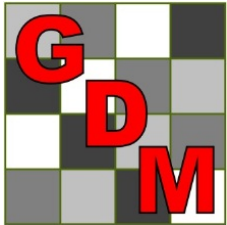# ARM Trial Management for 2016

Gylling Data Management, Inc.

Assessment Data Editor

Assessment Data view to hide data columns in which there are <u>no differences between treatments</u>

Assessment Data Editor

Before:

		1			2			3			4		
			☑			☑	SEPTTR	☑		SEPTTR	☑		
	LEAF	☑	C ☑	PLANT	☑	C ☑	LEAF3	☑	P ☑	LEAF3	☑	P ☑
	Jul-15-2014	☑		Jul-15-2014	☑		May-13-2014	☑		Jun-18-2014	☑		
	PHYGEN	☑		VIGOR	☑		PESSEV	☑		PESSEV	☑		
	%	☑		%	☑		%	☑		%	☑		

Plot ▲	Trt	1	2	3	4
101	3	0	100	1.00	0.80
102	1	0	100	10.00	7.70
103	4	0	50	1.00	1.10
104	2	0	100	0.00	1.20
105	5	0	100	10.00	1.70
201	2	0	100	0.00	1.20
202	3	0	100	2.00	0.90
203	5	0	100	0.00	3.30
204	4	0	100	5.00	1.70
205	1	0	100	3.00	9.50

After:

		3		4		5		
		SEPTTR	☑	SEPTTR	☑	SEPTTR	☑	ZZ
		LEAF3	P ☑	LEAF3	P ☑	LEAF2	P ☑	LE
		May-13-2014	☑	Jun-18-2014	☑	Jul-2-2014	☑	Jul
		PESSEV	☑	PESSEV	☑	PESSEV	☑	AR
		%	☑	%	☑	%	☑	%A

Plot ▲	Trt	3	4	5	
101	3	1.00	0.80	0.40	20.0
102	1	10.00	7.70	9.90	10.
103	4	1.00	1.10	1.60	10.0
104	2	0.00	1.20	0.00	80.0
105	5	10.00	1.70	7.40	0.00
201	2	0.00	1.20	1.20	20
202	3	2.00	0.90	0.10	20.
203	5	0.00	3.30	2.90	0.0
204	4	5.00	1.70	3.00	70.
205	1	3.00	9.50	16.00	0.0

Properties
Assessment
View Options...
Visible Col 8/10
Refresh
Hidden: 2 Col, Row

All values the same or missing/blank (50 in column 2 is "damaged" so is missing)

Assessment Data Editor

Click this "Visible Col" button to choose between displaying:

- All data columns, or
- A view that temporarily hides some columns

Reports

Option to:

- Change the order of treatment fields on reports, and

- Save this order into report sets, to easily use the same treatment order in future reports

Summary Reports

Option to merge assessment data headers over columns having the same information

Assessment Data Summary Report

New options for displaying extended 'plot' experimental unit description on report

"Damaged" plot value - handled as missing data during analysis

AOV Means Table Report

Print range of LSD values used to compare the largest and smallest **non-zero** means for any log, arcsine, or square root transformed data

| Pest Code Part Rated Rating Date Rating Type Rating Unit Days After First/Last Applic. ARM Action Codes		SEPTTR LEAF3 P Jun-18-2014 PESSEV % 64 15 AL	SEPTTR LEAF2 P Jul-2-2014 PESSEV % 78 29 AA
Trt Treatment No. Name	Rate Rate Unit	5*	7*
1 Untreated Check		6.89 a	15.14 a
2 Tub	0.5 l/ha	1.28 b	1.23 bc
3 Tub	1 l/ha	1.04 b	0.40 c
4 Tilt 250	0.5 l/ha	1.60 b	1.51 bc
5 Mico 60 Fungol	1.5 l/ha 1.25 l/ha	1.19 b	3.09 b
LSD P=.05 CV		1.878 - 3.785 39.69t	1.218 - 4.299 23.81t

AOV Means Table Report

Example using this log transform:

- Compare 6.89 vs. 1.60 using LSD≈3.785
  (largest mean vs. next largest)
- Compare 1.04 vs. 1.19 using LSD≈1.878
  (smallest mean vs. next smallest)

Rating Type	PESSEV
Rating Unit	%
ARM Action	AL
Trt Treatm No. Name	5*
1 Untreat	6.89 a
2 Tub	1.28 b
3 Tub	1.04 b
4 Tilt 250	1.60 b
5 Mico 60 Fungol	1.19 b
LSD P=.05	1.878 - 3.785

Tablet Data Collector

Pinch-to-zoom, for easier screen resizing on Windows touch tablets
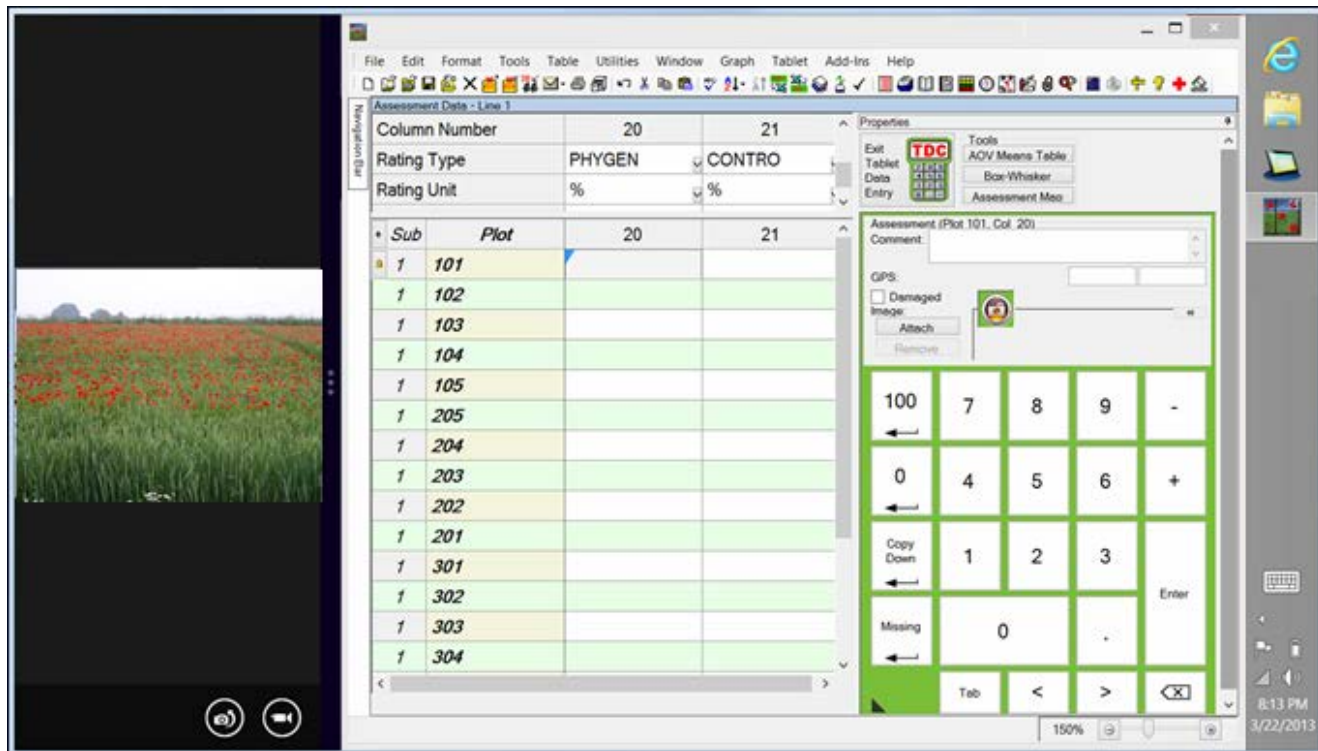
Tablet Data Collector

'Set GPS' button records location of:

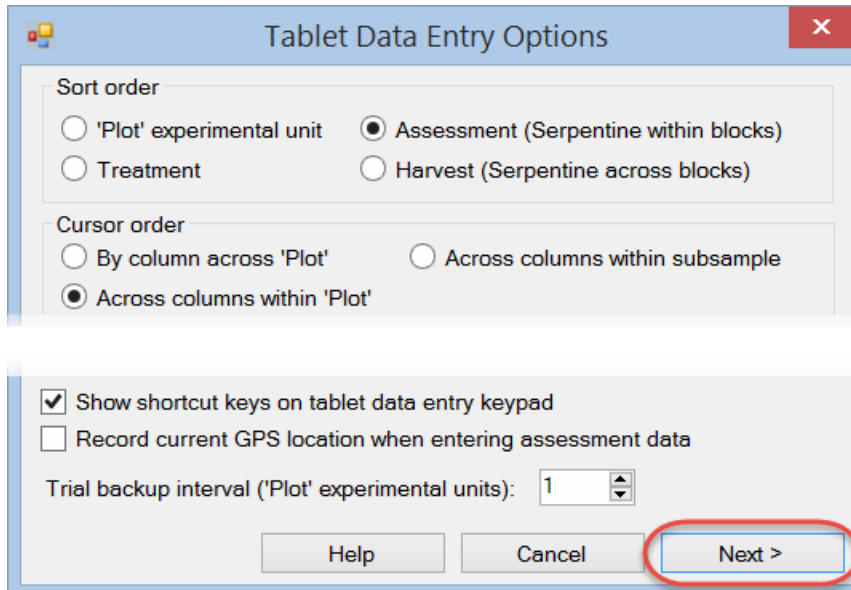- Current data value
- Current plot

Tablet Data Collector - GPS

Displays Trial Map to show actual trial shape when recording GPS for trial corners
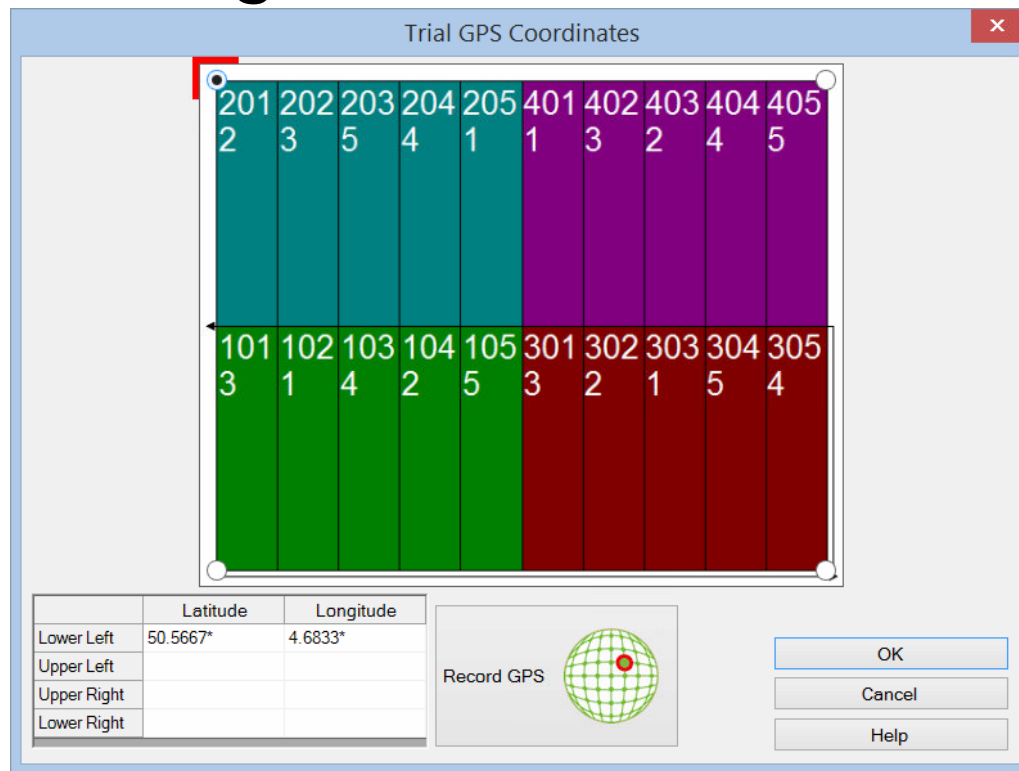
Tablet Data Collector 2016.1

Starting 'Tablet Data Entry' mode displays a wizard to also define 'Image Auto-Capture', reducing number of steps to take pictures

Tablet Data Collector 2016.1

Further touch interface improvements:

- Study List fits on 7" tablet
- Touchpad:
  - Text auto-sizes for button size
  - Tab and arrow keys are larger
- Larger 'display list' buttons are easier with fingers
- Auto-closes Study Rules tab

New Tablet Hardware

- **HarvestMaster Mesa 2**
  - 7 inch Windows 8.1/10 tablet
  - Waterproof, dustproof
  - Planned for release in 2Q2106

- **Motion Computing CL920**
  - 10 inch Windows 8.1 tablet
  - Rain resistant, dustproof
  - Available 1Q2016

Study List

- Guidelines in study list are now listed separately in dropdown selection list, to more easily find suitable trials

- More indexed fields:
  - Trial Address
  - GEP Accreditation Link
  - Interval to Prev. Appl.
  - Crop Stage Majority
  - Artificial Population

Study List

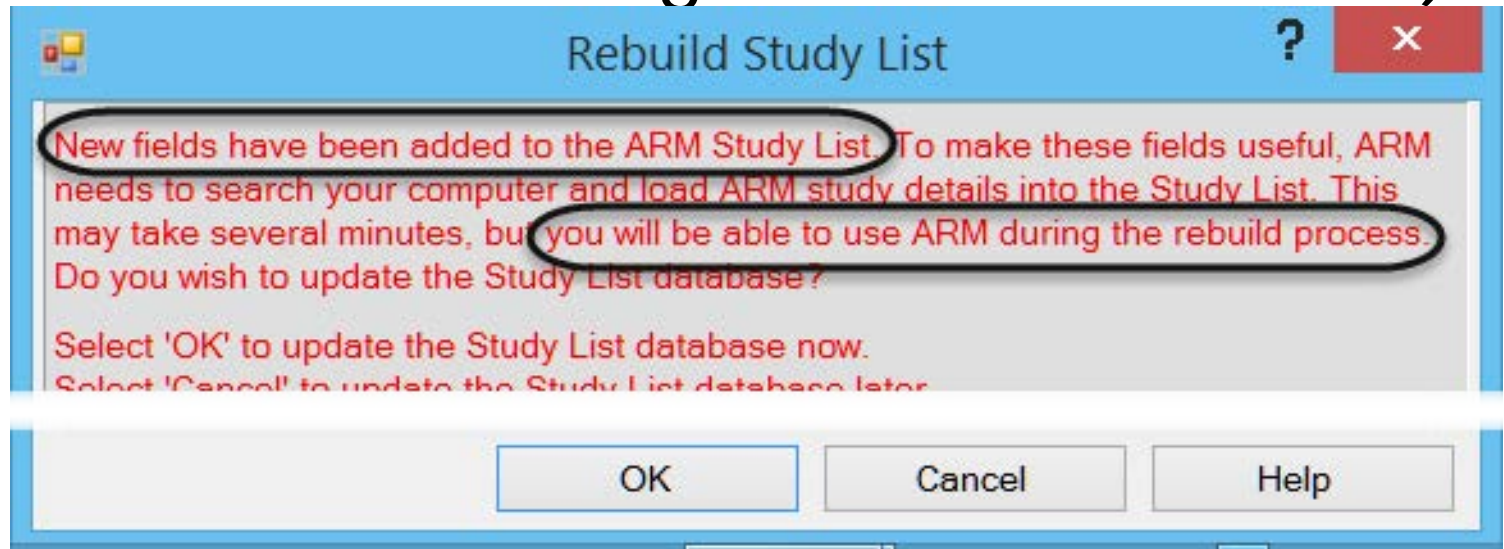- **Previous Filters list shows recent queries for locating studies of interest, to easily find and re-use past searches**

Study List

- Asks to rebuild study list after installing an ARM update with new indexed fields

- Can continue using ARM during rebuild (which runs in a background ARM session)

Trial Map

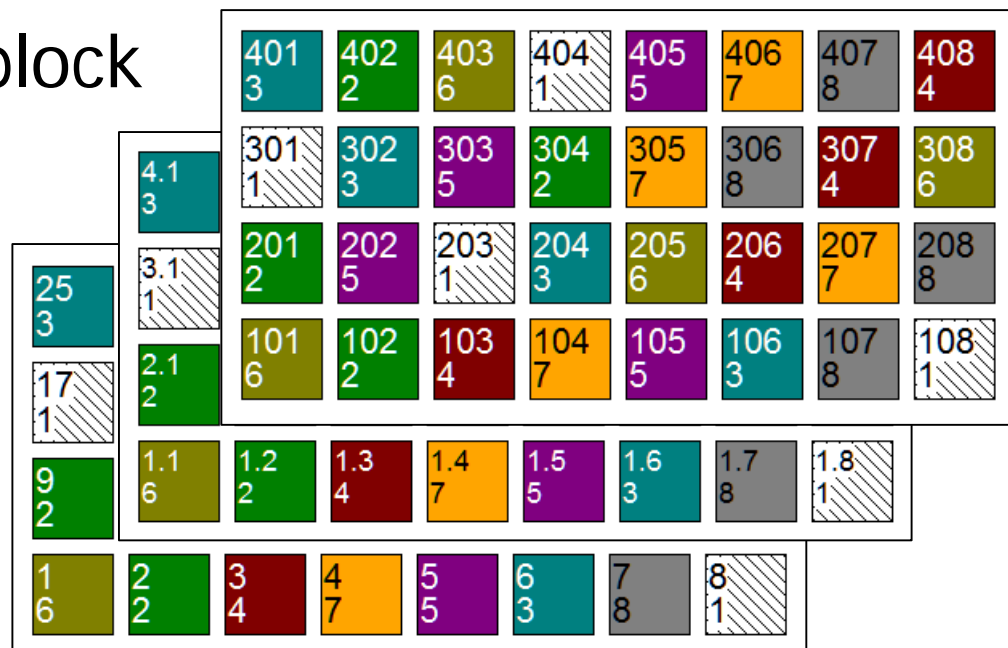Change plot number format at any time without re-randomizing the trial:

- Standard by rep/block
- Range by Row
- Sequential

Trial Map

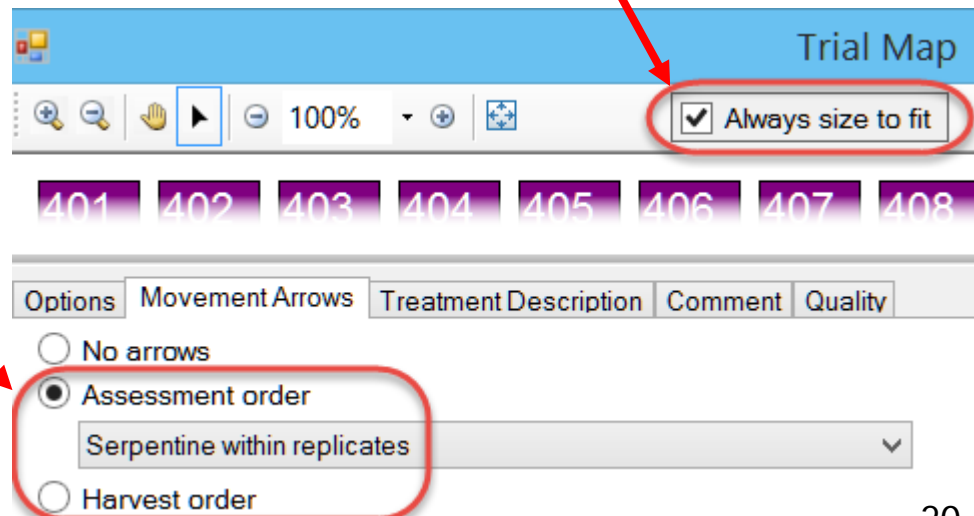- Dynamically auto-resize map and zoom level so entire trial always fits into trial map dialog

- New movement arrow choices:
  - Serpentine within replicates
  - Reversed serpentine within replicates
  - Within replicates
  - Reversed within replicates

GDM and HarvestMaster
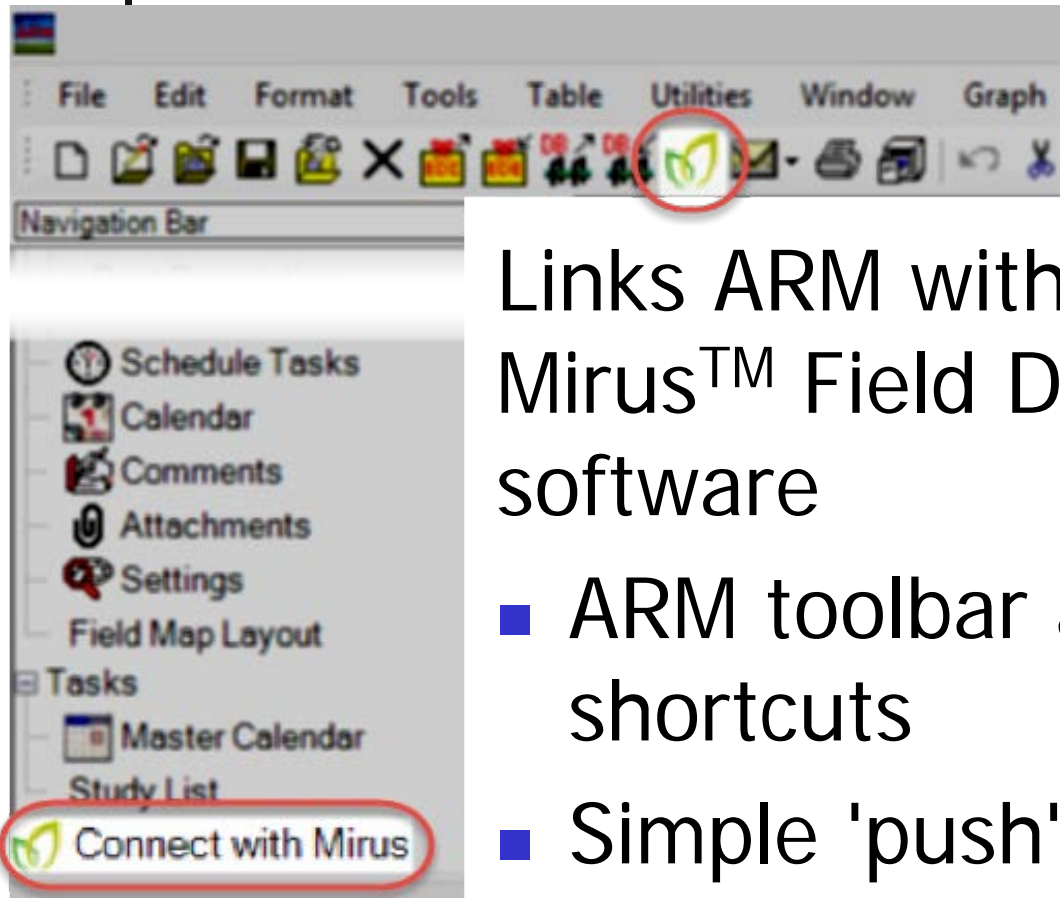
ARM Connect to HarvestMaster Mirus Software:

- ARM pushes field or trial map to Mirus
- Mirus uses with:
  - HarvestMaster Harvest Data Systems
  - Research sprayers
  - Other research equipment
- Mirus pushes harvest results to ARM

Details at GDM and HarvestMaster booths in exhibit hall
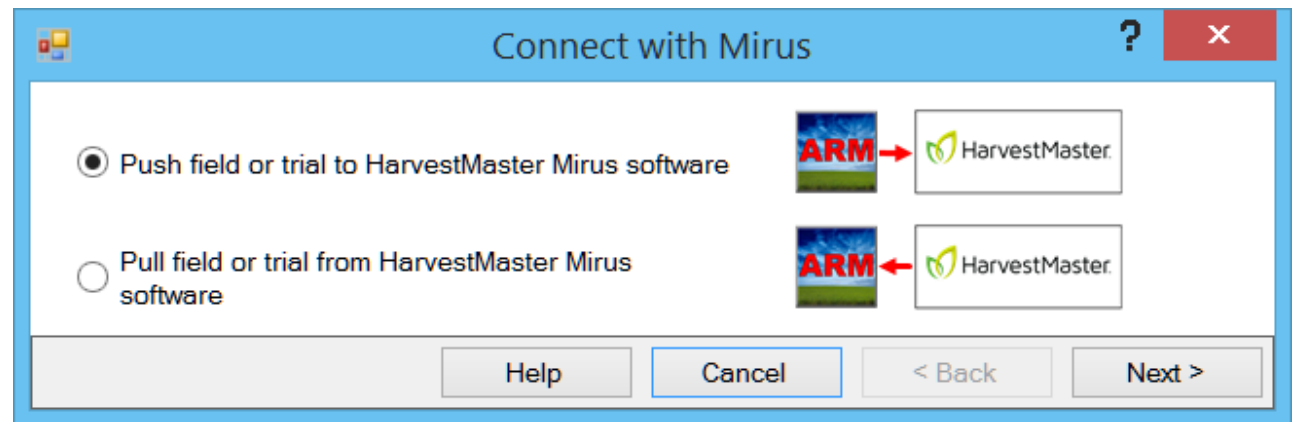
Connect with Mirus 2016.1

Links ARM with HarvestMaster's Mirus™ Field Data Collection software

- ARM toolbar and Navigation Bar shortcuts
- Simple 'push' and 'pull' connector

Connect with Mirus 2016.1
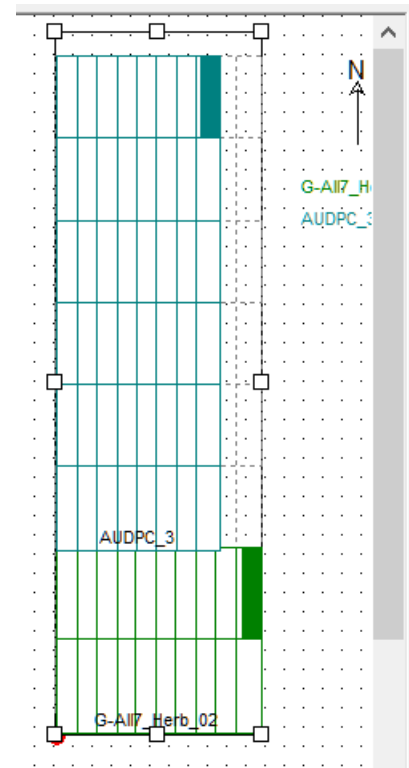
- **Wizard interface for simplicity**

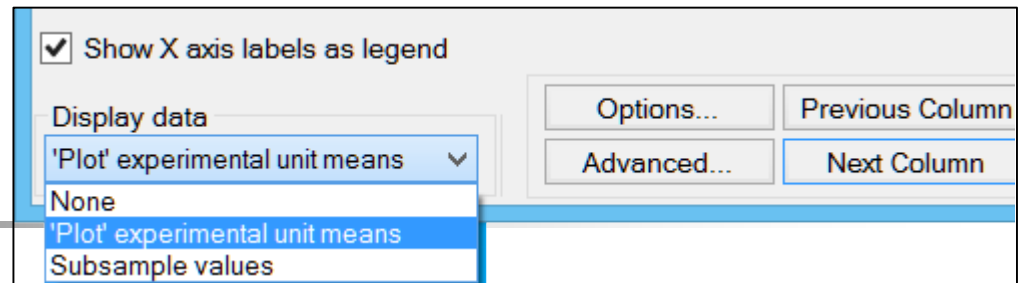- **Choose field or trial(s) from Study List**

Connect with Mirus 2016.1

Major improvements to ARM field map to support layout and harvest of multi-trial fields, such as:
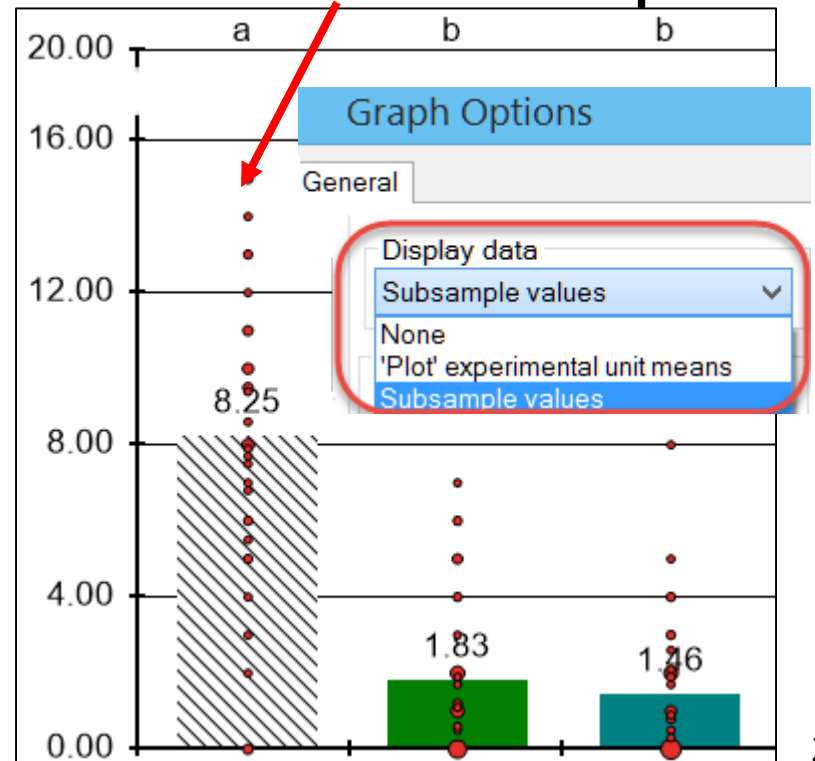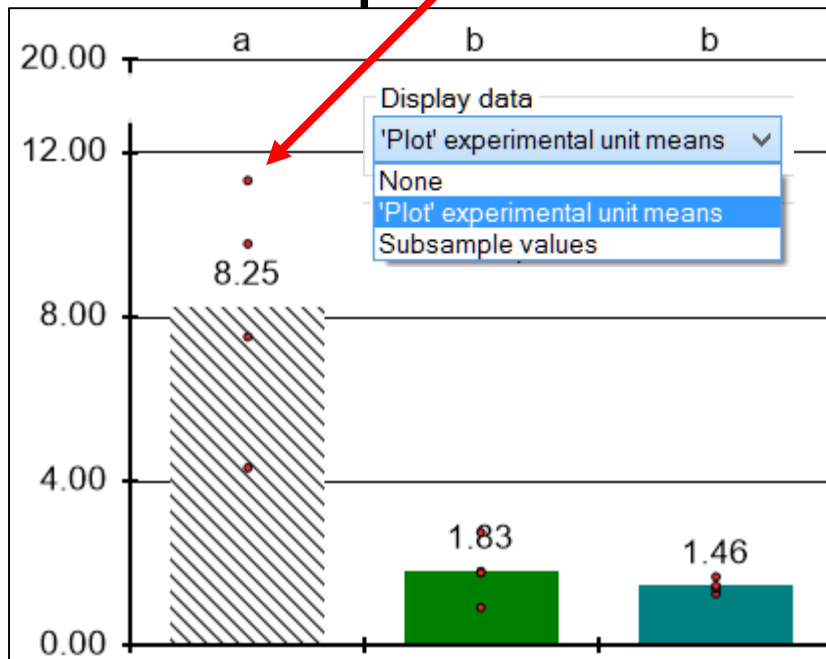
- Plot grid for trial layout
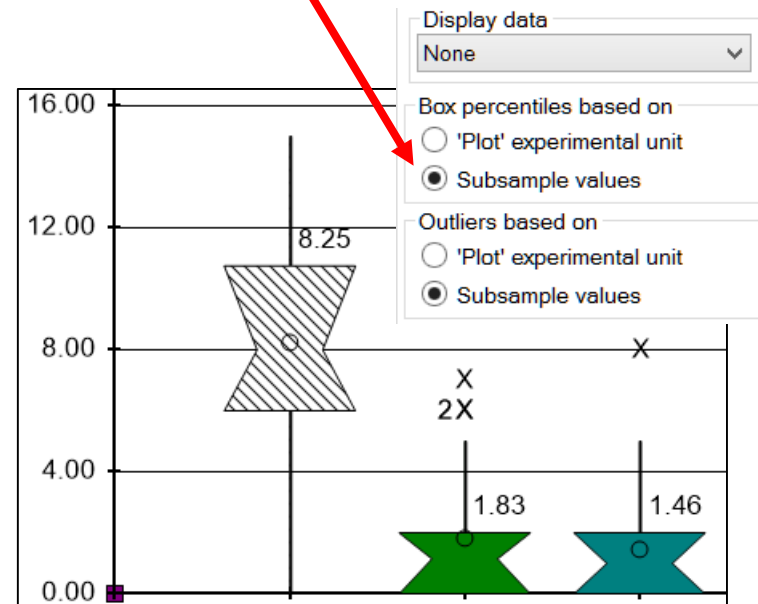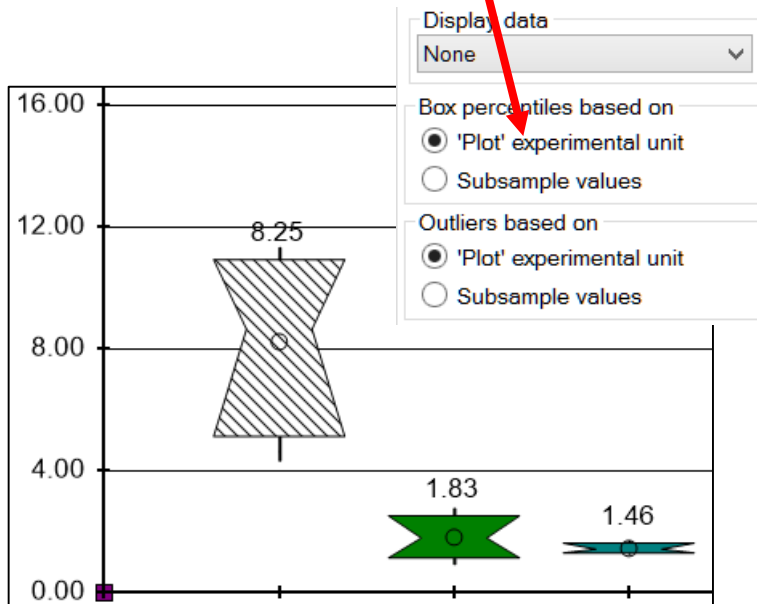- Drag to arrange trials
- Use GPS trial coordinates

Graphs

'Display data' option on viewer adds scatter graph showing plot or individual subsample values as points
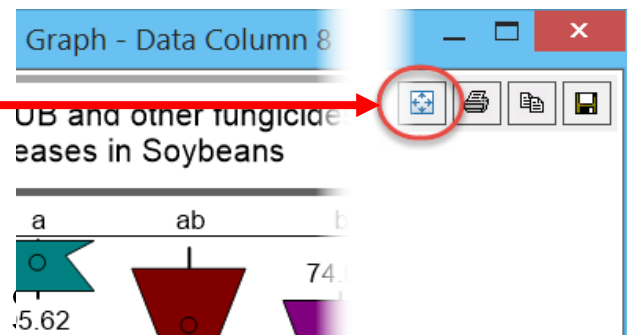
Box-Whisker Graph

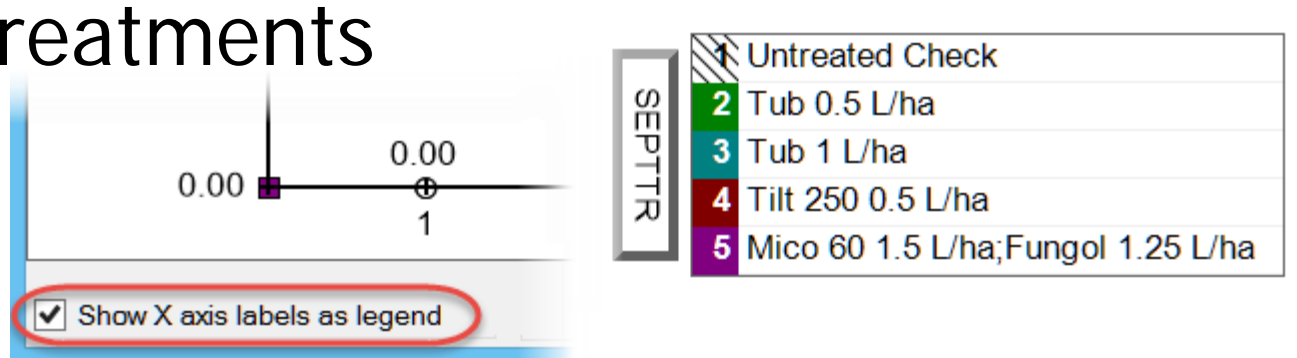'Box percentiles' and 'Outliers based on' options of 'Plot' or 'Subsamples' for box-whisker

Graphs

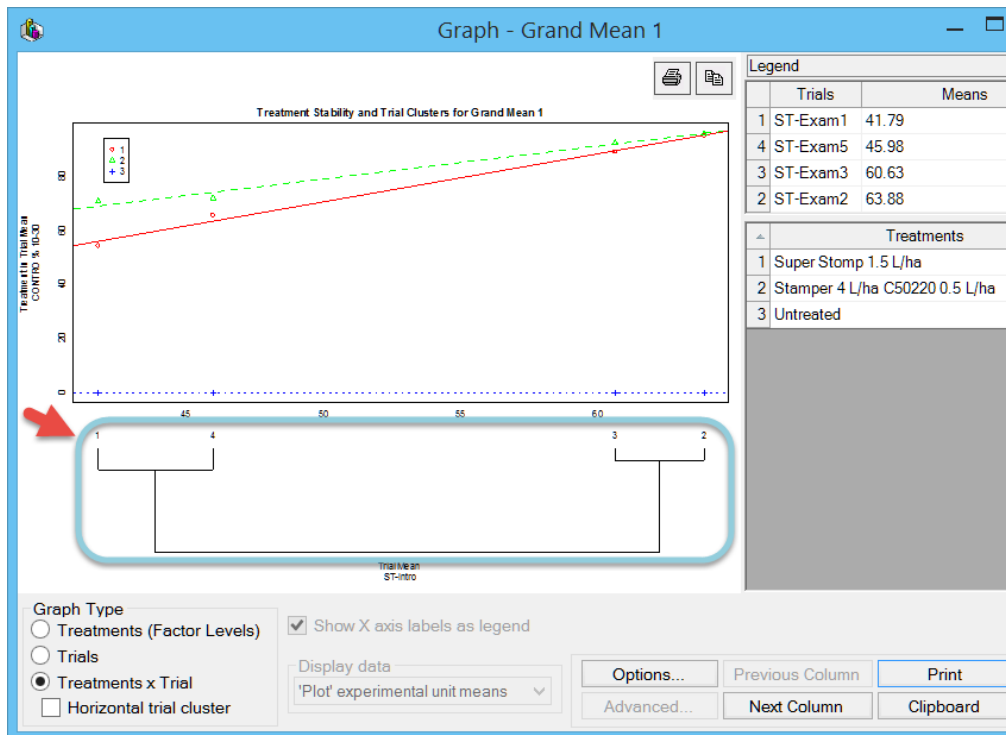- New 'Size to Fit' button re-sizes and re-positions graph to fit current window

- Use 'Show X axis labels as legend' to better display detailed treatment information or many treatments
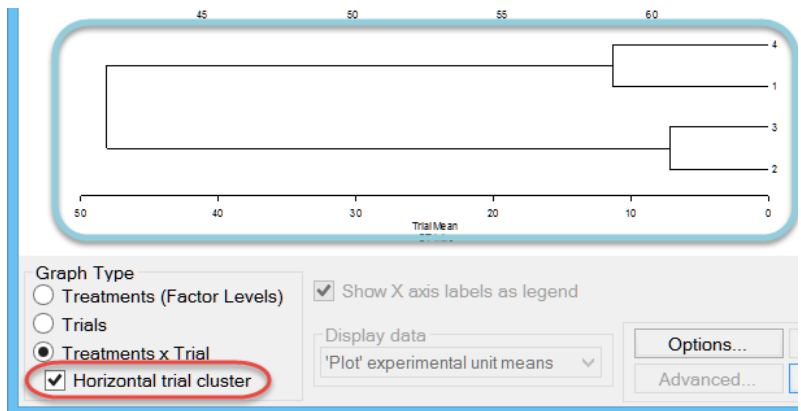
ST Graph

'Horizontal Trial Cluster' option shortcut on graph viewer for a Treatment x Trial graph

- Better displays large number of trials
- Includes its own X-axis

Residuals Graphs (Coming soon)

- On assessment editor

- Shows unexplained variability after removing treatment and replicate effects from analysis

- Can indicate when using a data correction trans-formation may help meet AOV assumptions

Column 1 Properties		📌
Previous	Next	
Column Flags:	Original	
Min/Max entry:	0	100
Low/High value:	0	0
Descriptive Statistics		Refresh
LSD P=.05:	0.00	
Standard Deviation:	0.00	
CV:	0.00	
Grand Mean:	0.0	
P(Bartlett's X2):	.	
P(Friedman's X2):	1.0	
Skewness:	.	
Kurtosis:	.	
Replicate Prob(F):	1.0000	
Treatment Prob(F):	1.0000	
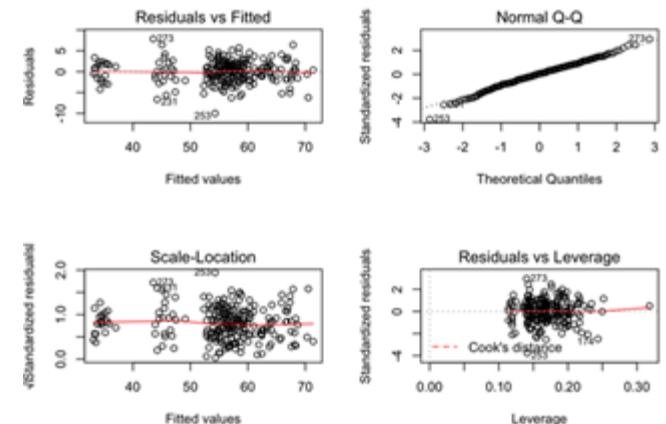
Residuals Graphs (Coming soon)
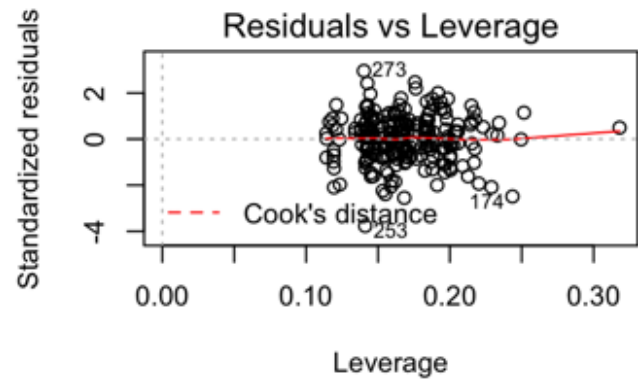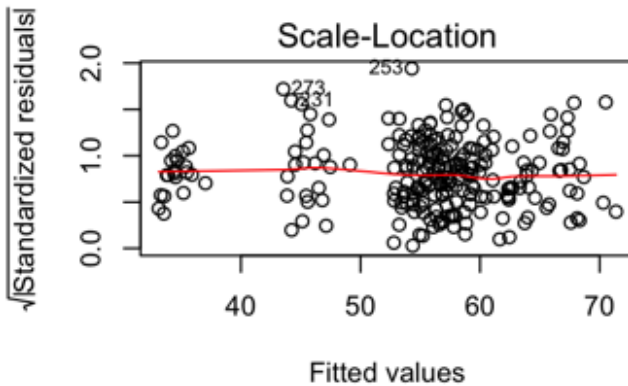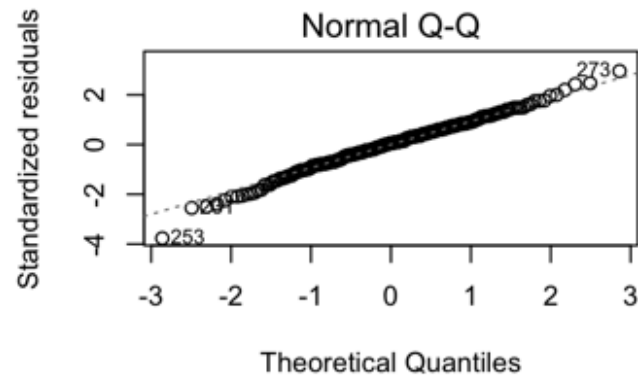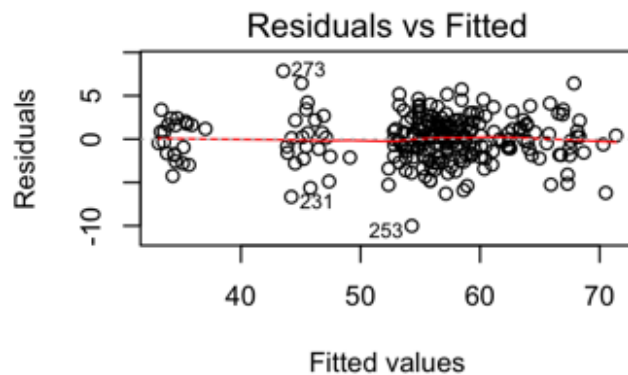
ARM 2016

- Released December 31, 2015
- Automatically provided to clients using ARM 2015, via electronic download by ARM Check for Updates program