

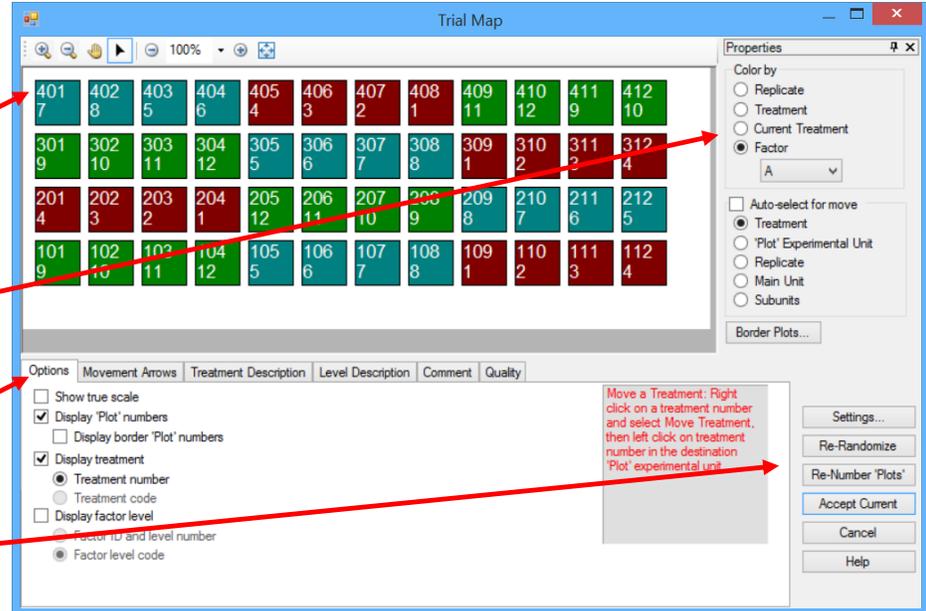
Trial Map

To display the Trial Map window: open a trial, and on Navigation Bar choose Trial Map.

The trial map provides a view of actual arrangement of experimental 'plot' units in a trial. Because many ARM features and data analyses are sensitive to the relative positions of experimental 'plot' units in a trial, it is **very important** to ensure that a trial map matches the actual arrangement in the field! Otherwise ARM calculations and data adjustments can be misleading or wrong.

1) Trial map components:

- Experimental 'plot' arrangement, showing the actual "graphical" trial layout. Right-click on trial map to display additional actions!
- Properties panel, to select which trial components are identified by color
- Option and feature tabs, to select and define what to display on the trial map, and add comments for trial map report
- Action buttons, to perform general actions



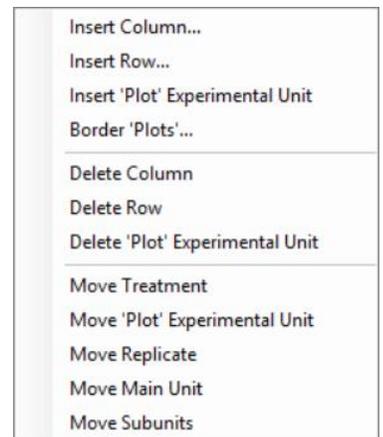
2) Experimental 'plot' arrangement -

displays the "graphical" trial layout.

If the trial map does not match the actual trial randomization and layout in the field, then click the right mouse button on the trial map to display a command menu:

Use these right-click menu commands to modify the trial map by:

- Inserting or deleting 1 or more blank columns, either before the current position on the map, or at right of the trial map.
- Inserting or deleting 1 or more blank rows, either above the current position on the map, or at bottom of the trial map.
- Inserting or deleting a blank plot at the current cursor location. Existing plots to the right of the blank plot are shifted right to make room when inserting a plot, or shifted left to overlay (and thus remove) the blank plot.
- Moving the treatment under the cursor. Once marked, then drag the marked treatment number/code to the plot where that treatment belongs, thus swapping position of the 2 treatments. Do this to modify a randomization for an accidental application mistake, or to match the actual trial randomization.



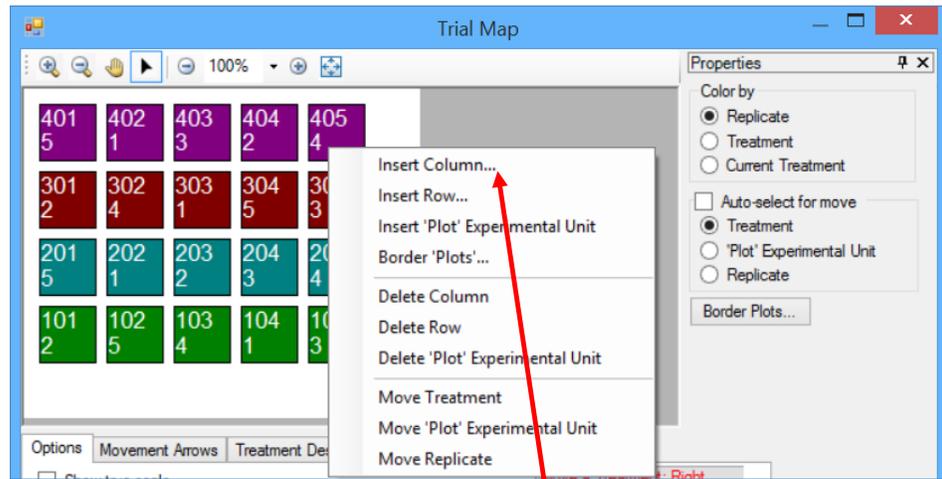
Note that a treatment can only be moved *within the same replicate* for a randomized block design, to prevent violating the blocking rules. Use 'Move plot' described below to shift position of an entire plot, including the treatment, to any blank area or to swap position with another plot.

- Moving the plot under the cursor. Once marked, then drag the marked plot to the location where the plot belongs. If a plot is already at the destination, that plot exchanges position with the moved plot.

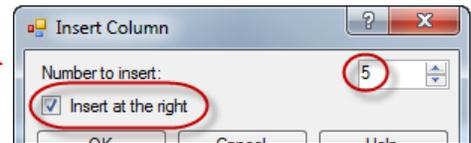
- f) Moving an entire replicate to a new position on the map, such as stacking replicates in pairs. A replicate can only be dropped onto a *blank* trial map area with enough empty rows and columns to hold the moved replicate.

Exercise: stack rep 3 immediately above rep 1, with rep 4 above rep 2 for 'Heterogeneity Example' trial (from Tutorial):

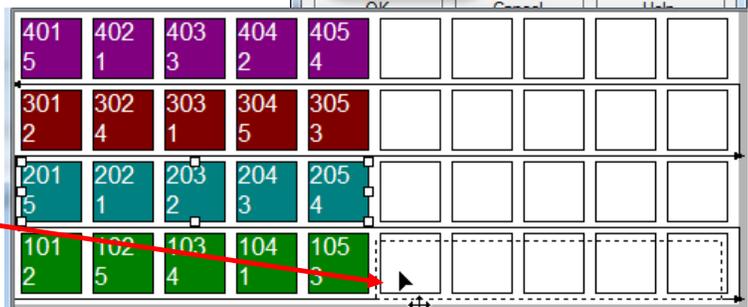
- Display the trial map.
- Right-click in column 5 (plots 105, 205, 305, 405), then select "Insert Column".
- On the Insert Column dialog, enter "5" as number of columns to insert, and check the box to "Insert at the right".
- Right-click on replicate 2, and select "Move Replicate".



- Grab plot 201 of the marked replicate by pressing and holding the left mouse button, and while holding the left button drag the replicate and drop it onto the blank space immediately right of plot 105:



- Rep 2 is now positioned at the right of rep 1.



401 5	402 1	403 3	404 2	405 4					
301 2	302 4	303 1	304 5	305 3					
101 2	102 5	103 4	104 1	105 3	201 5	202 1	203 2	204 3	205 4

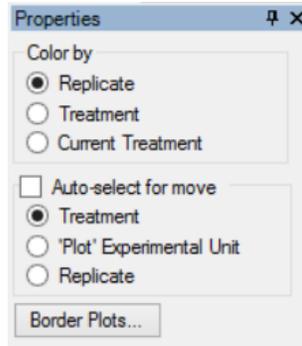
- Repeat this process to move rep 3 immediately above rep 1. (Right-click on plot 301, select "Move Replicate", and drag to the plot immediately above 101.)
- Next move rep 4 above rep 2, so the trial map has this appearance:

301 2	302 4	303 1	304 5	305 3	401 5	402 1	403 3	404 2	405 4
101 2	102 5	103 4	104 1	105 3	201 5	202 1	203 2	204 3	205 4

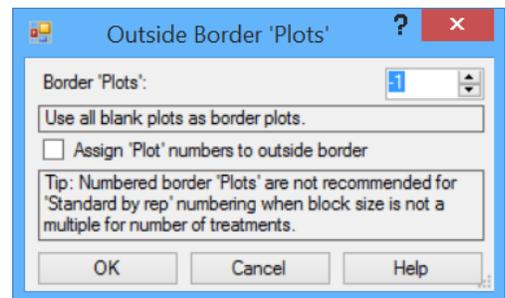
- Either select "Accept Current" to keep this change, or "Cancel" to abandon this change.
- Close "Heterogeneity Example", and **do not** save any changes.

3) **Properties panel** - used to display which trial components are identified by color. Colors are selected automatically, with each different trial component displayed in a different color.

- a) Color by
 - (1) Replicate
 - (2) Treatment
 - (3) Current treatment – only colors plots that are associated with the currently selected treatment of the treatment Description or the Quality tab



- b) Auto-select for move checkbox
 - (1) Treatment
 - (2) 'Plot' Experimental Unit
 - (3) Replicate
- c) Border plots are experimental units that do not have a treatment assigned to it, but rather are place holders to depict the actual shape of the trial map.
 - (1) Select border plots to add outside border plots to trial map
 - (2) Select the number of border plots to use around the outside of the Trial map.
 - (3) '0' will remove all outside border plots from the trial map; '-1' to use all plots that do not have treatments assigned as border plots.



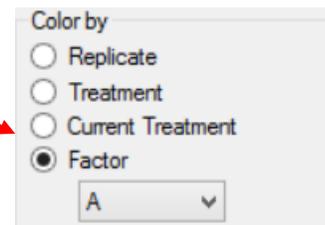
For example, in the trial map on page 1, each level of factor A has a different color.

4) **Option and feature tabs** - define display options or information to display.

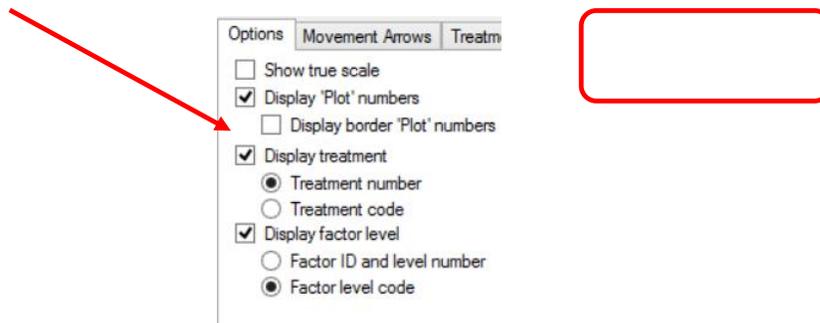
- a) Options:
 - a) Show true scale - display plot in the width to length ratio that is defined in General tab of Settings. Clearing this checkbox often allows displaying more plots in the trial map window.
 - b) Display plot numbers. Clear this checkbox to simplify the trial map when reviewing treatment randomization, making it easier to focus only on treatment numbers.
 - c) Display treatment - use to display either treatment number, or a treatment code (such as UTC) that has been entered in the Treatment Description tab.
 - d) Display factor level - use to display factor level information in each plot, immediately below any plot or treatment number/code that is displayed. Displaying factor level information makes it much easier to review or change randomization of a multi-factorial trial. (This option is hidden for non-factorial trials.)
 - (1) Factor ID and level number, from treatment editor. For example, a treatment that is level 2 of factor A and level 3 of factor B is identified as A2 B3 on trial map
 - (2) Factor level code, displays on a separate line in plots the level codes for each factor. Level codes are defined on "Level Description" tab, and by default are the first 3 characters of treatment name for each factor level.

Exercise 1: Display level codes for each of the 3 factors in 'SplitPlotTrialMapExample2.prt0'.

- (1) Open SplitPlotExampleProtocol2.prt0 (from Tutorial).
- (2) Review levels entered for the irrigation, variety, and zygosity factors entered in treatments.
- (3) Click the Create Trial button: 
- (4) Set Properties at top left in the displayed Trial Map to Color by Factor A.



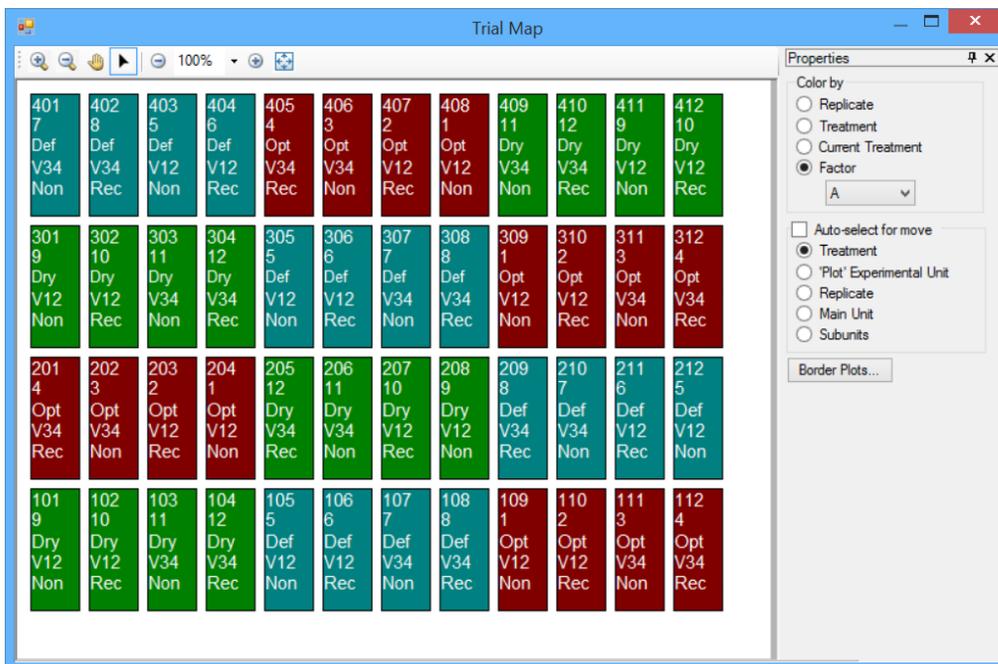
(5) Set the Options tab at bottom left to these settings:



(6) Click Level Description tab to view the automatic level codes, which are the first 3 characters of treatment name for each level.

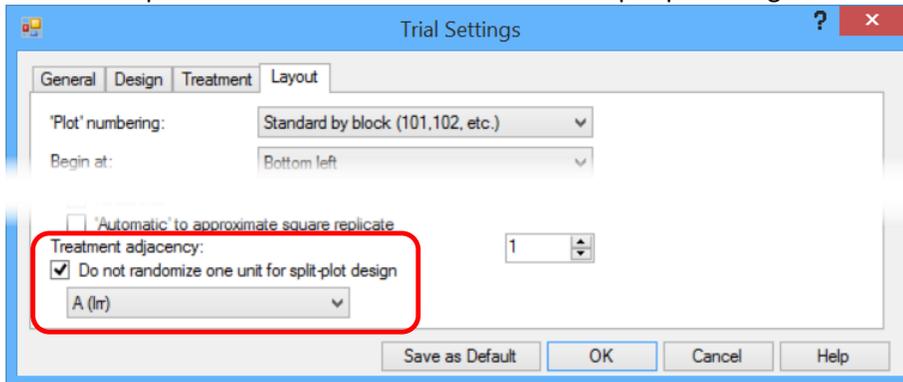
Options	Movement Arrows	Treatment Description	Level Description
Factor	Level	Level Code	Description
A	1	Opt	Optimal Irrigation
A	2	Def	Deficit Irrigation
A	3	Dry	Dryland Irrigation
B	1	V12	V12
B	2	V34	V34
C	1	Non	None
C	2	Rec	Recommended

Your Trial Map should now look similar to this (the randomization will differ):

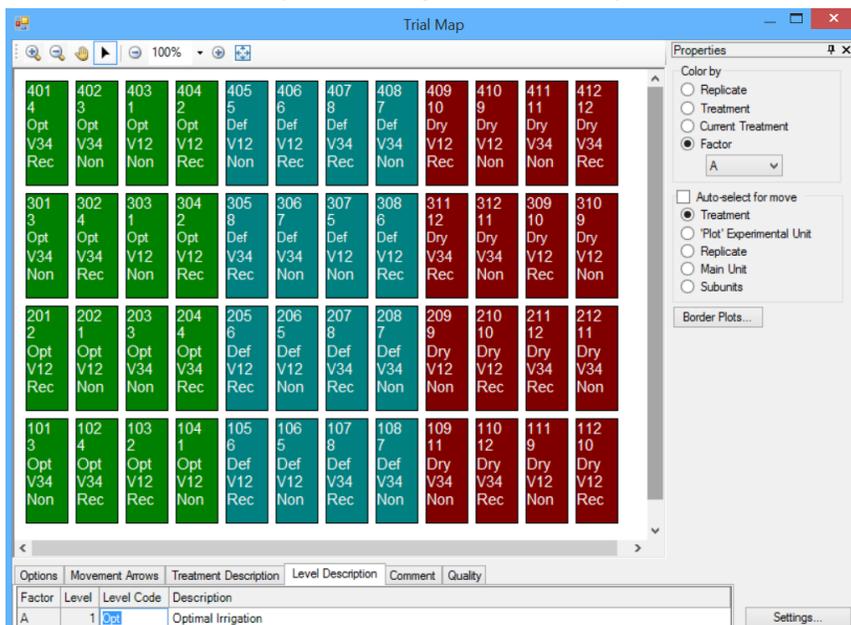


Exercise 2: Because it is difficult to irrigate a trial when irrigation levels are randomized per replicate, for this trial the irrigation levels should be forced as non-randomized.

- (1) Click Settings button at lower right of Trial Map, then select Layout tab.
- (2) Select the option "Do not randomize main unit for split-plot design"



- (3) Click OK button to accept this change. Your trial map should now look similar to this:

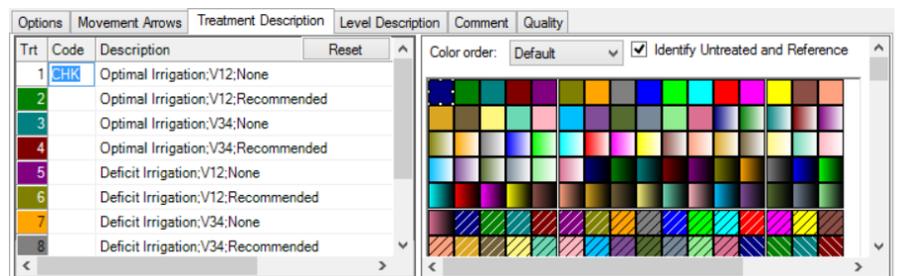


- b) Movement Arrows - defines the order of plots for assessment order or harvest order sort, such as for labels, data collection reports, rating shells, and when sorting data in the assessment editor. Select "No arrows" to hide movement arrows on the trial map dialog.



- c) Treatment Description - identifies what to display as the treatment code, plus a brief 1 line treatment description to:

- a) Display on Trial Map report
- b) Use as the treatment description on graphs.
- c) Assign a specific color to a treatment.



- d) Level Description - identifies the level code to display on trial map for a multi-factor trial. →
- e) Comment - any additional comment to display about the trial on Trial Map report. For example, enter directions to the trial so a printed Trial Map report displays a brief description of trial treatments, the randomization, and directions to the trial.
- f) Quality – contains tools to analyze and improve an experiment's precision.

Options	Movement Arrows	Treatment Description	Level Description	Comment	Quality
Factor	Level	Level Code	Description		
A	1	Opt	Optimal Irrigation		
A	2	Def	Deficit Irrigation		
A	3	Dry	Dryland Irrigation		
B	1	V12	V12		
B	2	V34	V34		
C	1	Non	None		
C	2	Rec	Recommended		

- (1) Suggested block size displays a table of suggested block sizes, based on the current settings. The optimum block size is denoted with an asterisk (*)
- (2) Treatment table assests in balancing the "edge effect" across treatments, and in balancing the average distance between treatments.

The Quality dialog box contains two main sections:

Suggested block size (=optimum): A table with columns for Block Size (2, 3*, 5) and rows for Rep Width, Rep Length, Surface/Area, Trial Width, Trial Length, and Unused 'Plot'.

Block Size	2	3*	5
Rep Width	6	9.5	16.5
Rep Length	32	21	10
Surface/Area	0.396	0.306*	0.321
Trial Width	6	9.5	16.5
Trial Length	131	87	43
Unused 'Plot'	1	1	0

Treatment Table: A table with columns for Trt, Code, At Edge, Ave Dist, StDev, Min, and Max.

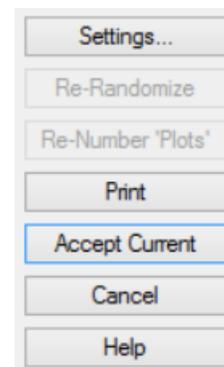
Trt	Code	At Edge	Ave Dist.	StDev	Min	Max
1	CHK	3	6.6	2.2	3.5	8.8
2		4	8.8	1.43	7	10.5
3		2	5.7	2.2	3.5	8.8
4		2	6.6	1.68	5.3	8.8
5		3	7.4	2.63	5.3	10.5
Average		2.8	7	2.03	4.9	9.5

5) **Action buttons.**

- a) Settings: Display the Settings dialog tabs that influence the trial map (the General, Design, and Layout tabs).
- b) Re-Randomize: Create a new proposed randomization, using layout information described in Settings.

Important Notes:

- a) Any existing trial randomization is lost if this button is selected in a trial.
- b) Any re-arrangements done with moves or inserting rows or columns are lost each time a new randomization is created.
- c) This button is disabled when:
 - 1. A trial contains assessment data, since re-randomizing would destroy the current link of assessment data to treatments.
 - 2. A trial is read-only.
 - 3. The current user has data entry or read-only rights.
- d) When the Re-Randomize button is disabled because assessment data is entered, use the Move commands (on right-click menu) to make any needed changes to a trial randomization.
- c) Re-Number 'Plots': Renumbers 'plot' experimental units according to the current plot position, skipping one number for each empty experimental unit on the map. The 'Plot' numbering option on Layout tab in Settings dialog controls what numbers are assigned, but does not change the action to skip 1 number for each blank 'plot' experimental unit on the trial map.



This button is disabled when the Re-Randomize button is disabled.

- d) Print: Print trial map to the default printer. The current trial map Movement Arrows and True Scale options are used, and the trial map is sized to fit on one page. Standard ARM print settings determine font, orientation and margins.

The print button is disabled while creating a trial from a protocol, because until accepting a randomization there is not a trial map to print.

- e) Accept Current: Accept and use the trial randomization, assessment and harvest orders that are currently listed on the trial map.

This button is disabled when a trial is read-only or when the current user has data entry or read-only rights.

- f) Cancel: Exit the trial map and abandon any changes.
- g) Help - displays general ARM help describing the trial map dialog.