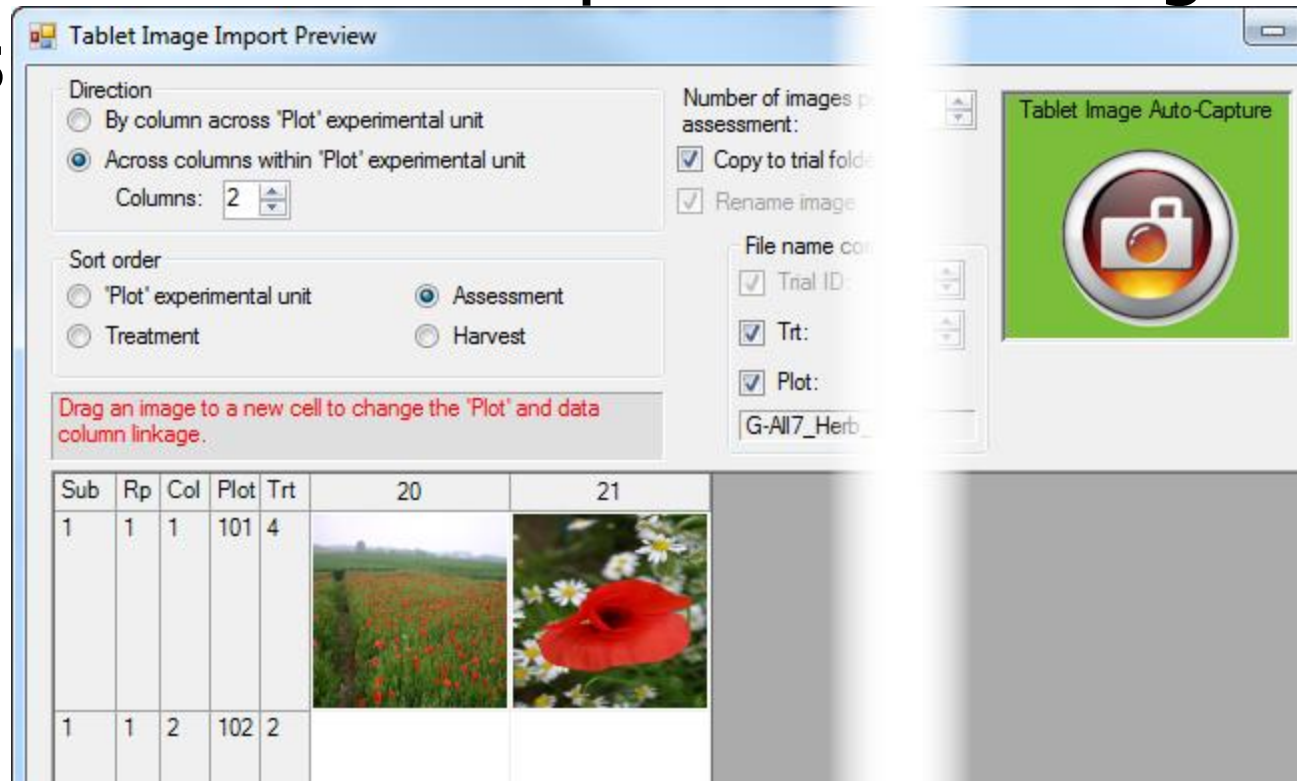
Assessment Map

- 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



Suggested "Camera" Position

ARM 9.1.0 (GDMdef) - G-All7_Herb

File Edit Format Tools Table Utilities Window Graph Tablet Add-Ins Help

Assessment Data - Line 1

Column Number	20	21
Pest Name		
Crop Name		
Part Rated		
Rating Date		
Rating Type		
Rating Unit		

Navigation Bar

Sub Plot 20 21

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

Properties

Exit Tablet Data Entry

Tools

AOV Means Table

Box-Whisker

Assessment Map

Assessment (Plot 101, Col 20)

Comment:

GPS:

☐ Damaged

Image:

Attach

Remove

100 7 8 9 -

←

0 4 5 6 +

←

Copy Down 1 2 3

←

Missing 0 . Enter

←

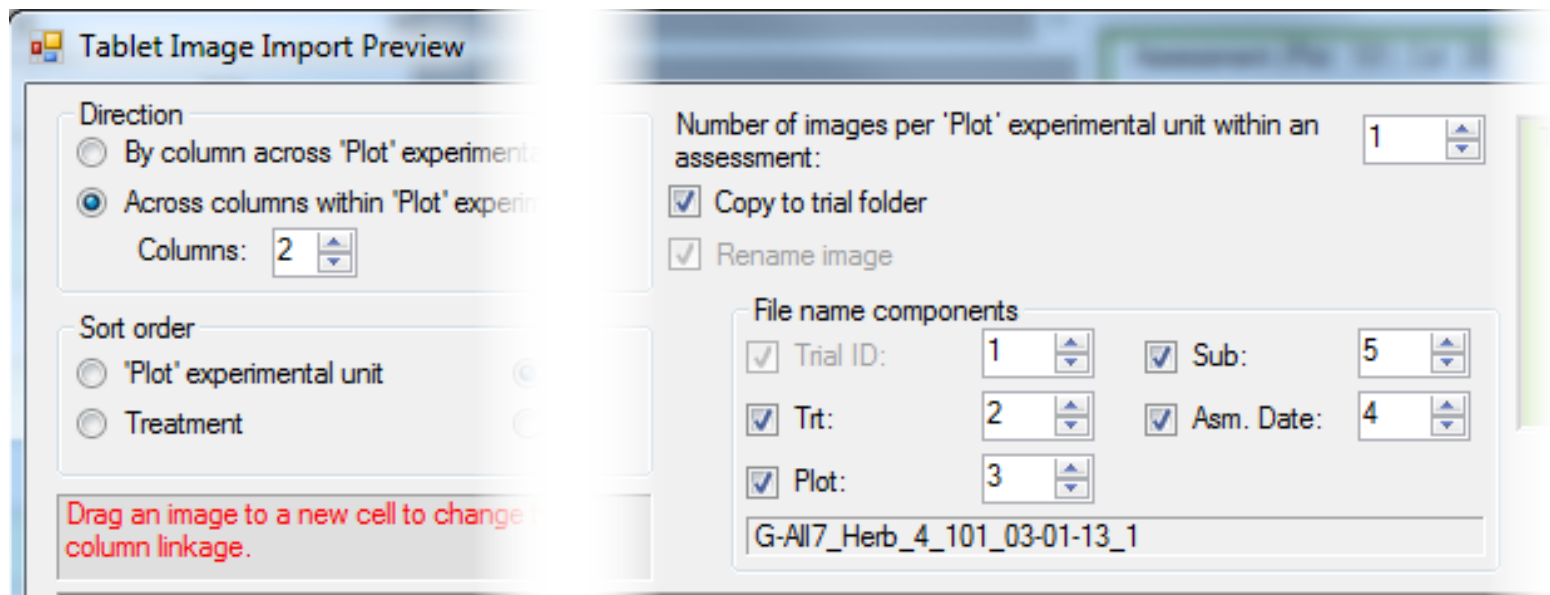
Tab < > <X>

120%

8:13 PM 3/22/2013

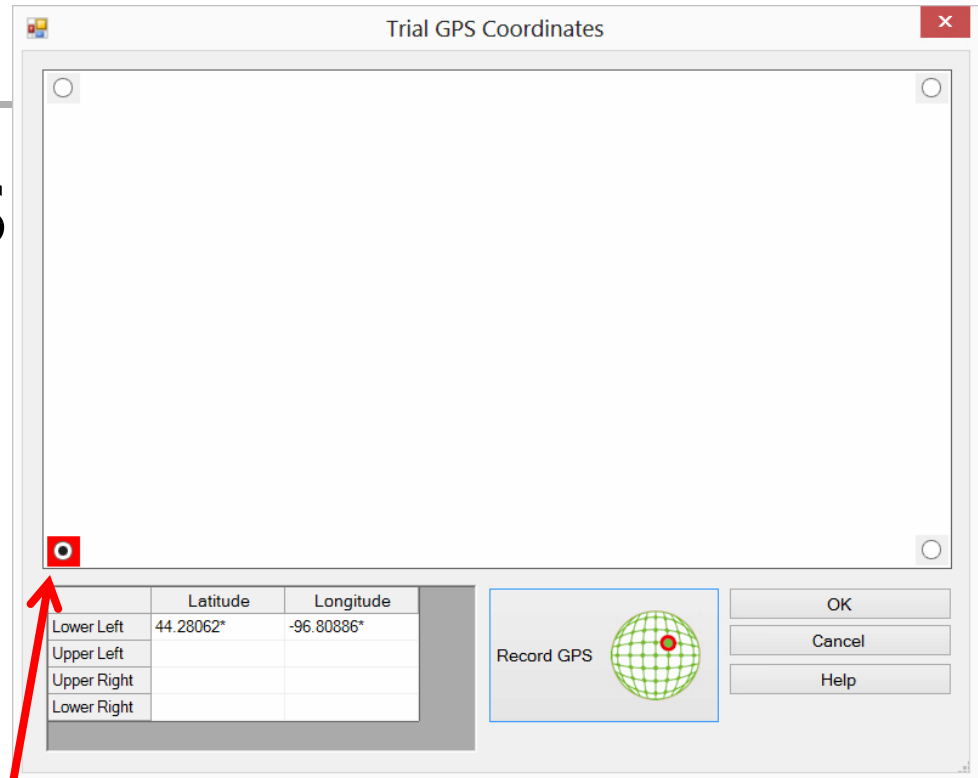
Tablet Image Auto-Capture

- 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

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

