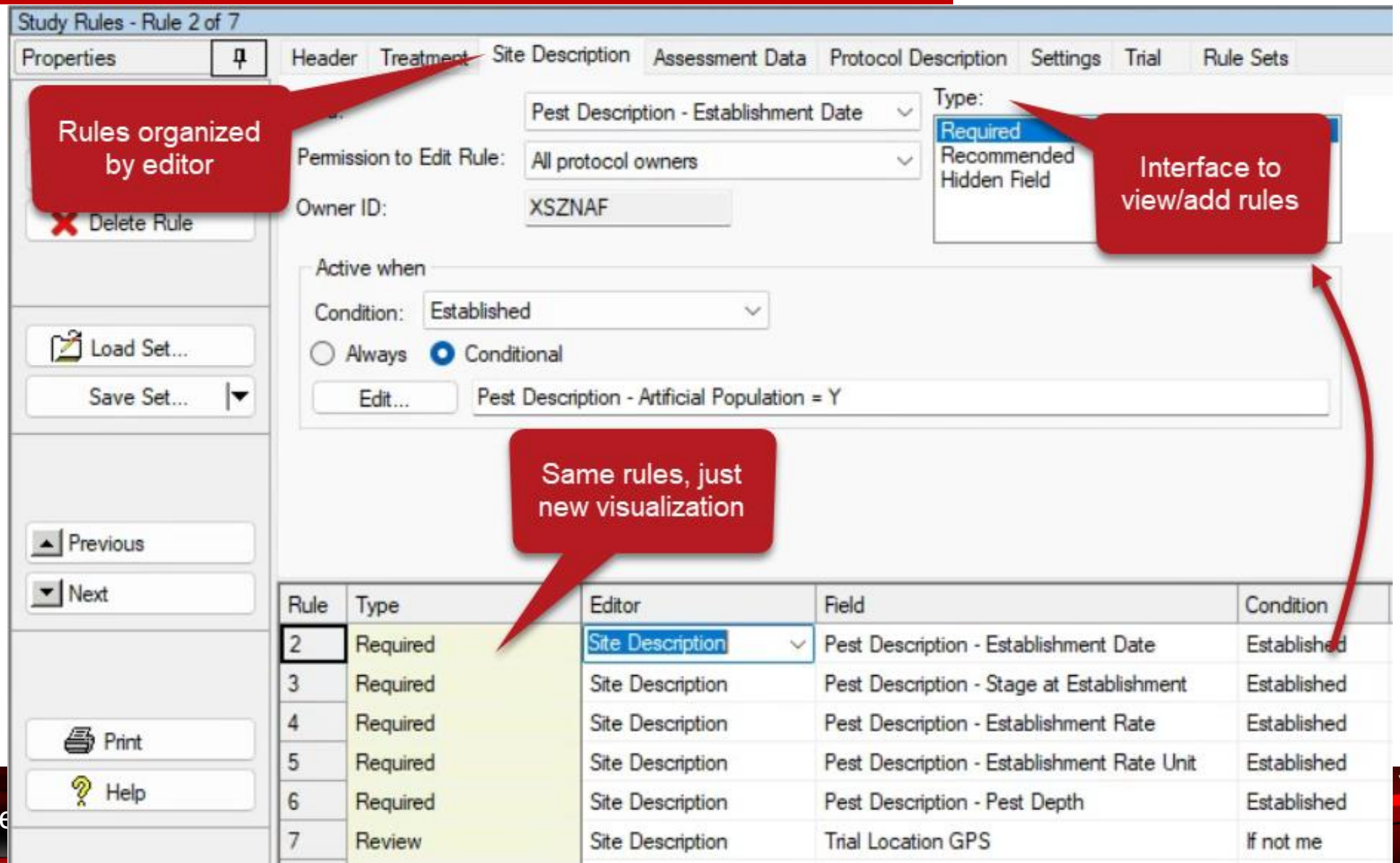
freegraphicdownload.com

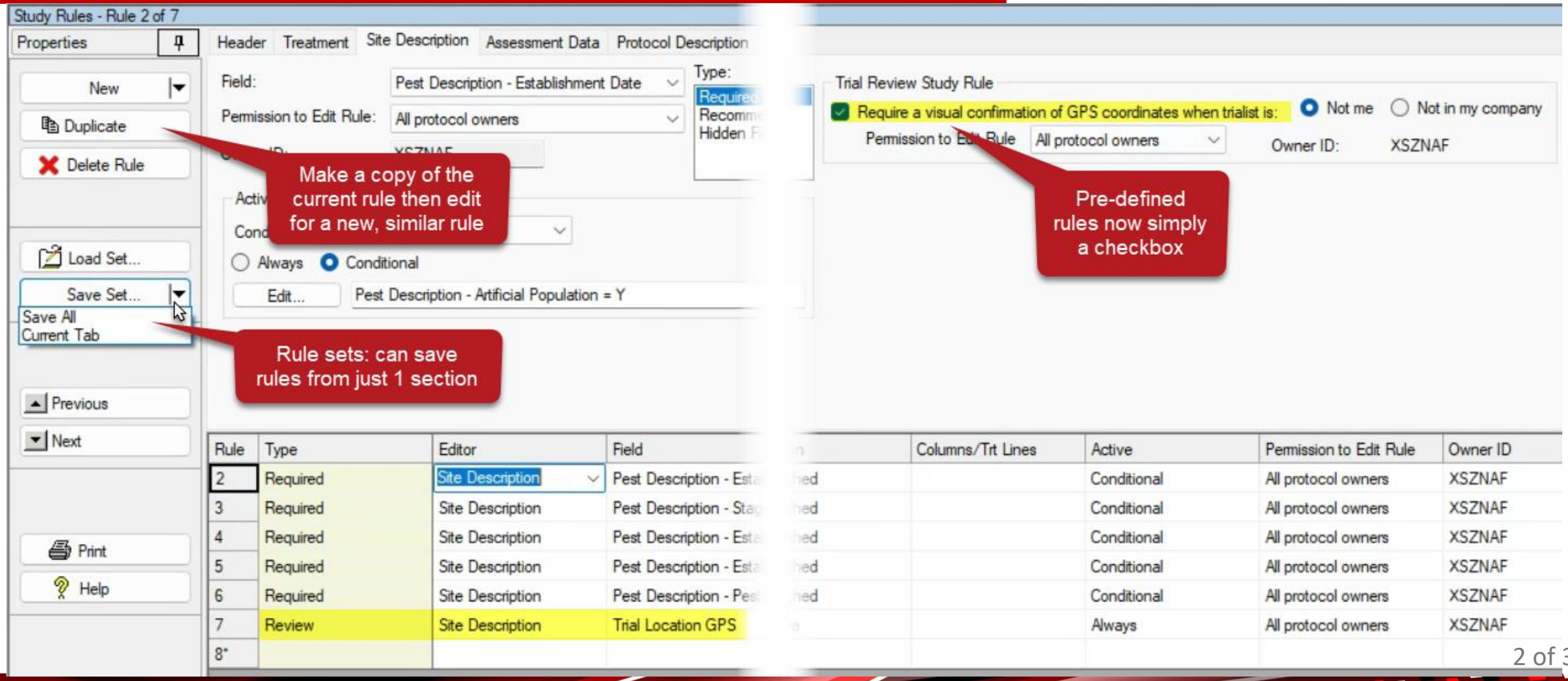
ARM 2022 Changes

Study Rules

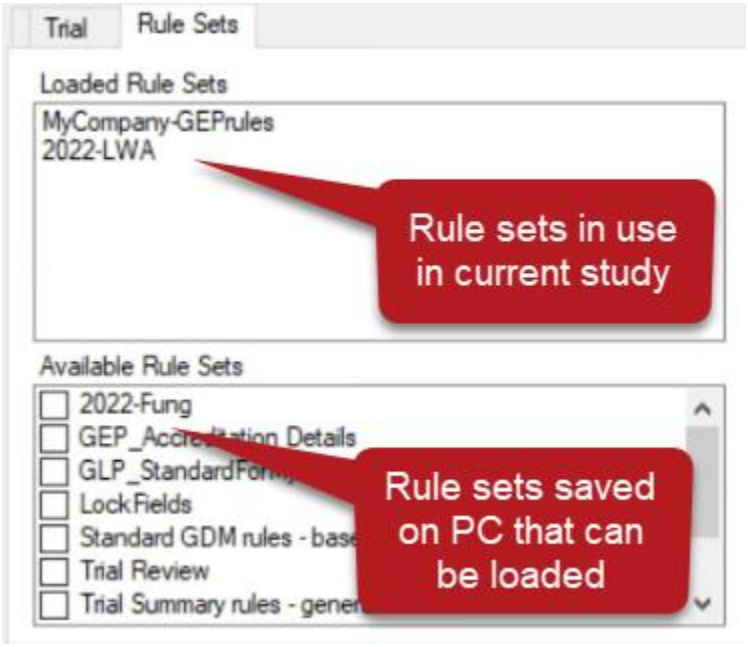
New Interface

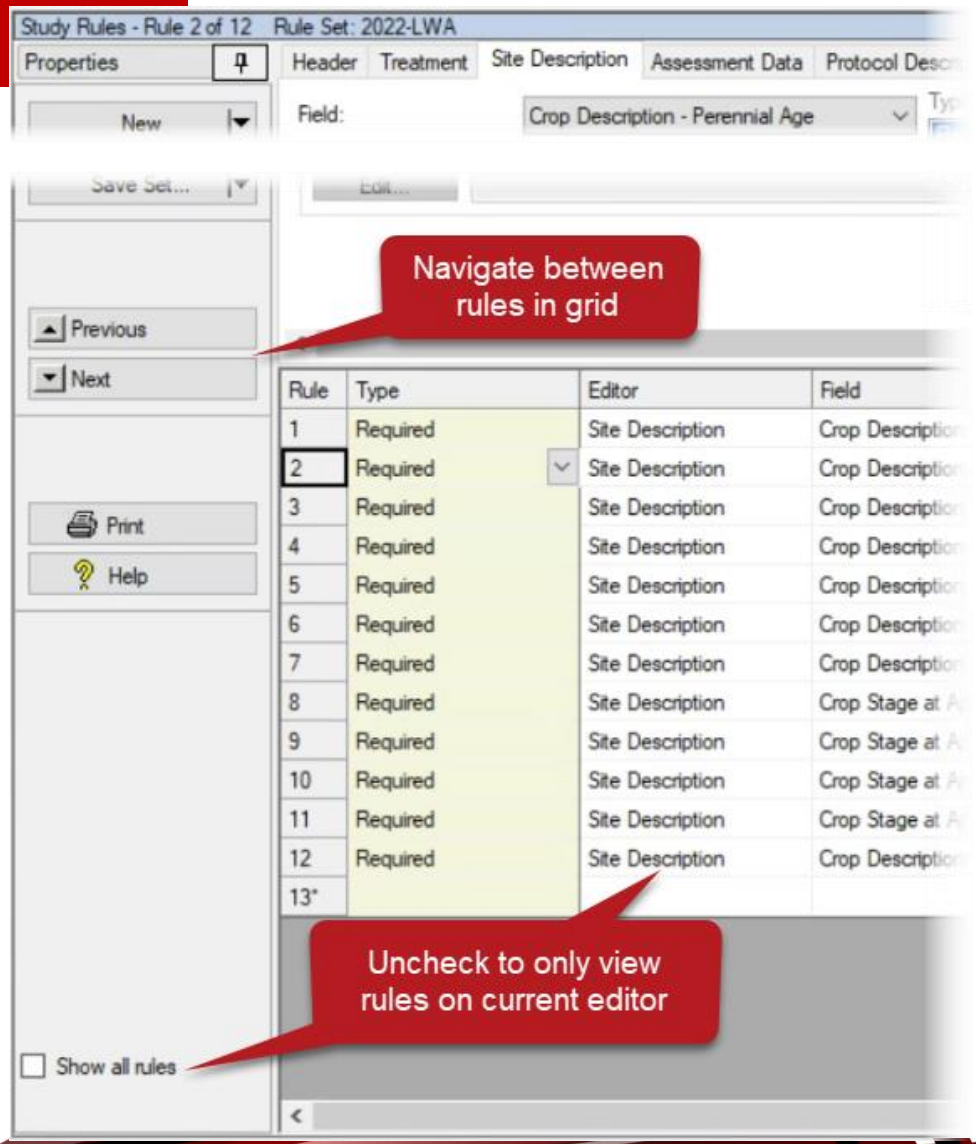


New Interface



New Interface

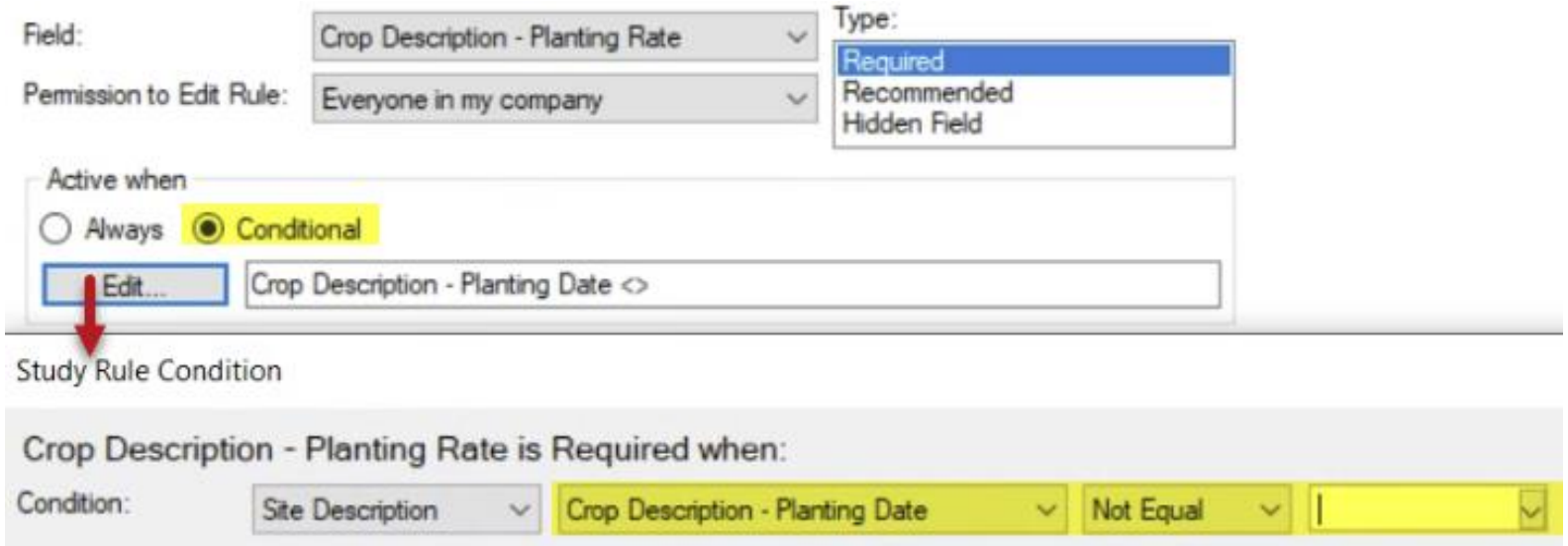




Conditional Rules

Define *when* a study rule should be activated, based on another field's contents

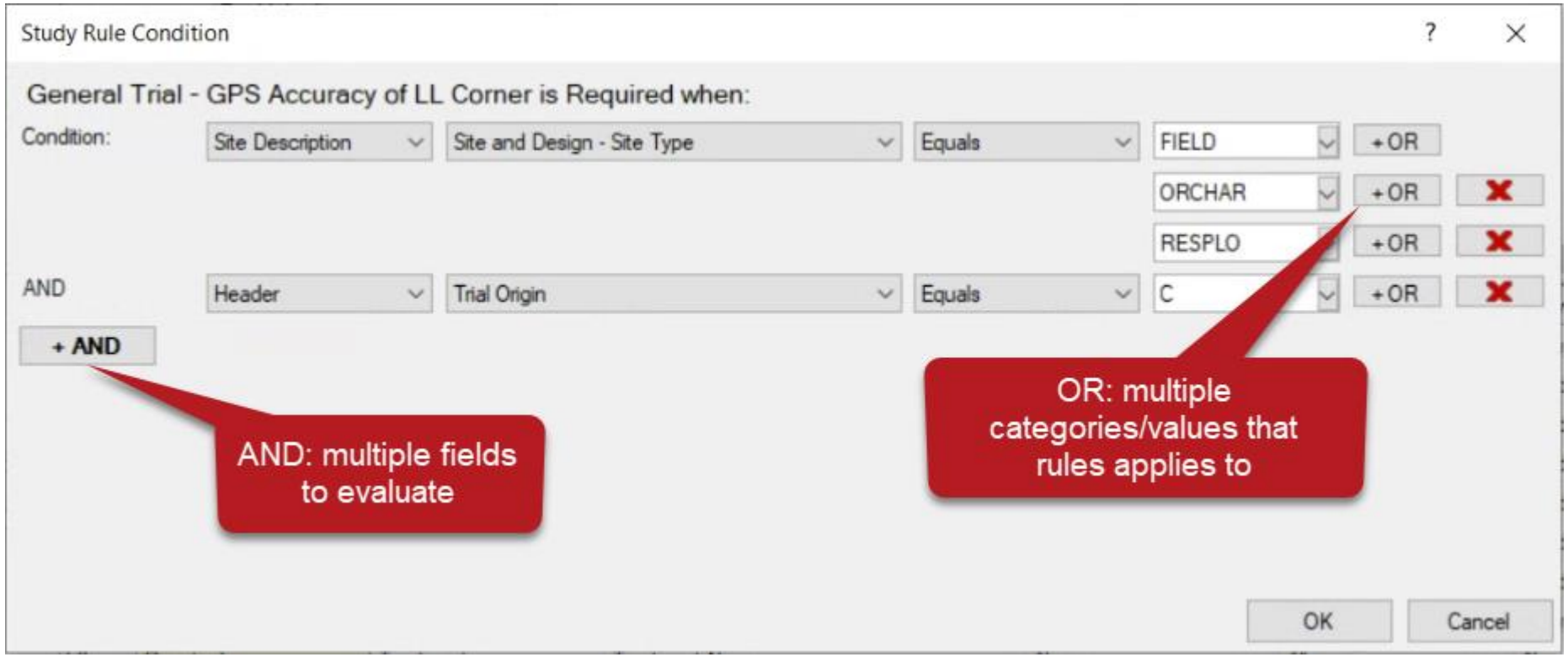
- *E.g. Require Crop Planting Rate, only when Planting Date is filled in*



Boost your company's "global rule set", to address specific rules for certain trial types

Conditional Rules

Condition can be based on multiple fields, or multiple values within single field

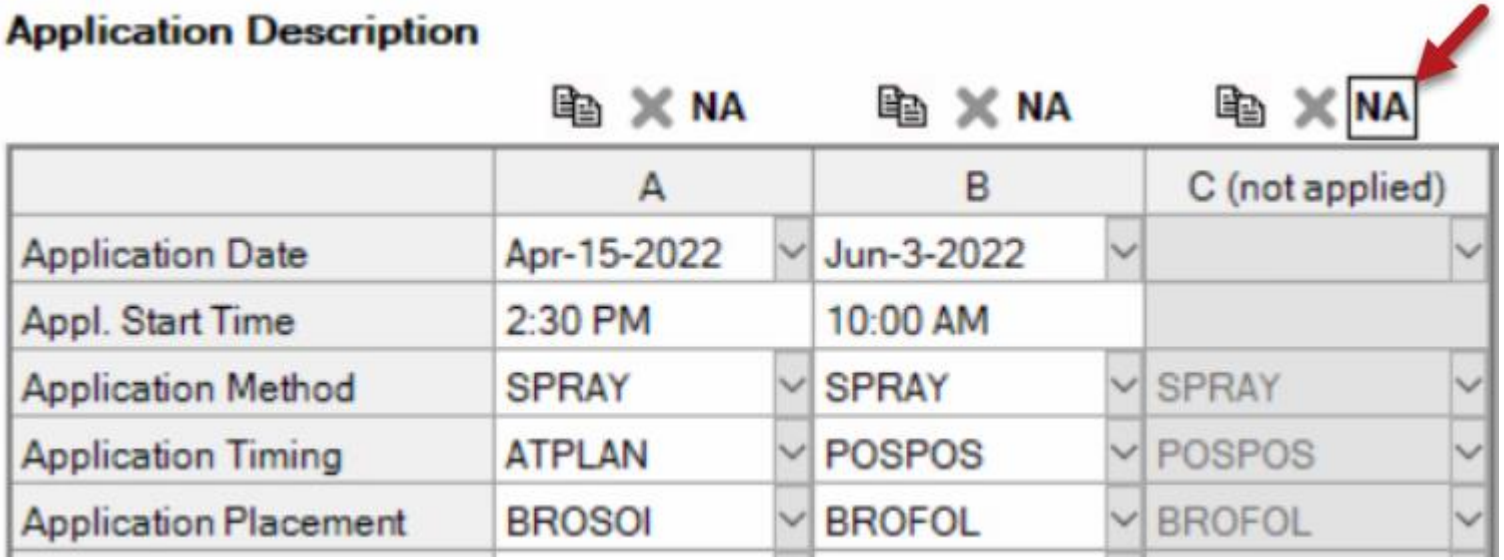


Site Description

Application Not Applied

Identify an application that is *not applied*

- **Purpose:** Retain a planned application code, but denote that it was not performed
- **Process:** Toggle **NA** button above application



	A	B	C (not applied)
Application Date	Apr-15-2022	Jun-3-2022	
Appl. Start Time	2:30 PM	10:00 AM	
Application Method	SPRAY	SPRAY	SPRAY
Application Timing	ATPLAN	POSPOS	POSPOS
Application Placement	BROSOI	BROFOL	BROFOL

Application Not Applied

Impact:

- Enter a deviation to explain circumstances
- Not included in product calc's
- 'NA' applications display with strikethrough
- Appl. Date field can be blank without failing validation if marked 'NA'

Deviations

Insert row with Shift+F7, Delete current row with Shift+F8

No. 1: Date: Jun-24-2022 By: Matthew Elsinger

Deviations: Application C not applied

Reasons: Reason why the application did not occur

Reps: 4 Plots: 2.5 by 10 meters
Appl. Amount: 200 L/ha Mix Size: 2.15 L

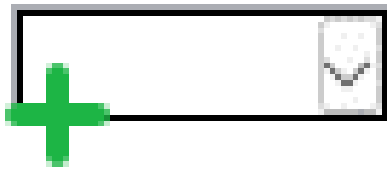
Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Appl Code	Amt Product to Measure
1	Untreated Check							
2	Tub	250	G/L	EC	0.5	l/ha	AB ~~C~~	5.3 mL/mx
3	Tub	250	G/L	EC	1	l/ha	AB ~~C~~	10.6 mL/mx
4	Tilt 250	250	G/L	EC	0.5	l/ha	AB ~~C~~	5.3 mL/mx
5	Mico 60							

Trt No.	Type	Treatment Name	Form Type	Rate	Rate Unit	Appl Code
1	CHK	Untreated Check				
2	FUNG	Tub	EC	0.5	L/ha	AB ~~C~~
3	FUNG	Tub	EC	1	L/ha	AB ~~C~~
4	FUNG	Tilt 250	EC	0.5	L/ha	AB ~~C~~
5	FUNG	Mico 60	EC	1.5	L/ha	AB
5	FUNG	Fungol	SC	1.25	L/ha	~~C~~

New Fields

Many new fields added to editors in Protocols and Trials

- New Regulations tab with Harvest Destruction section
- More columns in Trial Location table
- Crop Description expanded in protocol
  - …and now separate from Pest Description too

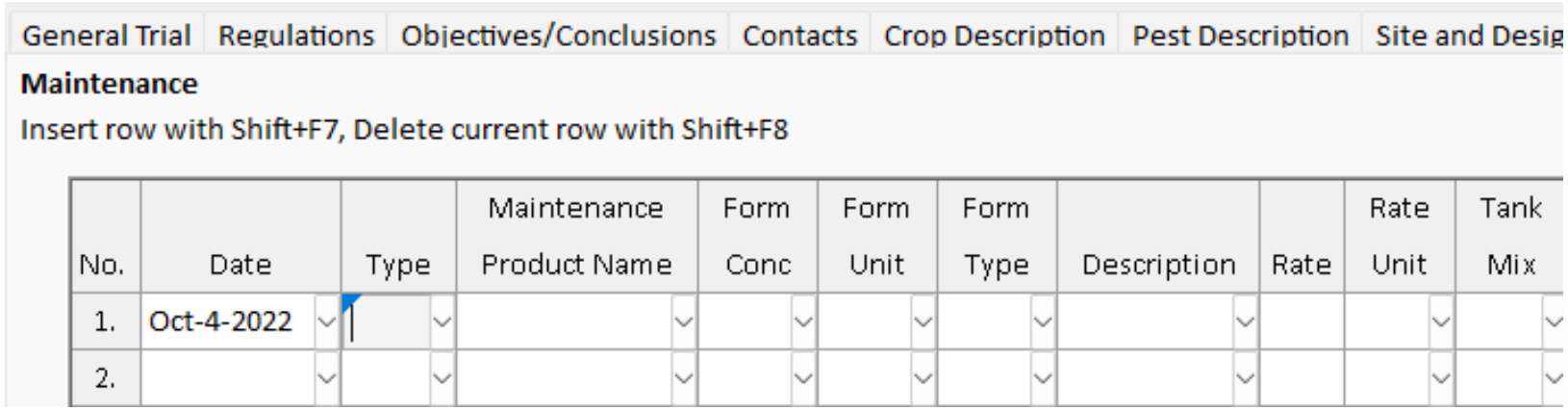


See ARM 2022.5 Field Changes PDF for more details:
https://gdmdata.com/media/documents/Change_logs/ARM_2022.5_Field_Changes.pdf

Repeating Sections

Empty record automatically added at end of repeating sections

- *Easier to add additional items without "Insert Repeating Section" command*
- *Excludes Application, Crop, and Pest sections*



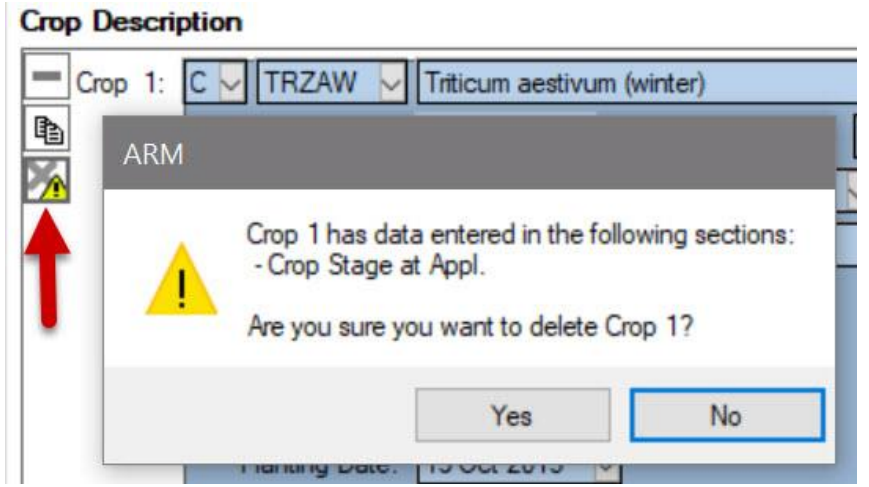
Crop/Pest in use

Verification for whether a **crop/pest is used** in the trial

"In use" if:

- Information entered in Crop/Pest Stage at Appl sections, or
- Referenced in an assessment column that has data

Warning when deleting crop/pest in use

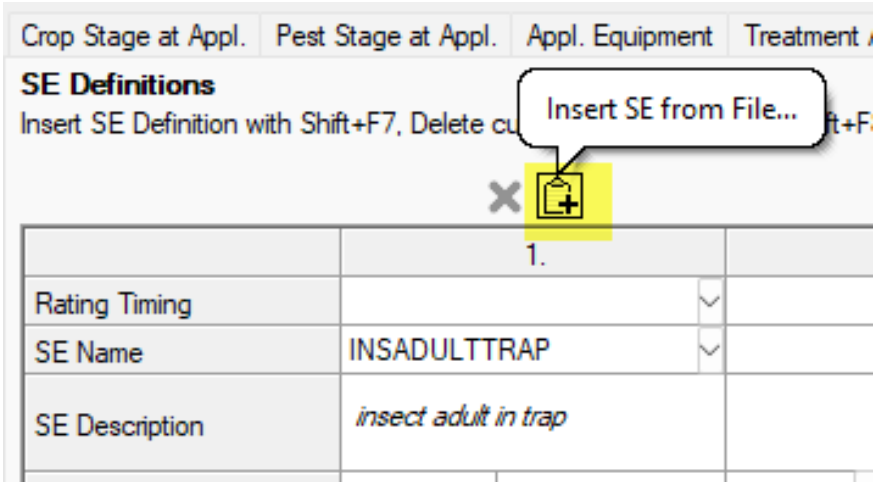


Validation warning for when not in use

Insert SE from File

New shortcut button on SE Definitions: load an SE from your PC

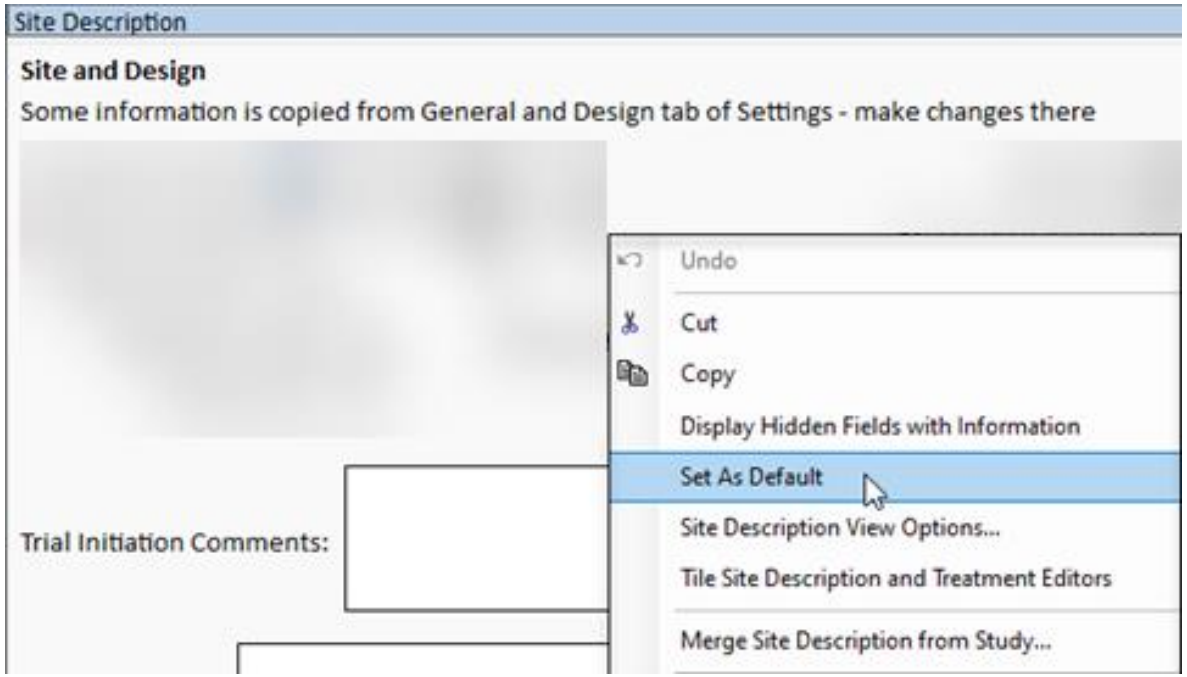
- Saves time after creating an SE from an existing assessment
- After loading from file once, the SE is added to the SE Name Favorites list



Set as Default

"Set as Default" can be used in rich text fields

- *Can include default instructions / required language for reports*

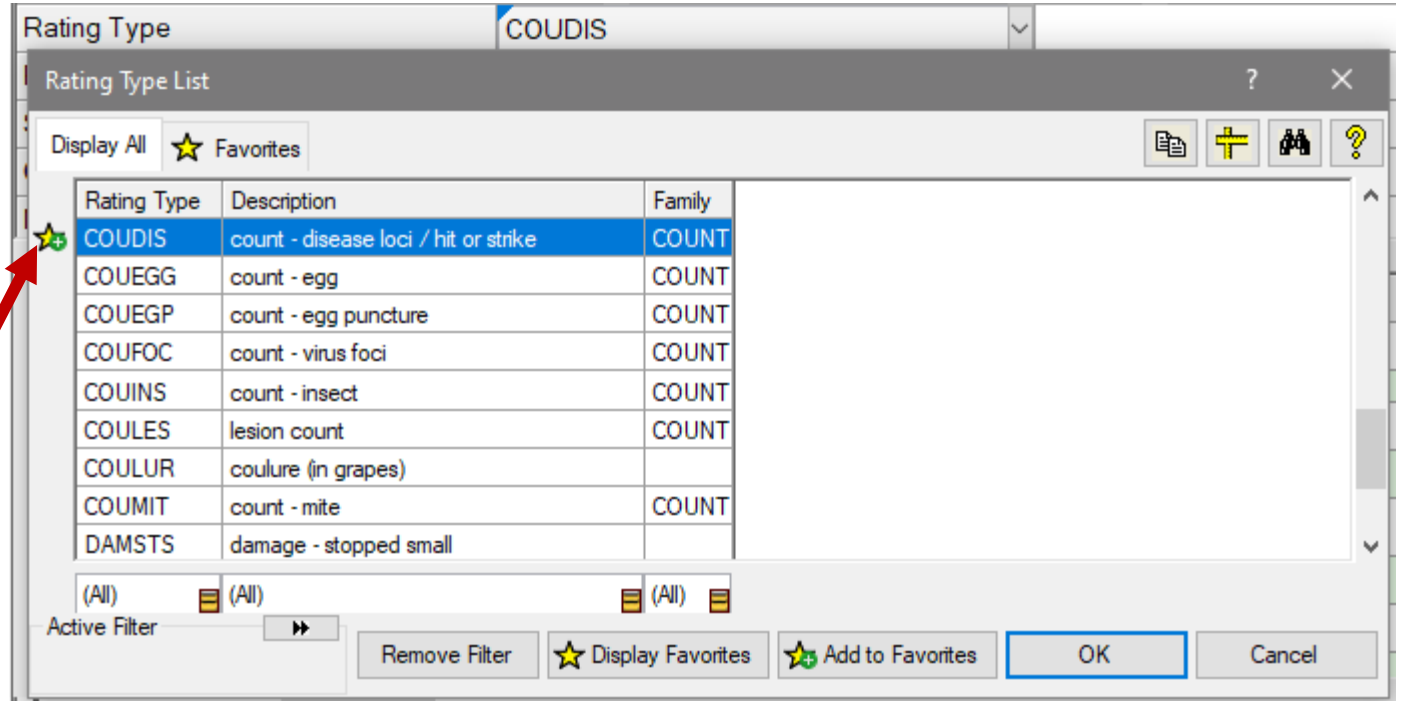


Validation Lists

Validation Lists

Personal List is now **Favorites**

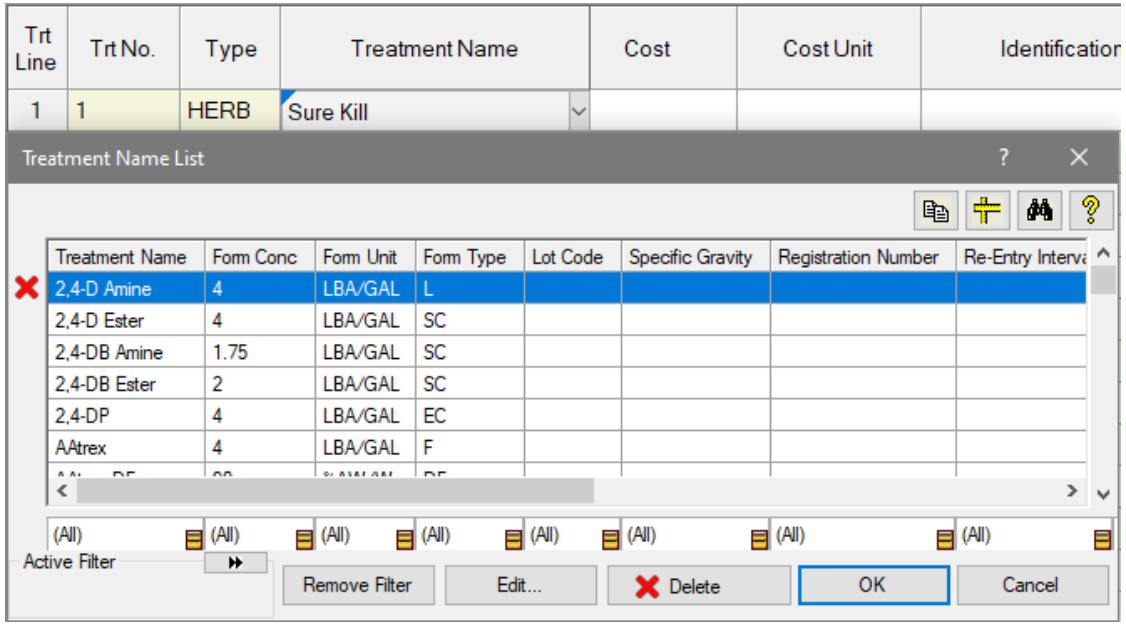
- Favorites tab on list window
  (no more Display Personal/Master)
- *Master List* is simply "Display All"
- Shortcut buttons add or remove from Favorites

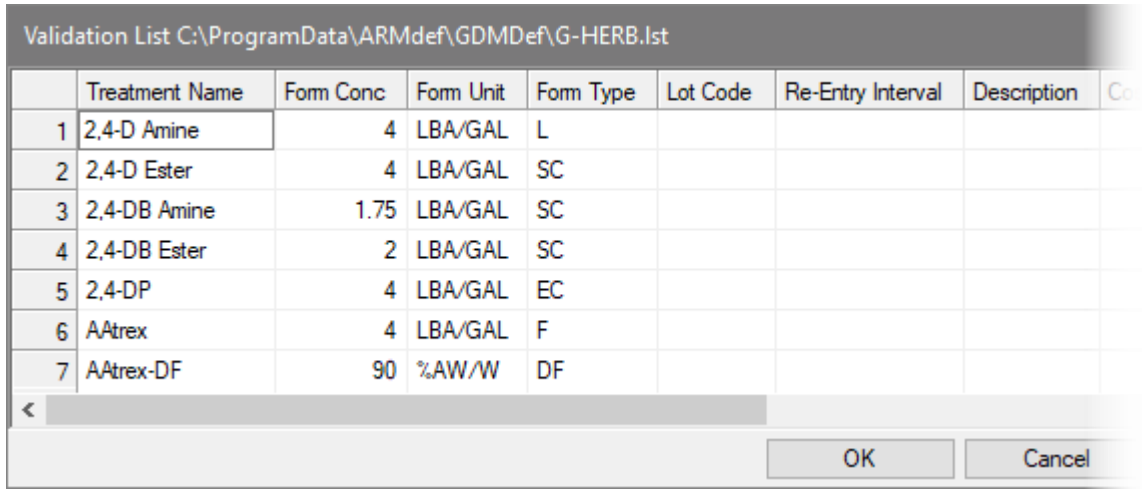


Validation Lists

"User-built" lists are improved

- Shortcut "X" button to remove from the list
- Open list in "edit" mode to adjust existing items



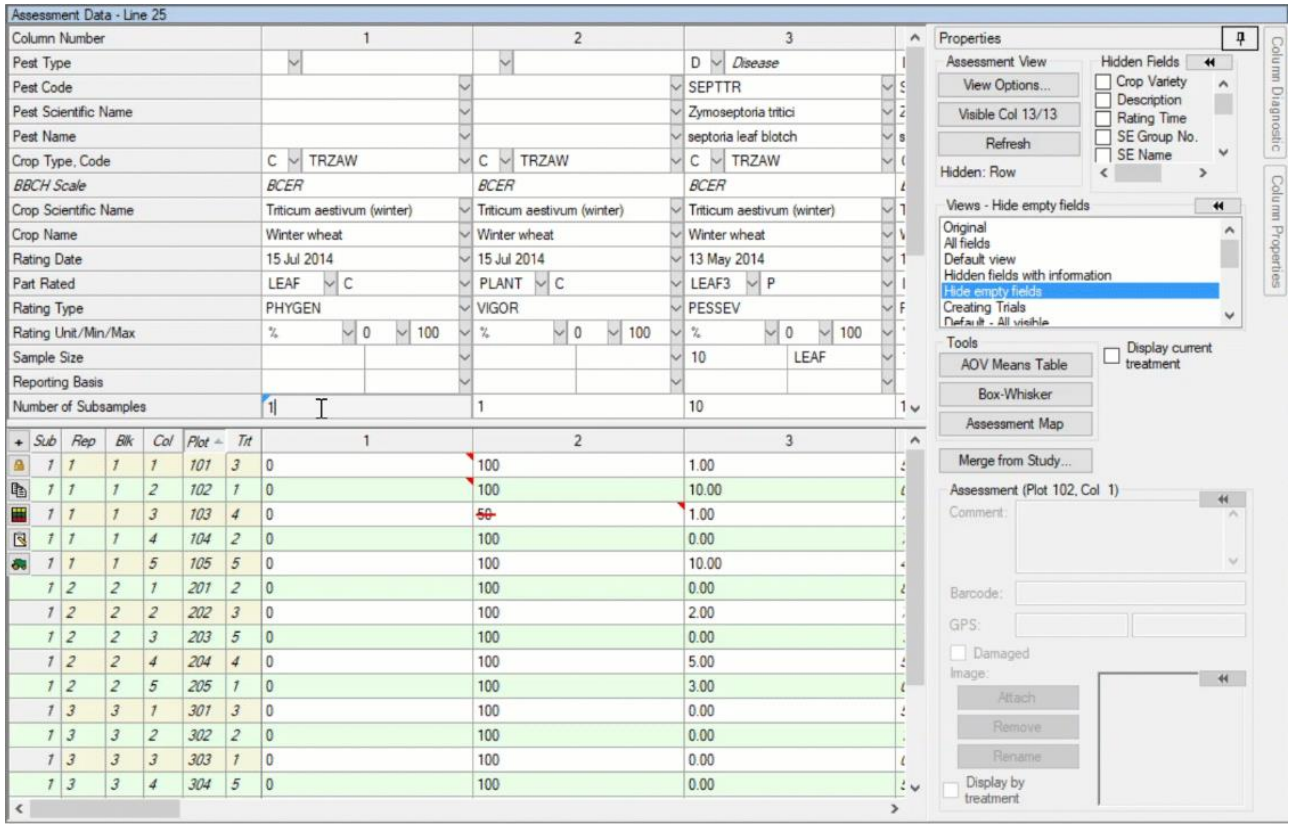


Assessment Data

Assessment Image

New dialog for previewing and zooming assessment images

- Improves performance for high-resolution photos
- Workflow improved for using image to review or take ratings



Data Review

Column Diagnostics

Now highlights values that indicate a failure of data to meet AOV assumptions

- *P-values < 0.05 imply failure of data to meet tested assumption*

Column 5 Diagnostics

Diagnostics

Raw Graphs

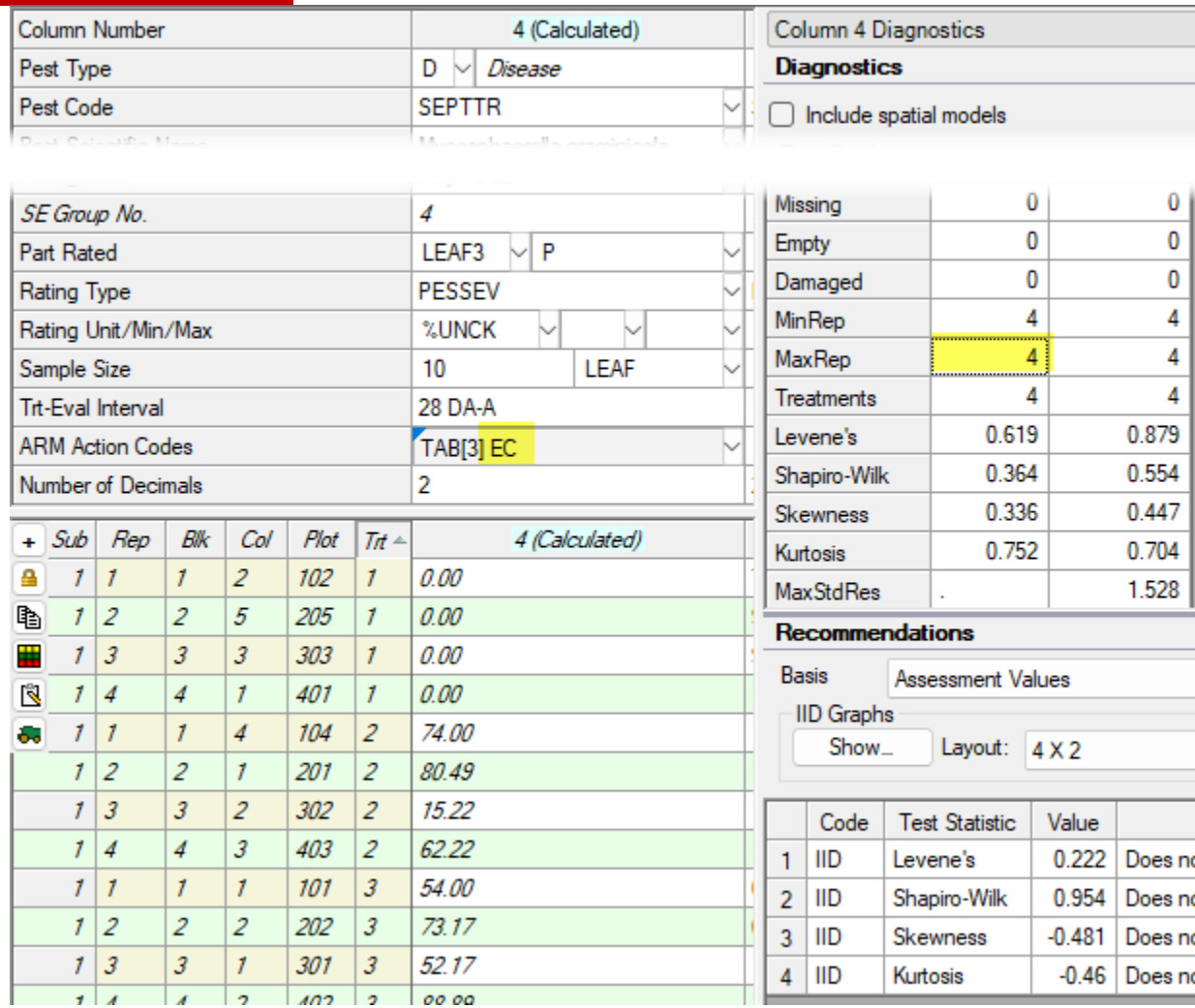
Show... Layout: 4 X 2

Statistics (P)	Raw ☑	IID ☐	AL ☐	AS ☐
Treatments	11	11	11	11
Levene's	0.0136	0.0059	0.0003	0.0014
ShapiroWilks	0	0.8081	0.1525	0.5179
Skewness	0	0.6599	0.5744	0.6345
Kurtosis	0	0.6530	0.0251	0.2111

Column Diagnostics

Recognizes “selected treatments” Action Codes (EC, ETn)

- *Recommended actions now calculated <u>after</u> excluding the data*



Column Number	4 (Calculated)
Pest Type	D *Disease*
Pest Code	SEPTTR

SE Group No.	4	
Part Rated	LEAF3	P
Rating Type	PESSEV	
Rating Unit/Min/Max	%UNCK	
Sample Size	10	LEAF
Trt-Eval Interval	28 DA-A	
ARM Action Codes	TAB[3] EC	
Number of Decimals	2	

+	*Sub*	*Rep*	*Blk*	*Col*	*Plot*	*Trt*	*4 (Calculated)*
	1	1	1	2	102	1	0.00
	1	2	2	5	205	1	0.00
	1	3	3	3	303	1	0.00
	1	4	4	1	401	1	0.00
	1	1	1	4	104	2	74.00
	1	2	2	1	201	2	80.49
	1	3	3	2	302	2	15.22
	1	4	4	3	403	2	62.22
	1	1	1	1	101	3	54.00
	1	2	2	2	202	3	73.17
	1	3	3	1	301	3	52.17
	1	4	4	3	403	3	88.88

Column 4 Diagnostics

Diagnostics

Include spatial models

Missing	0	0
Empty	0	0
Damaged	0	0
MinRep	4	4
MaxRep	4	4
Treatments	4	4
Levene's	0.619	0.879
Shapiro-Wilk	0.364	0.554
Skewness	0.336	0.447
Kurtosis	0.752	0.704
MaxStdRes	.	1.528

Recommendations

Basis: Assessment Values

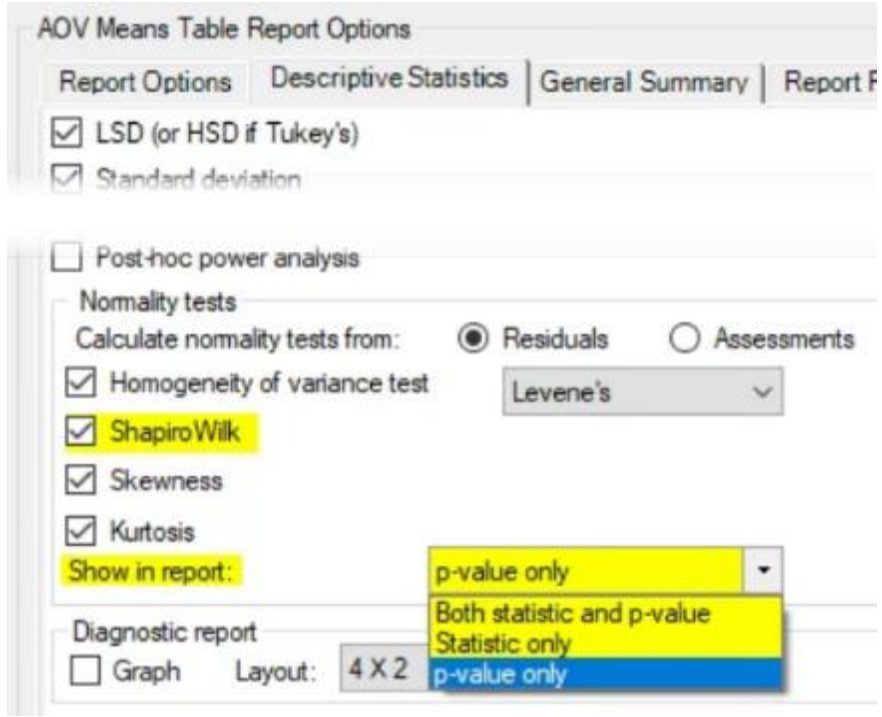
IID Graphs: Show... Layout: 4 X 2

	Code	Test Statistic	Value	
1	IID	Levene's	0.222	Does no
2	IID	Shapiro-Wilk	0.954	Does no
3	IID	Skewness	-0.481	Does no
4	IID	Kurtosis	-0.46	Does no

Normality Tests

Include all info used on Column Diagnostics in AOV report

- Added Shapiro-Wilk test to report

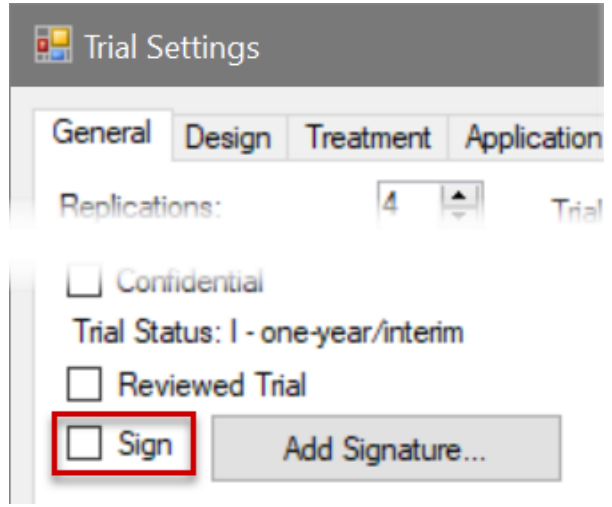


- Choose how statistical tests are reported
  - Test statistic, **p-value**, or both

Trt No.	Treatment Name	Rate Rate Unit	3*
1	Untreated Check		4.55 a
2	Tub	0.5 l/ha	1.93 b
3	Tub	1 l/ha	1.53 b
4	Tilt 250	0.5 l/ha	1.83 b
5	Mico 60	1.5 l/ha	2.70 b
LSD P=.05			1.264
Standard Deviation			0.821
CV			32.76
Levene's Prob(F)			0.73
P(Shapiro-Wilk)^			0.5027
P(Skewness)^			0.2652
P(Kurtosis)^			0.8741

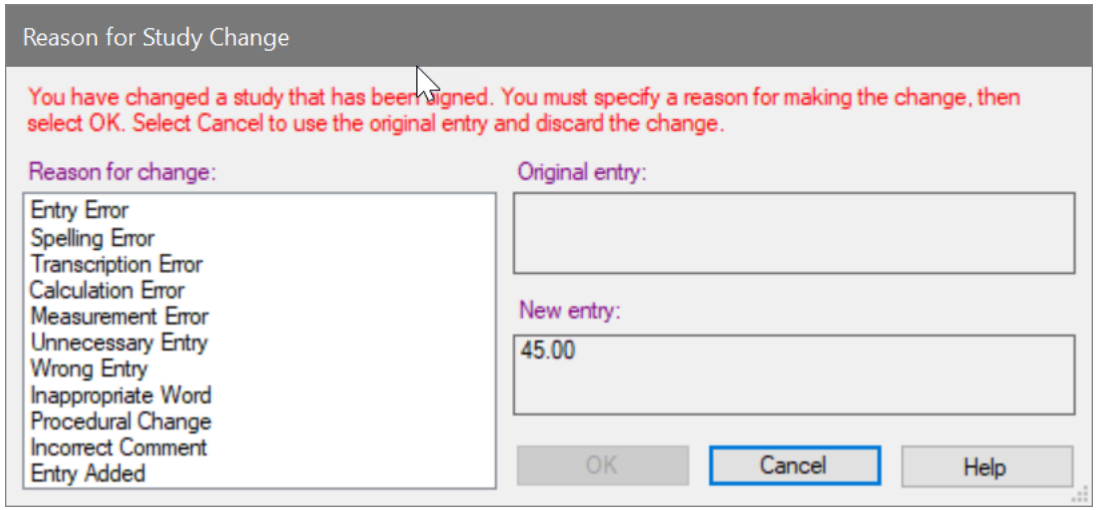
Trial Signature

Trial Signature



Updates to the new Trial Signature feature:

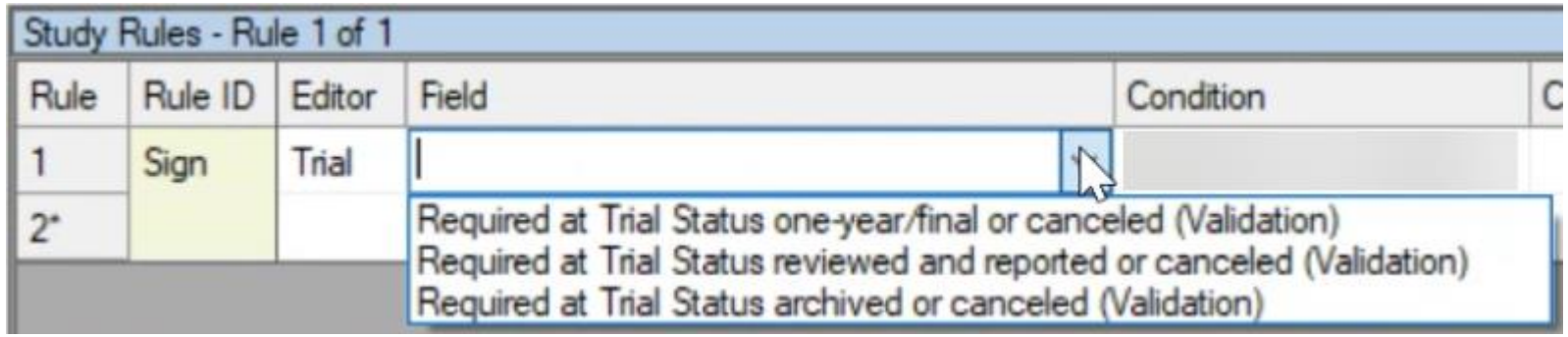
- Trial can be signed at **any** trial status (previously only for 'Final')
- Signing a trial with status = Final (or later) starts an **Audit Trail**
  - All further changes are logged and prompted to provide a reason

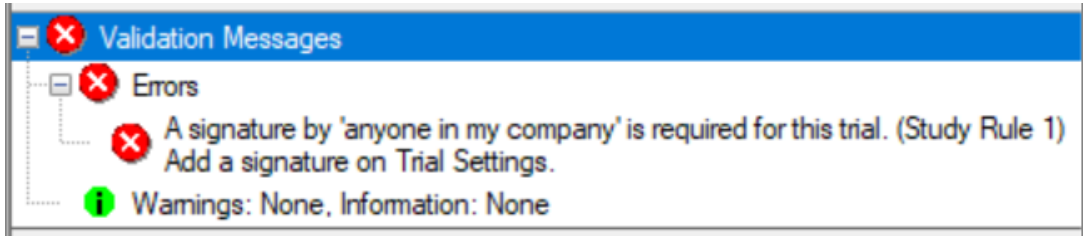


Trial Signature

New study rule to require a signature at particular Trial Status

- Field determines what status triggers rule
- Condition determines who needs to sign





- ARM prompts for signature when trial status is set (if validation passes)

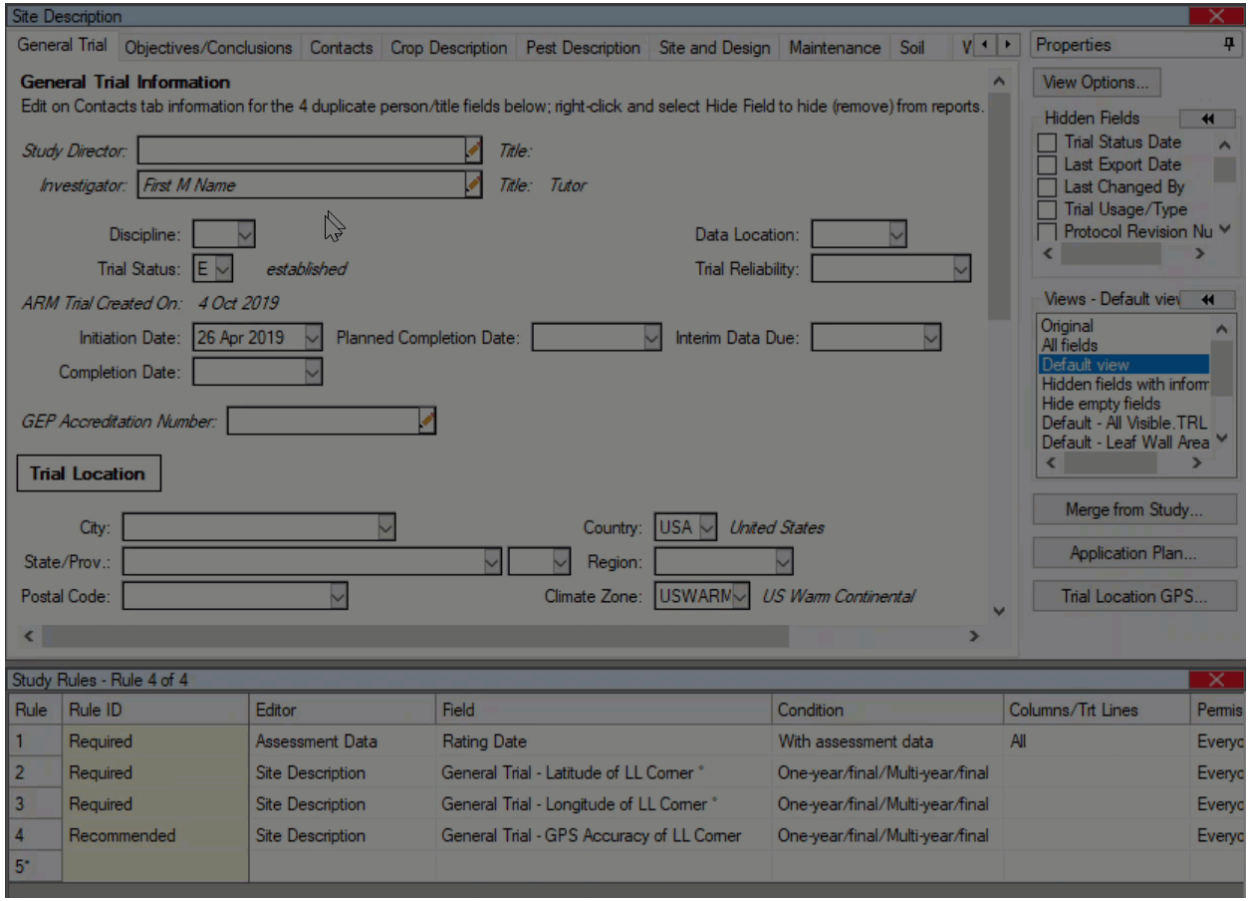
Validation

Trial Status

Validation is performed automatically when Trial Status is changed

Purpose: Study rules may become active with a different Status

Impact: Resolve validation issues before adding your signature to trial (or printing, sending, etc.)



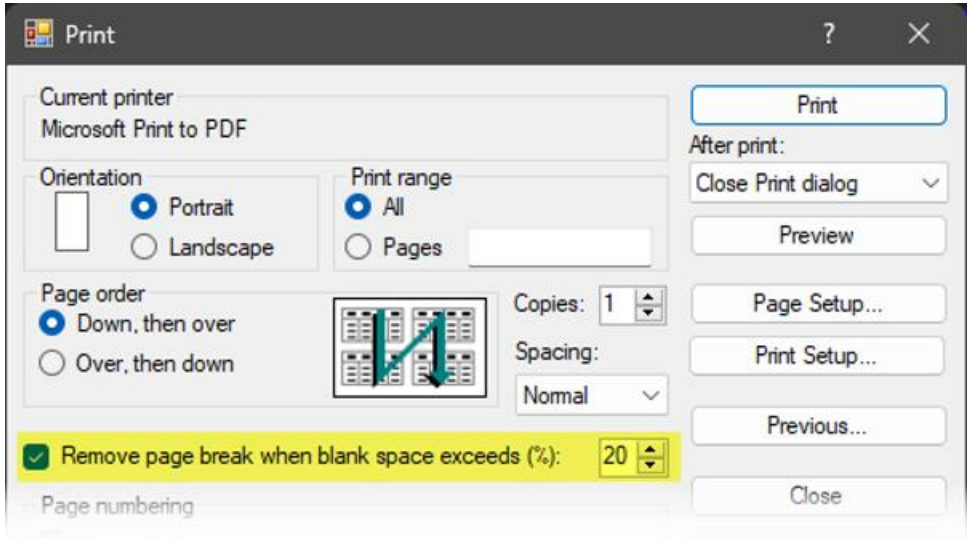
Print Reports

Summary Reports

Summary reports now always start on **a new page** in report

- *Summary reports = AOV Means, Assessment Data Summary, etc.*
- *Select 'Remove page break…' to combine report sections on same page when there is room*

- Summary reports take up most of a page, so do not fit well if combined with other reports

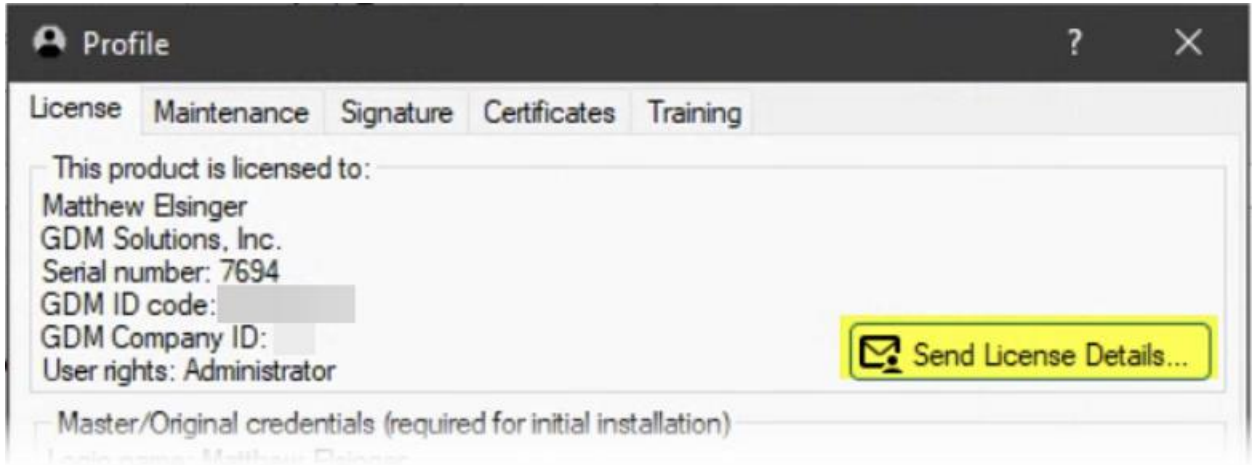


Profile

Send License Details

New ‘Send License Details’ button

- Find it on the Profile and Request Customization dialogs
- Share ARM license details in an email

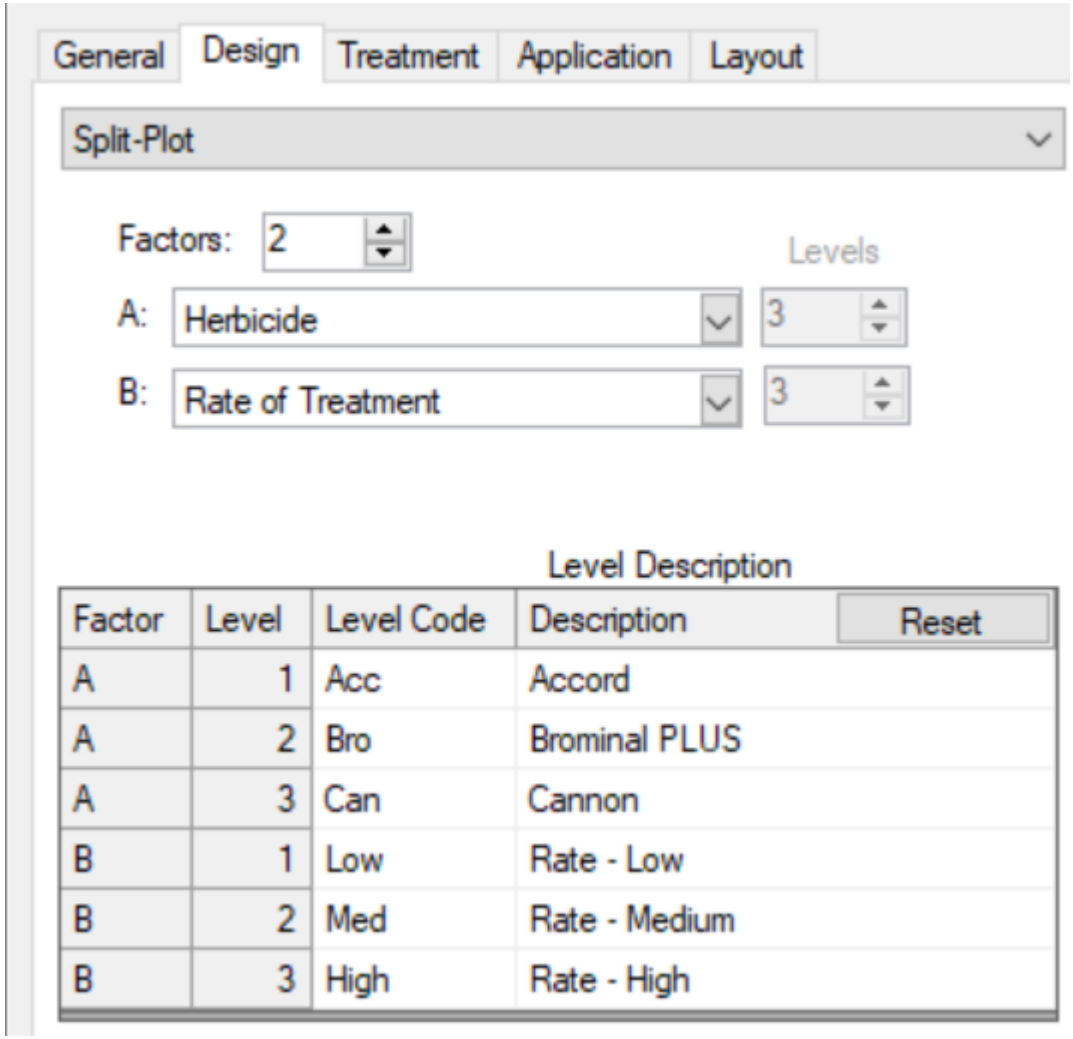


Multi-factor Designs

Multi-factor studies

Level Description added to Settings dialog

- Same information on the Trial Map dialog
- Now available in a protocol, too!



Treatments

Validation updates

Added support for **Biological Entity Dispensers** as treatments

- **Treatment Type**: BIOENT
- **Formulation Units**: BIOEN/D (biological entities per dispenser)
- **Formulation Type**: BD (biological entity dispenser)
- **Rate Units**: dispensers per area or per number of plants
  - D/A, D/ha, D/1000 FT2, D/100 m2, D/1000 plants, D/10000 m2 LWA

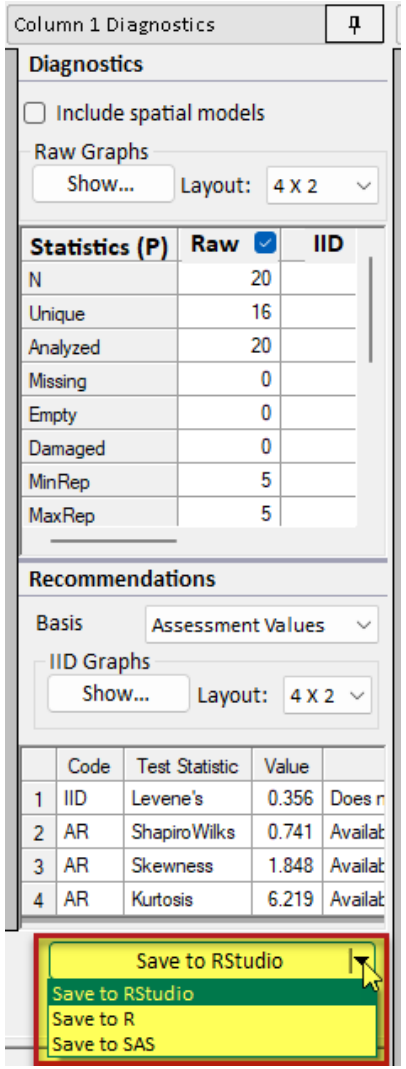
Trt No.	Type	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit
1	BIOENT	Biological Entity Dispenser	1000	BIOEN/D	BD	15	D/1000 FT2	16.1	D/100 m2

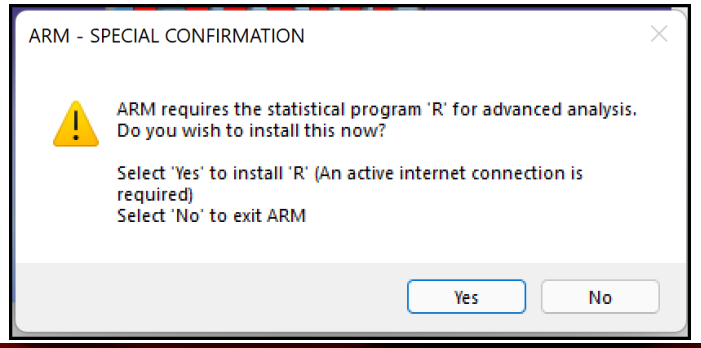
Data Analysis

R software update

ARM now supports R versions 4.2.0 and newer

- *No additional installation/update needed at this time*
- R is used behind-the-scenes for analysis, reporting
- R users – export Column Diagnostics script to R:

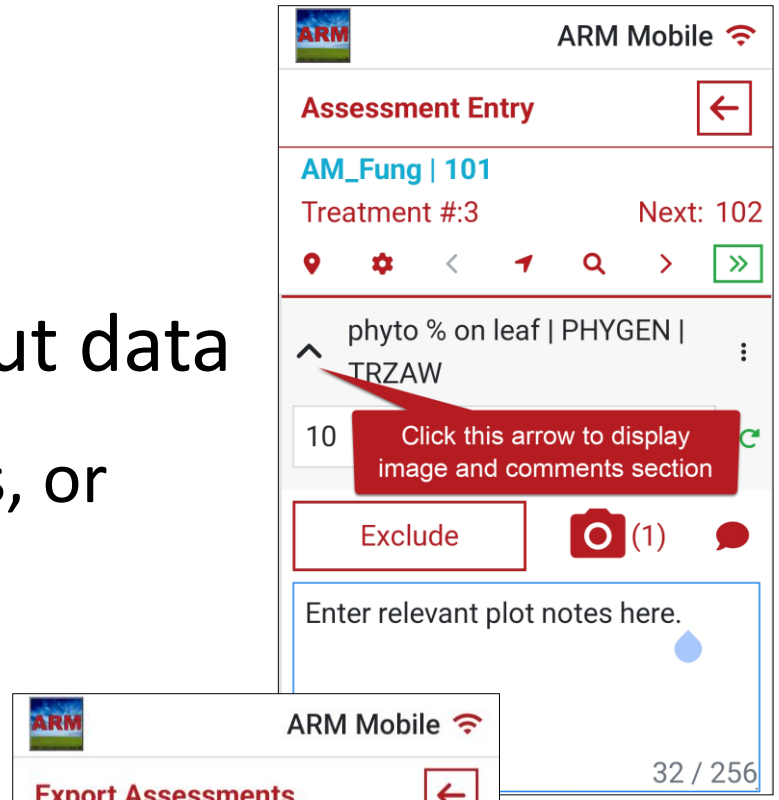
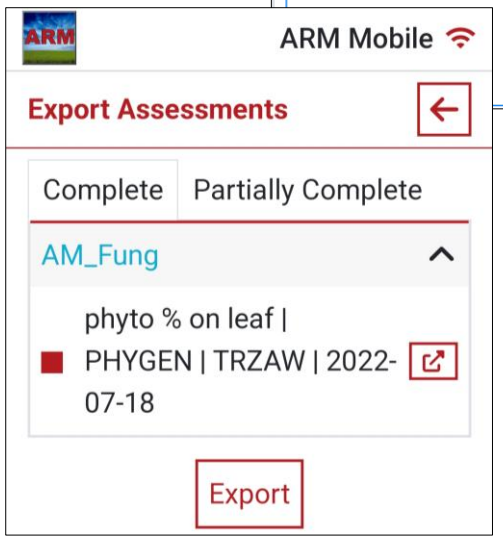




- Previously would give an error if R version was too new.

ARM Mobile

Export images

Export images from ARM Mobile with or without data

- **Purpose:** Allows user to export images, comments, or GPS during or after assessment export.
- **Example:** One researcher can enter only data, another can take plot pictures. Both can export the same assessment data column – images will import “on top of” data.