

ARM 9.0.5

Features

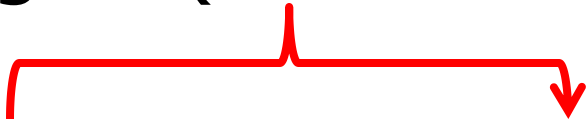


Gylling Data Management, Inc.



Treatments Editor

- Color bands also display in non-scrolling region (Trt No. to Treatment Name)



Trt Line	Trt No.	Type	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit
1	1	CHK	Untreated Check					
2	2	FUNG	TUB	250	G/L	EC	0.5	L/ha
3	3	FUNG	TUB	250	G/L	EC	1	L/ha
4	4	FUNG	TILT 250	250	G/L	EC	0.5	L/ha
5	5	FUNG	MICO 60	600	G/L	EC	1.5	L/ha
6	5	FUNG	FUNGOL	200	G/L	SC	1.25	L/ha

Assessment Data Editor

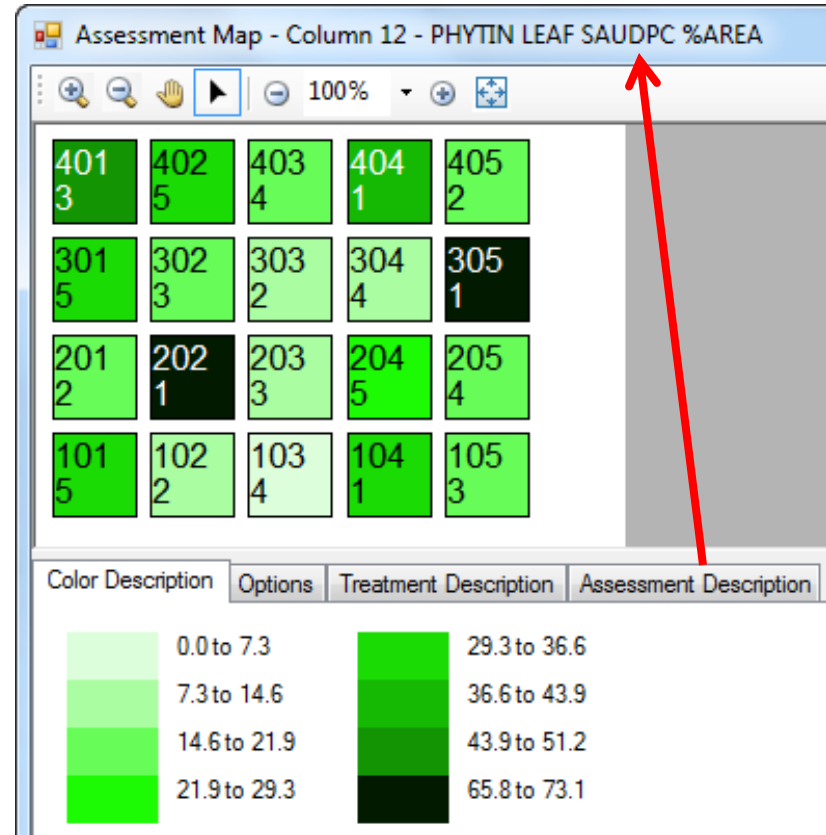
- When cursor is in a calculated column, column heading of source column(s) are highlighted (like Excel formulas)

P	P	P	T1 AUDPC
0	0	0	1
8	9	10	11 (Calculated)
30	50	80	1765.0
80	90	94	3949.0

- Calculated columns also identified

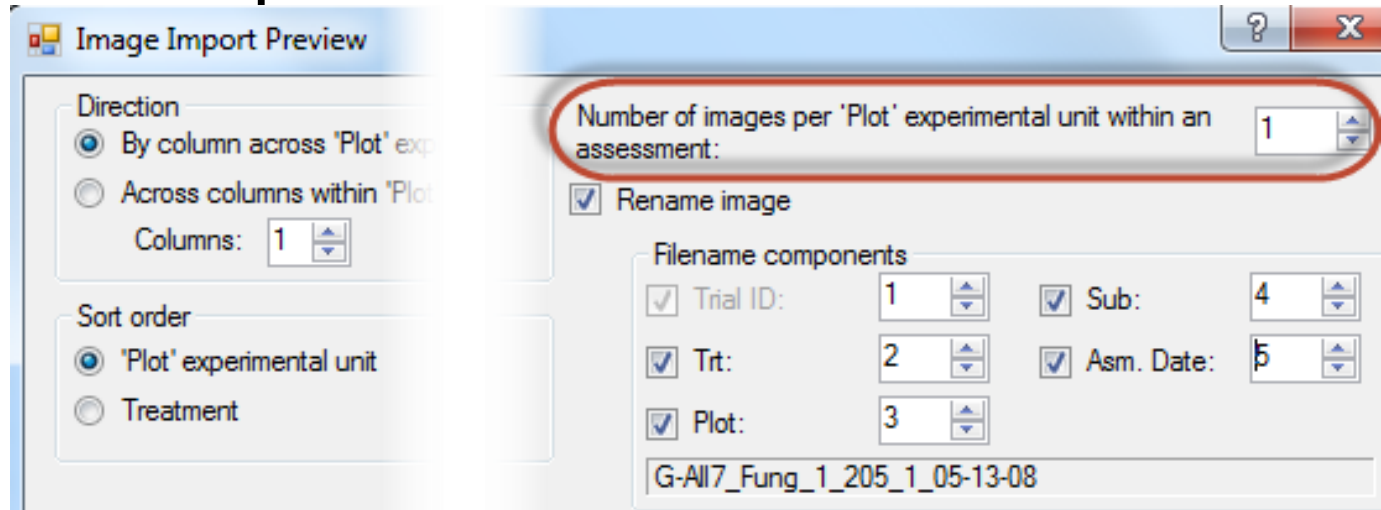
Assessment Map

- Assessment Description tab selects data header fields to describe each column on map and map report



Assessment Data Images

- Enhanced for defining multiple images per plot
 - Specify number of images per plot when subsamples are defined



Assessment Data Images

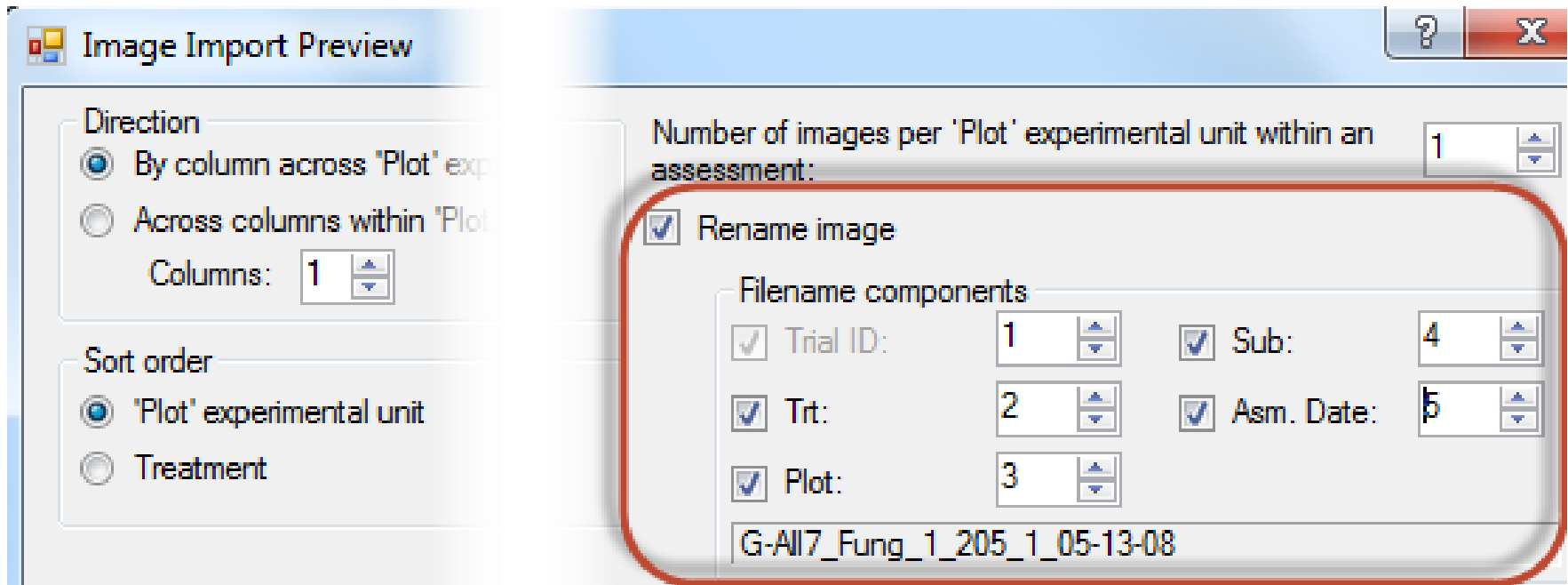
- Example of 2 images for plot 101 col. 6

		6 (Calculated)	
D <input type="checkbox"/> Disease			
SEPTTR			
TRZAW			
LEAF3 <input type="checkbox"/> P			
06/18/08			
PESSEV			
%UNCK			
1			
2			
64			
15 DA-B			
TAB[5]			
2			
v	Plot Δ	Trt	6 (Calculated)
101	3		83.00133
102	1		0.00

0.40	98.73	20.00	8.70	13.0	8.99
9.90	0.00	10.00	8.25	12.1	8.62

Assessment Data Images

- More 'Rename images' choices





Trial Map Enhancements

- Special colors to identify check and reference treatments - map and graph
- Treatment color selection palette of 999 unique color + symbol combinations
- Border plot options on right-click menu

Trial Map Enhancements

Check/Ref
(read from
Settings)

Color
palette

The screenshot shows the 'Trial Map' software interface. At the top left, there is a grid of 20 plots arranged in 4 rows and 5 columns. Each plot contains a treatment code (e.g., 401, 301, 201, 101) and a replication number (e.g., 1, 3, 2, 1). The plots are color-coded: 401 is white with diagonal lines, 402 is teal, 403 is green, 404 is dark red, 405 is white with diagonal lines, 301 is teal, 302 is green, 303 is white with diagonal lines, 304 is white with diagonal lines, 305 is dark red, 201 is green, 202 is teal, 203 is white with diagonal lines, 204 is dark red, 205 is white with diagonal lines, 101 is teal, 102 is white with diagonal lines, 103 is dark red, 104 is green, 105 is white with diagonal lines.

Below the grid is a table with the following data:

Trt	Trt Code	Trt Description
1	CHK	Untreated Check
2	Tu.5	TUB 0.5 L/ha
3	Tu1	TUB 1 L/ha
4	Tilt	TILT 250 0.5 L/ha
5	M+F	MICO 60 1.5 L/ha; FUNGOL 1.25 L/ha

At the bottom right, there is a color palette with a grid of 24 color swatches. A legend above the palette shows 'CHK' with a white box with diagonal lines and 'REF' with a white box with diagonal lines. The 'Identify Untreated and Reference' checkbox is checked.

On the right side, there is a 'Properties' panel with the following options:

- Color by:
 - Replicate
 - Treatment
- Auto-select for move
 - Treatment
 - 'Plot' Experimental Unit
 - Replicate

At the bottom right, there are several buttons: 'Settings...', 'Re-Randomize', 'Re-Number 'Plots'', 'Print', 'Accept Current', 'Cancel', and 'Help'.

Trial Map Enhancements

Outside
border
plots

Numbering

Define
custom
palette

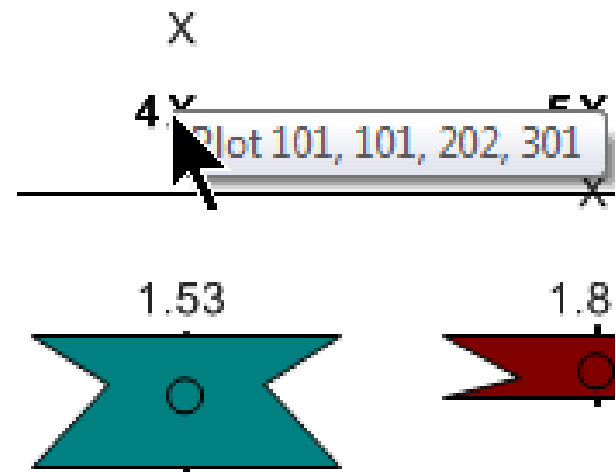
January 2013

The screenshot shows the 'Trial Map' software interface. A context menu is open over the grid, with 'Insert Outside Border 'Plots'' highlighted. The grid contains plots numbered 106 to 607, with some plots colored or patterned. The 'Properties' panel on the right shows 'Color by' set to 'Treatment' and 'Display border 'Plot' numbers' checked. The 'Options' panel at the bottom shows 'GemplerStd' selected in the 'Color by' dropdown and a custom color palette. A table at the bottom left shows treatment details.

Trt	Trt Code	Trt Descr	Reset
1	CHK		
2			
3			
4			
5			

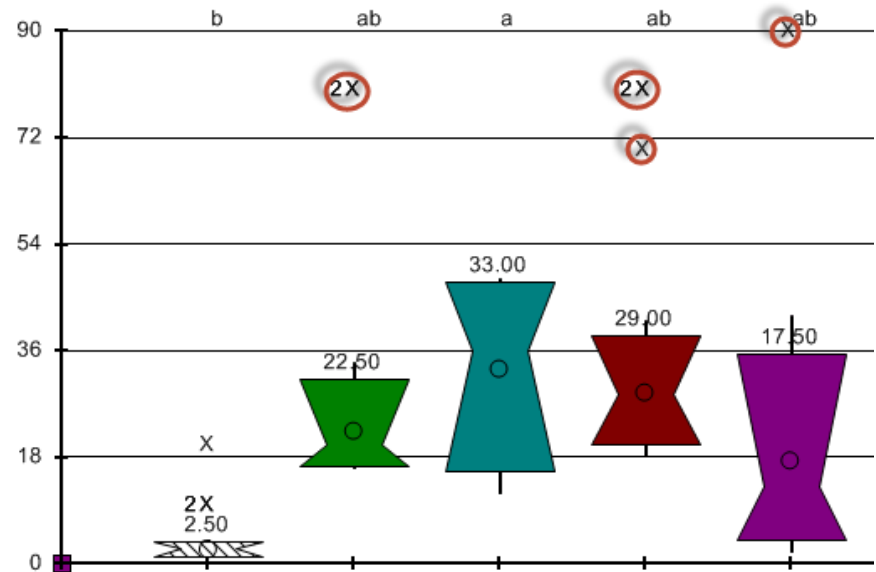
Graphs

- Display untreated/check and reference treatments with special colors
- Hover mouse over outlier 'X' on box-whisker graph to show plot number(s) (especially useful with subsamples)



Graphs

- Auto-size graph title boxes in new graph to optimize using graph space
- Resize y-axis to show all outliers of box-whisker graph (previously you had to manually size)





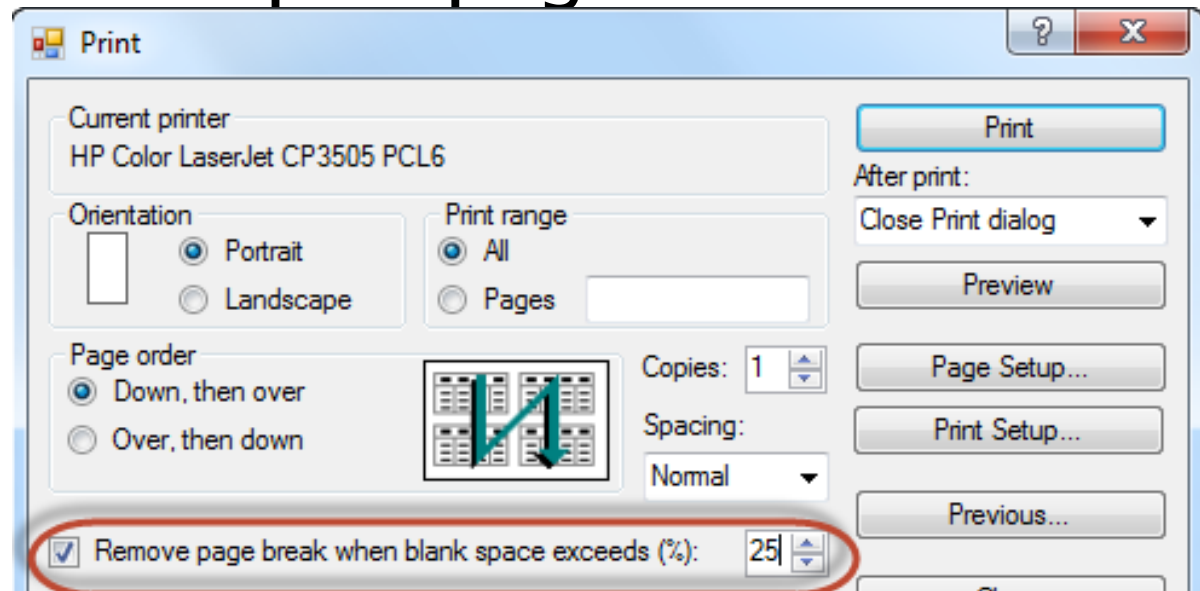
Graphs

- Use as default the size and position from previous graph
- Suppress 0 on box-whisker graph for missing treatments
- Modified Y-axis for box-whisker graphs to reduce extra space above graphs when maximum values exceed 100

Print Reports:

Remove page break when...

- 'Remove page break when blank space exceeds (%)' option reduces unused space on report pages



Print Reports: Remove page break when...

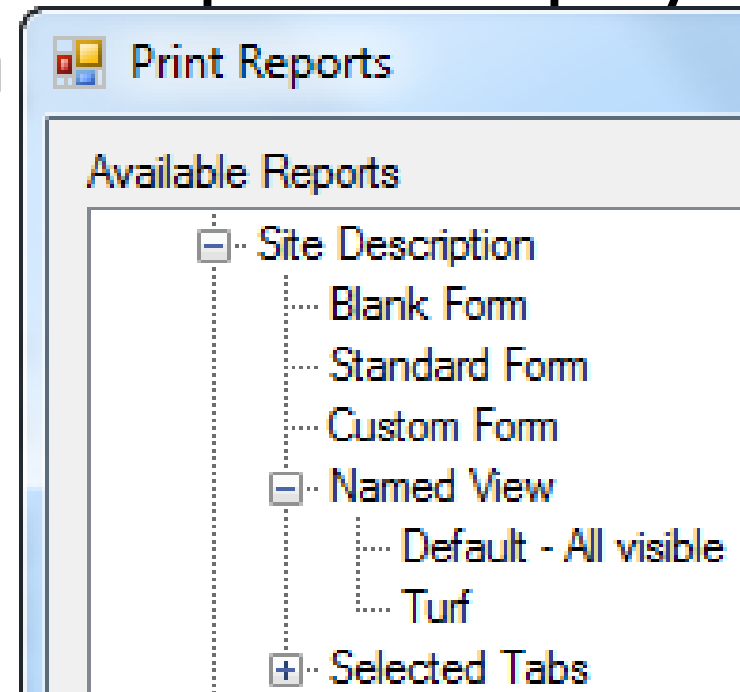
- Can shrink 4 pages to 1

Reps: 4 Appl Code: A Plots: 2.5 by 10 meters																
Spray vol: 200 L/ha Mix size: 2.15 liters (min 2.15)																
Trt No.	Treatment Name	Form Conc	Fom Unit	Fom Type	Rate	Appl Unit	Spray Code	Volume	Mix Unit	Mix Size	Amt to Measure	Product	Rep 1	2	3	4
3	TUB	250	G/L	EC	1 l/ha	ABC					10.75 ml/mx		101	202	301	402
1	Untreated Check					ABC							102	205	303	401
4	TILT 250	250	G/L	EC	0.5 l/ha	ABC					5.375 ml/mx		103	204	305	404
2	TUB	250	G/L	EC	0.5 l/ha	ABC					5.375 ml/mx		104	201	302	403
5	MICO 60	600	G/L	EC	1.5 l/ha	AB	250 L/HA	2.65	Liters		15.9 ml/mx		105	203	304	405
Reps: 4 Appl Code: B Plots: 2.5 by 10 meters																
Spray vol: 200 L/ha Mix size: 2.15 liters (min 2.15)																
Trt No.	Treatment Name	Form Conc	Fom Unit	Fom Type	Rate	Appl Unit	Spray Code	Volume	Mix Unit	Mix Size	Amt to Measure	Product	Rep 1	2	3	4
3	TUB	250	G/L	EC	1 l/ha	ABC					10.75 ml/mx		101	202	301	402
1	Untreated Check					ABC							102	205	303	401
4	TILT 250	250	G/L	EC	0.5 l/ha	ABC					5.375 ml/mx		103	204	305	404
2	TUB	250	G/L	EC	0.5 l/ha	ABC					5.375 ml/mx		104	201	302	403
5	MICO 60	600	G/L	EC	1.5 l/ha	AB	250 L/HA	2.65	Liters		15.9 ml/mx		105	203	304	405
Reps: 4 Appl Code: C Plots: 2.5 by 10 meters																
Spray vol: 200 L/ha Mix size: 2.15 liters (min 2.15)																
Trt No.	Treatment Name	Form Conc	Fom Unit	Fom Type	Rate	Appl Unit	Spray Code	Volume	Mix Unit	Mix Size	Amt to Measure	Product	Rep 1	2	3	4
3	TUB	250	G/L	EC	1 l/ha	ABC					10.75 ml/mx		101	202	301	402
1	Untreated Check					ABC							102	205	303	401
4	TILT 250	250	G/L	EC	0.5 l/ha	ABC					5.375 ml/mx		103	204	305	404
2	TUB	250	G/L	EC	0.5 l/ha	ABC					5.375 ml/mx		104	201	302	403
5	FUNGOL	200	G/L	SC	1.25 l/ha	C					13.44 ml/mx		105	203	304	405

Sort Order: Application Code, Replicate 1

New Site Description Reports

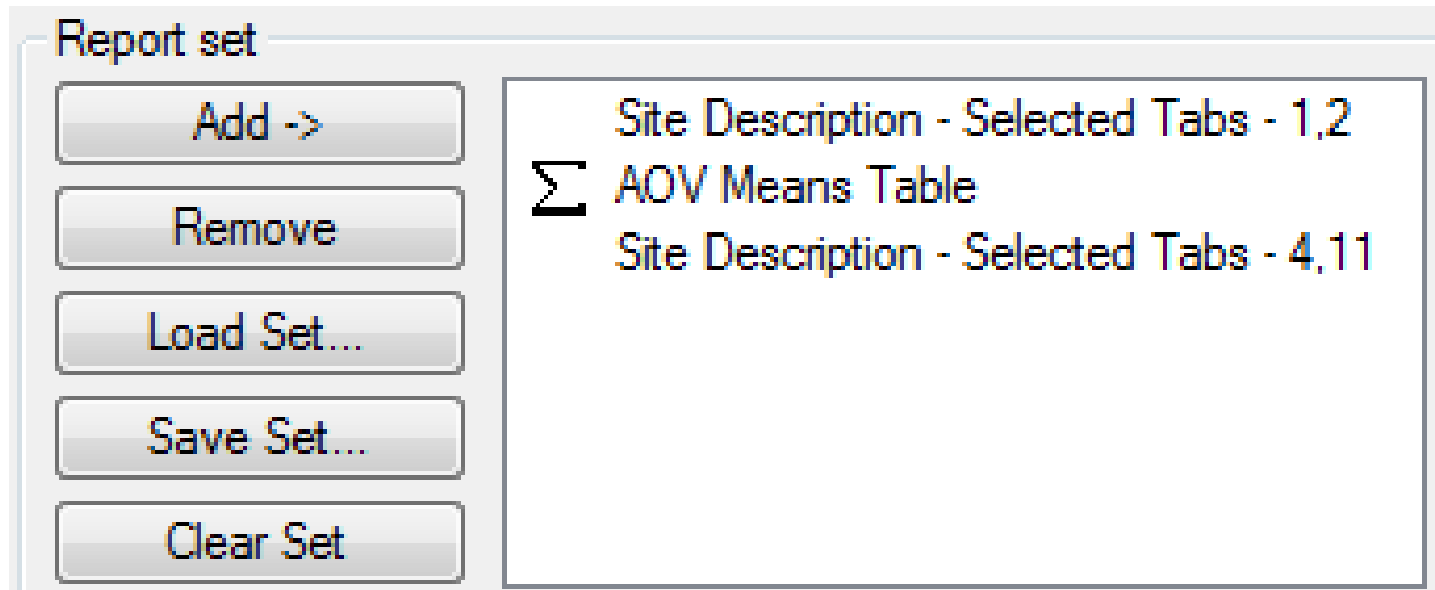
- New Site Description reports simplify changing between common report uses





New Site Description Reports

- Allow printing several report segments



New Site Description Reports

- Allows you to create your own custom reports

General Trial Information		
Study Director: R.E. Ceasch Investigator: ARM Demonstration	Title: Study Leader	
Discipline: F fungicide Trial Status: F one-year/final Trial Reliability: HIGH Completion Date: 08/07/08		
Trial Location		
City: GEMBLOUX State/Prov.: NAMUR Postal Code: 5030	Country: BEL Belgium	
Latitude of LL Corner: 50°34'1" N Longitude of LL Corner: 4°41'0" E Altitude of LL Corner, Unit: 152.00 M Angle y-axis to North: 60.00		
Official Trial ID: B2007RTJ02N25		
No.	Guideline	Description
1.	PP 1/152(3)	Design and analysis of efficacy evaluation trials
2.	CEB 189	F : Maladies des céréales
3.	PP 1/25(3)	Foliar diseases on cereals

Pest Code	SEPTTR TRZAW	SEPTTR TRZAW	SEPTTR TRZAW	ZZYYFY TRZAW	TRZAW GRAIN C	TRZAW GRAIN C	
Crop Code	LEAF3 P	LEAF3 P	LEAF2 P	LEAGRE P	GRAIN C	GRAIN C	
Part Rated	05/13/08	06/18/08	07/02/08	07/15/08	08/07/08	08/07/08	
Rating Date	PESSEV	PESSEV	PESSEV	AREA	YIELD	YIELD	
Rating Type	%UNCK	%UNCK	%UNCK	%AREA	T-MET	%UNCK	
Rating Unit	10 LEAF	10 LEAF	10 LEAF	5 LEAF	1 HA	1 HA	
Sample Size, Unit	4.42PERCENT	8.25PERCENT	15.5PERCENT	1.75PERCENT	30 DA-C	30 DA-C	
Pest Density, Unit	28 DA-A	15 DA-B	29 DA-B	11 DA-C			
Tit-Eval Interval							
Tit Treatment	Rate Appl						
No. Name	Rate Unit Code	4	6	8	9	12	13
1 Untreated Check	ABC	0.00 b	0.00 b	0.00 c	2.31 b	7.93 b	100.00 b
2 TUB	0.5 l/ha ABC	57.98 a	71.65 a	89.11 ab	21.58 a	8.62 a	108.68 a
3 TUB	1 l/ha ABC	67.06 a	80.07 a	96.53 a	28.98 a	8.51 a	107.51 a
4 TILT 250	0.5 l/ha ABC	59.52 a	70.60 a	86.63 ab	27.82 a	8.56 a	108.16 a
5 MICO 60 FUNGOL	1.5 l/ha AB 1.25 l/ha C	39.92 a	71.49 a	75.56 b	11.46 a	8.48 a	106.90 a
LSD (P=.05)		28.205	22.410	10.444	0.435	0.366	4.640

Footnote 1: Adjusted at 15 % Moisture
Footnote 2: % Green Leaf Area

Crop Description	
Crop 1: TRZAW Triticum aestivum (Winter)	Winter wheat
Variety: RIBAND	BBCH scale: BCER
Planting Date: 09/30/07 Planting Method: DRILLE drilled Harvest Date: 08/07/08 Harvested Vldth, Unit: 1.1 M Harvested Length, Unit: 9 M Harvest Equipment: COMBINE % Standard Moisture: 15.0	

Crop Stage At Each Application			
	A	B	C
Crop 1 Code, BBCH scale:	TRZAW BCER	TRZAW BCER	TRZAW BCER
Stage Scale Used:	BBCH	BBCH	BBCH
Stage Majority, Percent:	32 100	39 100	77 100

Print Selected Replicates

- General Summary report option to exclude replicates that may be damaged

The screenshot shows a software dialog box titled "AOV Means Table Report Options". It has several tabs: "Pre-mix Ingredient", "Fields to Print", "Global - General", and "Global". The "Global - General" tab is active, showing "AOV Means Table Report Options" and "General Summary". Under "Missing data estimates", the "Yates" radio button is selected. Under "Assessment data header rows", there is a "List:" field. At the bottom, there is a checkbox labeled "Print selected replicates" which is currently unchecked and circled in red. Above this checkbox is the text "Apply automatic transformations or treatment exclusions to data columns that violate assumptions of AOV".

Print Selected Replicates

- Similar prompting as selected data columns or header rows

+ Sub	Rp	Bk	Col	Plot	Tit	1	
1	1	1	1	101	3	0	100
1	1	1	2	102	1	0	100
1	1	1	3	103	4	0	100
1	1	1	4	104	2	0	100
1	1	1					
1	2	2					
1	2	2					
1	2	2					
1	2	2					

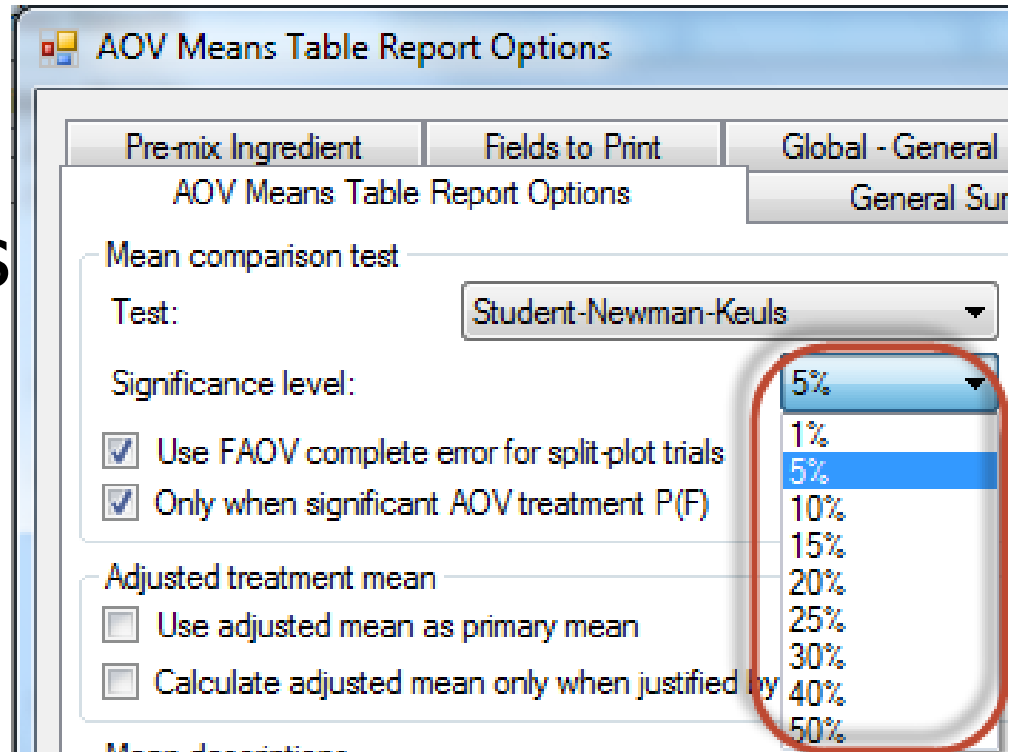
Specify replicate numbers to include in report

1 2 4

OK

AOV Means Table Report OSLs

- New significance levels for LSD, SNK, and Tukey's mean comparisons of 15, 20, 25, 30, 40, 50%





AOV Means Table Report OSLs

- Allows selecting appropriate significance levels according to 'penalty of failure' for tested treatments. For example, new 'plant health' products frequently improve yield, however a failure loses only cost of the product, so reduced significance levels are more appropriate than for crop protection tests



Heterogeneity/Skewness/ Kurtosis on Summary Reports

- ARM 9 always tests homogeneity of variance and normality for summaries
- Possible solutions are listed on Summary Report Messages:
 - Apply data correction transformation
 - Exclude check treatment
 - Exclude treatment with highest or lowest standard deviation (if either works)*

* ARM cannot automatically apply

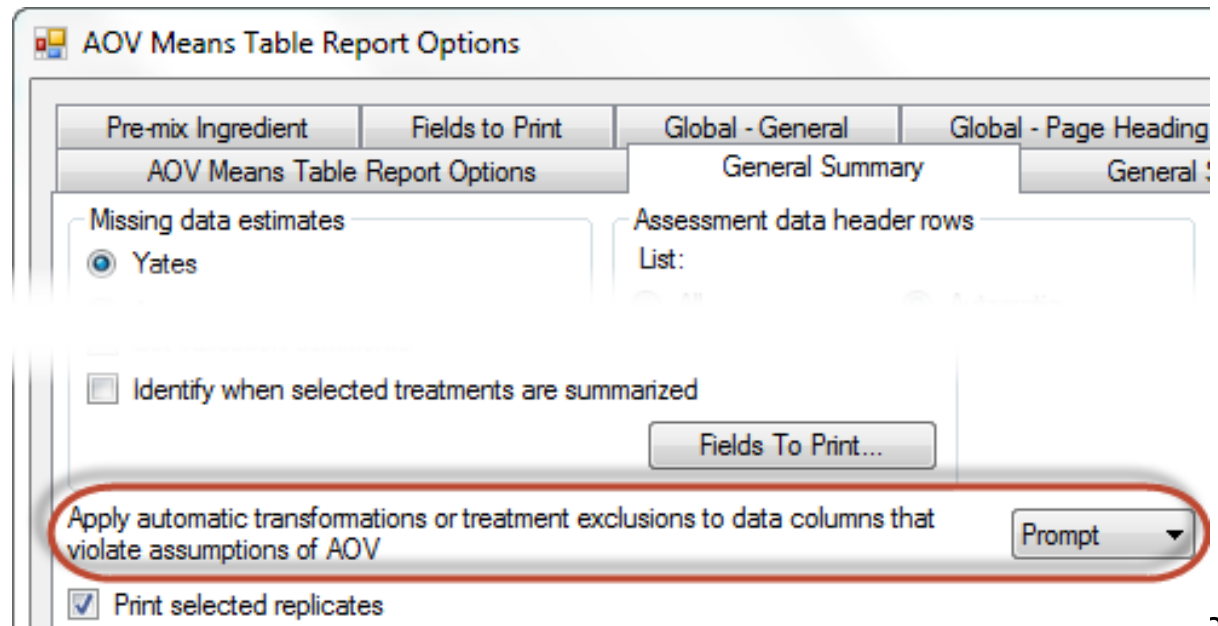
Heterogeneity/Skewness/ Kurtosis on Summary Reports

- Apply automatic transformations or treatment exclusions to data columns that violate assumptions of AOV:

Prompt

Yes

No



AOV Means Table Report Options

Pre-mix Ingredient Fields to Print Global - General Global - Page Heading

AOV Means Table Report Options General Summary General :

Missing data estimates

Yates

Assessment data header rows

List:

Identify when selected treatments are summarized

Fields To Print...

Apply automatic transformations or treatment exclusions to data columns that violate assumptions of AOV

Prompt

Print selected replicates

Heterogeneity/Skewness/ Kurtosis on Summary Reports

- When 'Prompt' a confirmation dialog identifies violation(s) and asks:

ARM - SPECIAL CONFIRMATION

Apply automatic data correction transformation 'Log(n+1)' to data column 5 to correct heterogeneity of variance/skewness/kurtosis?
Apply automatic data correction transformation 'Arcsine square root percent' to data column 7 to correct heterogeneity of variance/skewness/kurtosis?
Apply automatic data correction transformation 'Arcsine square root percent' to data column 8 to correct skewness?
Apply automatic data correction transformation 'Log(n+1)' to data column 9 to correct heterogeneity of variance?
Apply automatic data correction transformation 'Log(n+1)' to data column 11 to correct skewness/kurtosis?

Should ARM automatically apply the suggested correction?

Select 'Yes' to apply the correction for column 5. ARM will prompt individually for other columns.

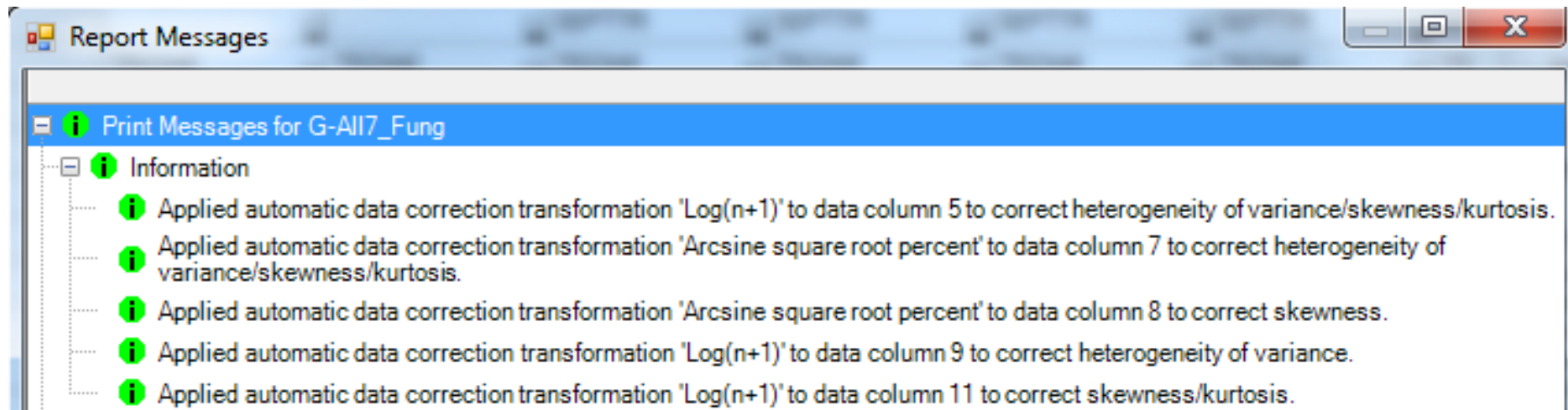
Select 'Yes to All' to apply the corrections for all columns.

Select 'No' to not apply the correction for column 5. ARM will prompt individually for other columns.

Select 'No to All' if you do not wish to apply any corrections.

Heterogeneity/Skewness/ Kurtosis on Summary Reports

- When 'Yes' or 'Prompt' the applied actions are listed in Report Messages



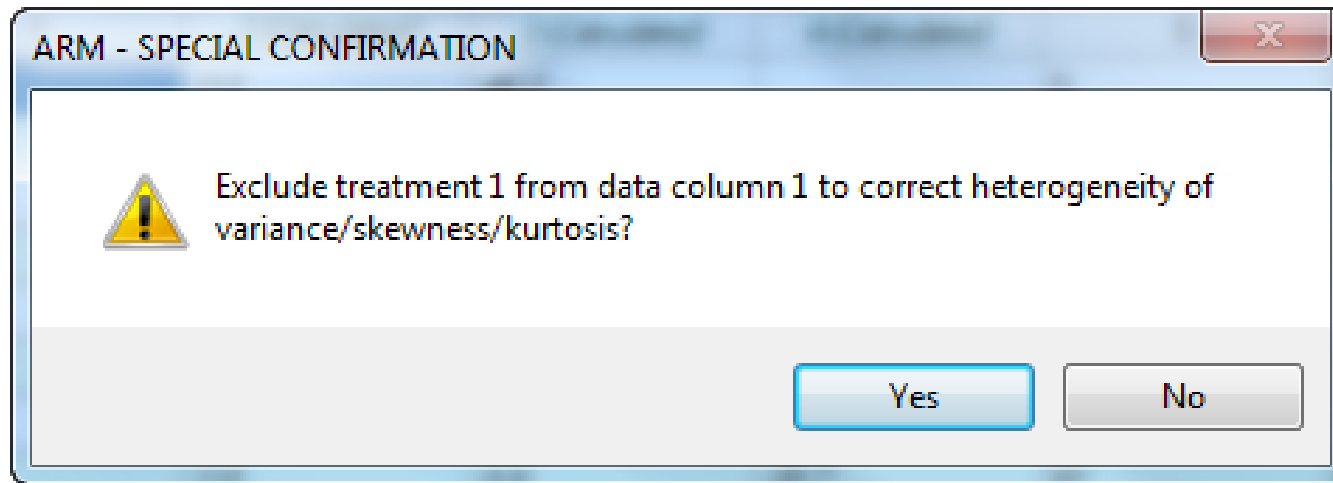
Heterogeneity/Skewness/ Kurtosis on Summary Reports

- Corrections added to ARM Action Codes
 - AL=Automatic Log
 - AA=Automatic Arcsine Square Root Percent (only tested for 0-100 data)
 - AS=Automatic Square Root

15 DA-B AL 2	15 DA-B TAB[5] 2	29 DA-B AA AA 2	29 DA-B TAB[7] 2	11 DA-C AL 2
5	6	7	8	9
7.82 a	0.00 b	15.28 a	0.00 c	2.31 b

Heterogeneity/Skewness/ Kurtosis on Summary Reports

- Exclude check treatment
 - EC=Exclude Check



4 DE-1
EC
1
962.8
30.8 a
30.8 a
36.3 a
34.5 a

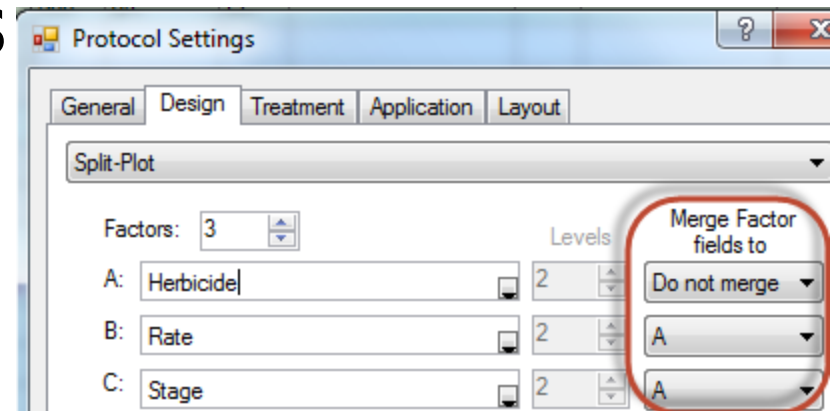


Heterogeneity/Skewness/ Kurtosis on Summary Reports

- ARM cannot automatically exclude a non-check treatment number, since there is no special ARM Action Code defined for this task
- GDM plans to define a 'ETn' code, such as ET8 to exclude treatment number 8, so non-check treatments can also be automatically excluded

Create Trial - Merge Factor to

- New Settings option to define auto-merge actions for combining factors when creating a multi-factor trial (e.g. copying rates or growth stages to factor that defines tested products)



Create Trial - Merge Factor to

- These protocol treatments:

Trt Line	Trt No.	Type	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Growth Stage	Appl Code
1			Start of Factor A (Herbicide)							
2	1	HERB	Tub	500	g/L	EC				
3	2	HERB	Tilt	600	g/L	EC				
4			Start of Factor B (Rate)							
5	1		Low rate				25	g Al/ha		
6	2		High rate				50	g Al/ha		
7			Start of Factor C (Stage)							
8	1		Early						EAPOCR	A
9	2		Late						LAPOCR	B

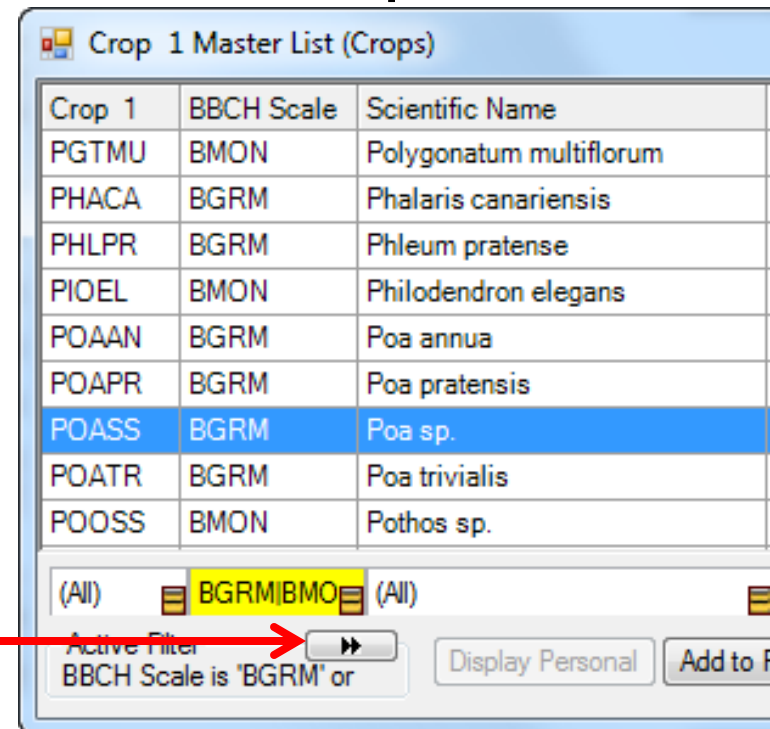
Create Trial - Merge Factor to

- Result in these trial treatments

Trt Line	Trt No.	Type	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Growth Stage	Appl Code	Factor ID	Level No.
1	1	HERB	Tub	500	g/L	EC	25	g AI/ha	EAPOCR	A	A	1
2	1		Low rate				25	g AI/ha			B	1
3	1		Early						EAPOCR	A	C	1
4	2	HERB	Tub	500	g/L	EC	25	g AI/ha	LAPOCR	B	A	1
5	2		Low rate				25	g AI/ha			B	1
6	2		Late						LAPOCR	B	C	2
7	3	HERB	Tub	500	g/L	EC	50	g AI/ha	EAPOCR	A	A	1
18	6		Late						LAPOCR	B	C	2
19	7	HERB	Tilt	600	g/L	EC	50	g AI/ha	EAPOCR	A	A	2
20	7		High rate				50	g AI/ha			B	2
21	7		Early						EAPOCR	A	C	1
22	8	HERB	Tilt	600	g/L	EC	50	g AI/ha	LAPOCR	B	A	2
23	8		High rate				50	g AI/ha			B	2
24	8		Late						LAPOCR	B	C	2

Validation Lists

- Database filter control for defining more than one filter per validation list column
- Display previous filters applied to a list



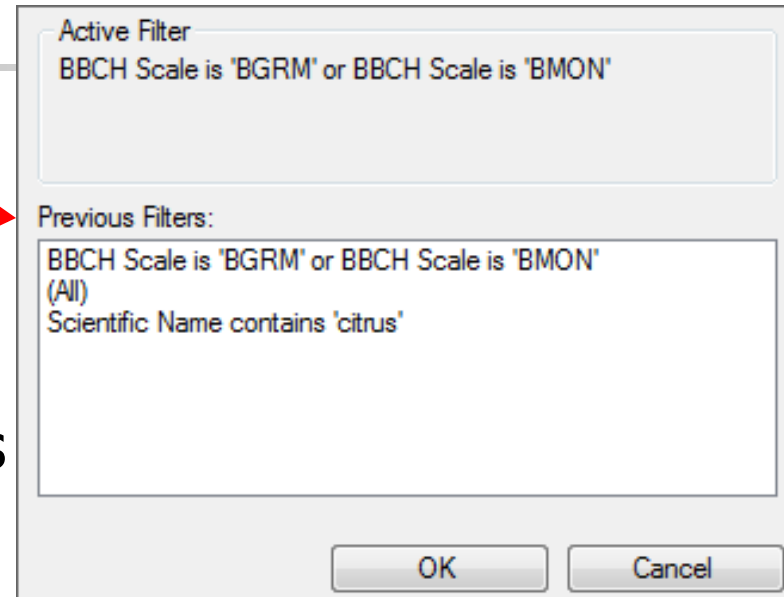
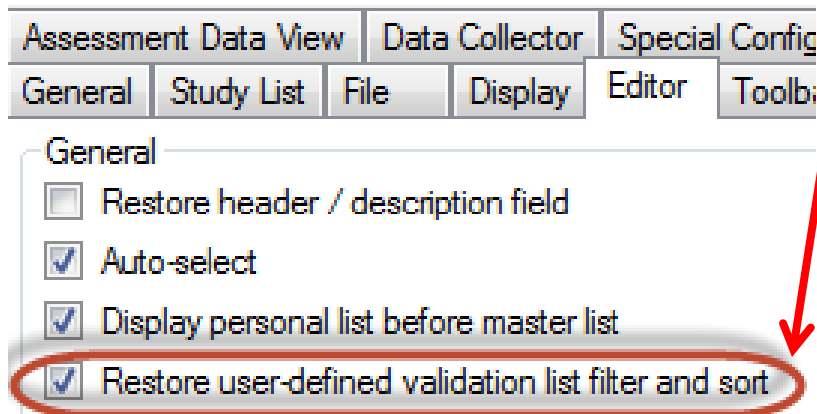
The screenshot shows a window titled "Crop 1 Master List (Crops)" containing a table with three columns: "Crop 1", "BBCH Scale", and "Scientific Name". The table lists several crop entries. Below the table, there is a filter control area showing "(All)" and a selected filter "BGRM|BMO" with a dropdown arrow. Below the filter, it says "Active Filter" and "BBCH Scale is 'BGRM' or". There are also buttons for "Display Personal" and "Add to F". A red arrow points from the text "Display previous filters applied to a list" to the filter control area.

Crop 1	BBCH Scale	Scientific Name
PGTMU	BMON	Polygonatum multiflorum
PHACA	BGRM	Phalaris canariensis
PHLPR	BGRM	Phleum pratense
PIOEL	BMON	Philodendron elegans
POAAN	BGRM	Poa annua
POAPR	BGRM	Poa pratensis
POASS	BGRM	Poa sp.
POATR	BGRM	Poa trivialis
POOSS	BMON	Pothos sp.

Validation Lists

■ Previous Filters *

*Filters are only saved when this Tools - Options Editor choice is active



Study Rule Required and Recommended Field Colors

- Required=pink background:

Latitude of LL Comer °:

Longitude of LL Comer °:

- Recommended=blue background:

Overall Moisture Conditions:

Study List

- Discipline field

The screenshot shows a form titled "Site Description - General(2)" with various input fields. A dropdown menu for the "Discipline" field is open, showing options: F, FIH, and FIS. The "Include" button is highlighted in blue. The dropdown menu is circled in red.

- Tutorial mode shows only studies in Tutorial folder, for ARM and ST

Selected	Study ID	Study Type
<input type="checkbox"/>	2009Fung_AU	Trial
<input type="checkbox"/>	ATD_06HERB-05_02	Trial
<input type="checkbox"/>	ATD_06HERB-05_03	Trial
<input type="checkbox"/>	ATD_06HERB-05_04	Trial

Buttons: Select All, Clear All, Remove Filter

Include archived studies Tutorial