ARM Quick Reference

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Introduction

This document describes various tricks and shortcuts for improving efficiency when using ARM.

Terminology

Study is used for information that applies to both a protocol and a trial.

Protocol is a plan for a trial. It does not contain a randomization or space for assessment data. Protocols are stored with a file extension that begins with ".prt", such as .prt9.

Trial is the realization of a protocol. It has a treatment randomization, trial map, and space to enter assessments and location details. Trials are stored with a file extension that begins with ".dat".

Study definition is an ARM "template" that defines structure of protocols and trials. For example, G-All7 is a typical template used for most protocols and trials. However, some large corporate manufacturers who began using ARM before the year 2000 have customized study definitions that have a different name.

Right Click Menu

The quickest way to find what choices are available is to use the right mouse button. Right click on an editor or field to display the list of available choices. Each editor will have the choices available for their screen.



Copy Current Data Column Insert Data Column Delete Data Column... Insert SE from File... Export SE... Hide Current Field **Display All Fields** Display Hidden Fields with Information Assessment Data View Options.. Assessment Data Column Tools... Show Validation List... Show Tooltip Remove Split Required . Recommended Strict Validation Delete Study Rule Load Rule Set...

ARM Required File Extensions

.dat0	ARM 2015 or newer Trial
.dat9	ARM 9 Trial
.dat8	ARM 8 Trial
.dat	ARM 7 or older Trial
.pdv	Plot Data View
.set	Report Set
.dcf	Data Collector File

.prt0	ARM 2015 or newer Protocol
.prt9	ARM 9 Protocol
.prt8	ARM 8 Protocol
.prt	ARM 7 or older Protocol
.ede	NACA Electronic Data Exchange
.fld	Field Description
.se	Standard Evaluation (customized .def)

'GDM Recommends' Symbol



This symbol is included in ARM documentation on options and procedures that GDM highly recommends. There are cases where GDM feels strongly about using a particular option over a different option, depending on the circumstances. The documentation will provide a detailed description of why the option or procedure is preferred, while still providing information about all available options.

Getting Started

			<u>H</u> elp)		
				Contents		•
General	Overview of ARM	Menu Choices		Search for Help On		•
			2	<u>T</u> opic	F1	
і. <u>пеір</u> :			+	Study Definition	F5	
a. F1.an\	/ Help button. or 꿀 displays I	nelp on current ARM screen.	-	References (pdf)		•
				How To Topics		•
D. F5 Or L	on a study editor displays n wield Defense a conditioner way	elp about current data entry field.		Tutorial		•
C. ARIVIG	uick Reference card is very us	serui; print it as a convenient	-	BBCH Growth Stages (ndf	a	
d Lleo Tu	utorial for an introduction and o	verview of ARM and How To	~	Charlefeelladates	,	
	for information on typical ARM	tasks		Check for Updates		
				Rollback to Previous ARM	Version (9201404a)	
2. File: most	File commands are available of	on the toolbar, which is faster to		- Request GDM Support		
	🖄 菌 🖬 🛍 🗙 👗 🕻	🙀 🖂 - 🗁 🗐	ARM	Start ARM Support Viewer	r	
use.				Request Corporate ARM (
3. Edit: Undo	and block commands are ava	ilable on toolbar: 📩 👲 🖷 💶		About ARM	-ustornization	
Click right	mouse button (right-click) on s	tudy editors for common edit			Navigation Bar	7
commands	».				 Header Treatments 	
4. Format an	d Table are for editing "rich te	xt" in Trial Comments and Site or Pr	otor	col Description	General Trial	
			0.00		Personnel Crop Description	
5 Tools SA	veral Tools commands are on r	toolbar: 🖤 🖞 🚮 🚾 🔐 🥪 省 -	\checkmark		Pest Description	
Right-click	menu on study editor for avail	able Tools			Maintenance Soil	
					Moisture Application	
6. Utilities: M	ligrate Studies and Settings to	New Computer, Install License, <u>Re</u>	buil	d Study List,	 Crop Stage at Appl. Pest Stage at Appl. 	
and Conve	rsion Calculator are the most u	used commands.			Appl. Equipment Treatment Appl. Commer	nts
) 🛐	ំ 🔊 🖉	Notes Deviations	
7. Window: S	Split command. Study editors a	ire on toolbar: 🔤 🗨 🐝 🖬 📠 🤇			Trial Map	
and Naviga	ation bar:				Calendar	
Creating	and Using Drate				Attachments Settings	
Creating	and Using Froto			APM		
1. Create pro	tocol by selecting New Protoco	bl icon on toolbar 🛄, File - Create				
Protocol, o	r from "Startup Wizard."			Create a New Study	D. ((
a. Define	who study is for:	Create New Protocol		Create New	Protocol (PRT)	
Any cu	stomized corporate ARM	Who is this study for?		Create Trial	(DAT) from Existing P	
study d	lefinitions installed on your					
PC are	listed on the upper portion of	Any customized corporate ARM study		-		
dialog.	Note that the ARM install			Open an Ex	isting Study	
does no	ot include customized study	Myself or another sponsor (standard GDMdef)		Study List		
definitio	ons. These are provided with	Br	rowse	More Protocols More Trials		
a speci	ar installation program at	Help Cancel < Back Next >	Rnish	Documents\arm data\G	i-All Example 8.dat8	

request of a research sponsor.

definition(s) are listed on the next dialog:
 a=Definition: Listed are choices for "Myself or another sponsor (standard GDMdef)" company. The recommended study definition is highlighted by default, such as "G-All7" in the example above.

.....

General Des

Replications:

Length

Treated 'Plot Width:

ii. b=Language: If the default study definition language is not appropriate, then select a different definition language by clicking the down arrow on the language drop-down.

b. "Who is the study for?" selection determines which study

- c. After selecting "Finish" button, then define appropriate Protocol Settings on the New Protocol dialog.
- 2. Review of Settings dialog tabs.
 - a. General: Replications, Plot size (used for product calculations and some rate conversions)
 - b. Design: Select proper design for study, and plan appropriate replicates to achieve desired precision.
 - c. Treatment: Untreated treatments, specify treatment units.
 - d. Application: Application volume and calculate appropriate mix size for liquid applications
- 3. Entering header, overview of how to <u>move</u> between various data entry fields
- <u>Entering treatments</u>, description of various data entry fields, copy/paste, <u>keyboard shortcuts</u>
- 5. Entering tasks:
 - a. Type each task "from scratch"
 - b. Copy/paste existing tasks from another study
 - c. Tools Merge from ARM Study to merge tasks from another protocol

Creating a Trial from a Protocol

- 1. Begin by selecting the Create Trial wizard from toolbar 6, File Create Trial, or from "Startup Wizard".
- 2. <u>Modify</u> a proposed randomization on Trial Map.
 - a. Select Settings button to change:
 - i. General: number of replications, plot size.
 - ii. Layout: change numbering and position of plots, buffer between plots.Tips: Set "Block size" smaller than number of

treatments to split replicates into smaller blocks. Set "Block size" larger then number of treatments with "Fill blocks" to get more than one replicate into the same block giving "side by side" replicates.

-down.	
Proto	col Settings ? ×
gn Treatment Applic	ation Layout
4	
experimental unit size	
4	meters ~
General Design Tr	eatment Application Layout
Paired Checks:	None 🗸
Untreated treatments:	1
Reference treatment r	umber:
Treatment units	
Metric	US standard
Settings	General Design Treatment Application Layout
	Application volume: 200
	Mix size
ns	Treatments 1
113.	Replications 4
arious	Annication volume 2001/ba
anous	Mix size unit liters ¥
	2 liters based on 1 trts; 4 reps; 25 m2 'Plot' experimental unit
fielde	Verage: 250 ml x
neius,	
	Calculated mix size 2.25 liters
Schedule Tasks	1 If A Housed Band wheeler 18.85
Туре	Description:
 Treatment applicat 	ion - for Appl Code:
O Assessment - for R	ating Timing:
O Other	Assigned to:
Timing	Duration Completed Length: 1.00
O Date:	Jan-17-2014 V Multiple days
O Interval:	Duration:
Application Date	
Timing deviation allow	ed: -





- iii. Design: change experiment design, which may influence number of treatments or how treatment information must be entered!
- b. Use Auto-Select option to drag and drop treatments, plots, and replicates.
- c. "Color by" options control how trial map is colored: by Replicate, Treatment, or Factor (for multi-factor experiment designs).
- d. Right click to insert multiple columns or rows in a trial map to define a blank space to move multiplot units (replicate or factor).
- 3. Name and save the new trial

1. Printing trial establishment reports

Editing Trials

a. Trial map

Trial Map @ 🤤 🤚 🕨 🖃 100% 🔹 🛞 🔂 Properties Ąх Color by 405 Replicate Treatment 1 Current Treatment 102 103 202 204 Auto-select for move Treatment 'Plot' Experimental Unit Replicate > Border Plots... Options Movement Arrows Treatment Description Comment Quality Show true scale Display 'Plot' numbers Settings Display border 'Plot' numbers Display treatment Treatment number Treatment code Print Accept Current Cancel Help

Assessment (Plot 104, Col 9)

Comment: Plot is in a small depression that was under water 3 days in May

8.584602

- Spray/seeding plan report and options b.
 - c. Data collection and verification reports
- 2. Entering assessment data
 - a. Copy/paste shortcuts
 - b. Copying data from spreadsheet
 - c. Special plot data tools
- 3. Enterin
 - a. Cor
 - b. Too
- 4. Changi
- Use atta 5.
- Use tas 6.

g site description information	65.00	Display ourset
py/paste shortcuts	60.00 0.00	Trial Settings
Is - Merge - from ARM Study ng settings that influence the trial		General Design Treatment Application Layout Replications: 3 3 Treated 'Plot' size 10 fast
achments to manage linked trial information ks to manage work calendars		Length: 30 Orientation (degrees):
-		Format definitions Site description G-All7.fm8 Change FRM Change FRM

9

75 00

60.00

70.00

65

0.00

65.00

70.00

70.00

0.00

55.00

.

Barcode:

Image

GPS: 52.490406

Attach

Remove

Damaged

Schedule Tasks

Type

Description

	Completed	Туре	Description	Timing	-	Planned	+
1	-	Treatment application - for A	Apply Early Post Treatment	Mar-10-2013	5	Mar-10-2013	5
2	~	Treatment application - for B	Apply 3-LF Treatments	5 Days After A		Apr-3-2013	
3		Assessment - for A1	Assess 7 Days After EAPOCR	7 Days After A		Apr-5-2013	
4		Assessment - for A3	Assess 7 Days After 3-LF	7 Days After B		Apr-17-2013	
5		Assessment - for A2	Assess 14 Day After EAPOCR	14 Days After A		Apr-12-2013	
6		Assessment - for A4	Assess 14 Days After 3-LF	14 Days After B		Apr-24-2013	
7		Assessment - for A5	Assess 28 Day After EAPOCR	28 Days After A		Apr-26-2013	
8		Assessment - for A6	Assess 28 Days After 3-LF	28 Days After B		May-8-2013	
9		Other - Maintenance Treatment Date	Side Dress N Fertilizer	Jul-15-2013		Jul-15-2013	
10		Assessment - for A7	Pre-Harvest Assessment	Oct-1-2013		Oct-1-2013	
11		Other - Harvest Date	Harvest	Oct-10-2013		Oct-10-2013	
•							

ARM Help

Select Help on the toolbar then choose the following.

- Contents Display all topics in the ARM help system.
- Search for Help On Enter text to search all Help topics for.
 For example, type "Excel" to find all topics mentioning Excel spreadsheets.
- **Topic** Display help for the current topic (F1).
- **Study Definition** Display any study definition help for the current study editor (F5).
- **References** (pdf) Display several ARM Reference documents in pdf form on various subjects.
- **How To Topics** Descriptions of how to perform many tasks within ARM.
- **Tutorial** PowerPoint overview of general features in ARM.
- BBCH Growth Stages (pdf) Display a description of BBCH growth stages for various crops, as appropriate for the current ARM program language.

Hel	p		
	Contents		۲
	Search for Help On		۲
?	Topic	F1	
٠	Study Definition	F5	
2	References (pdf)		۲
	How To Topics		۲
	Tutorial		۲
	Media		
2	BBCH Growth Stages (pdf)		

Utilities

ARM includes resources helpful for your project. Select Utilities on the toolbar then choose the following.

Migrate Studies and Settings to New Computer

Migrate Studies and Settings to New Computer
Are you migrating files to ARM 9 or ARM 2015?
 ARM 9 ARM 2015 (or newer)
Note: Full migration is only supported for ARM 2015
Help Cancel < Back Next > Finish

Migrate Studies and Settings to New Computer is a wizard to migrate all ARM associated studies and files to a new computer. Note: Full migration is only support for ARM 2015 and newer

GPS Helper



GPS Assist is a tool to help find approximate Latitude and Longitude locations.

Note: Any changes made in this dialog are not returned to ARM.

Conversion Calculator

🖆 Convert – 🗆	×
File Options Help Custon Denxity Distance Energy Flow Force Light Mass Pro- Pressure Pressure Speed Temperature Time Torque Volume Volume Acceleration Amt. of Substance Angle Area Computer Concentral Input Cortineer Cortineer Cortineer Cortineer Input Input Cortineer Input Input Input Non- toor Input Input Input Input	wer Dry ion
Input 1 hectare Dutput 2.471044 acre	

Convert is a tool to assist with unit conversion calculations.

Select an input unit and magnitude, then select desired output unit.

Note: Any changes made in this dialog are not returned to ARM.

ARM Support Viewer

A licensed, customized version of the TeamViewer "Quick Support" program allows GDM support staff to connect to and troubleshoot a user's computer. Using the ARM Support viewer:

- Does not install any new software on your computer.
- Temporarily hides the Windows desktop background so only current programs are visible.
- Shares the entire computer desktop. Please close email or confidential material before connecting.

Connecting to GDM

Hel	p		
	Contents		۲
	Search for Help On		۲
?	<u>T</u> opic	F1	
٠	St <u>u</u> dy Definition	F5	
-	References (pdf)		×
	How To Topics		۲
	Tuto <u>r</u> ial		۲
	Media		
2	BBCH <u>G</u> rowth Stages (pdf)		
	Ch <u>e</u> ck for Updates		
	Detect and Repair		
	Rollback to Previous ARM Version (920140	4a)	
	Request GDM Support		
ARM	Start ARM Support Viewer		
	Request Corporate ARM Customization		
	About ARM		



In ARM, select Help – "Start ARM Support Viewer..."

Or

In Windows, select Start – All Programs – ARM – "Start ARM Support Viewer"

S ARM Support -	×						
R							
Allow Remote Control	\$						
TeamViewer QuickSupport Program Please tell your ARM support person the ID and Password below to connect with your desktop:							
Your ID 815 225 864							
Password 8cs82v 🖸							
Ready to connect (secure connection)							
www.teamviewer.com Canc	el						

Support Viewer shares the entire computer desktop to allow for diagnosing issues that occur from other programs that are running.

- 1. Start ARM Support Viewer (see above).
- 2. Read the disclaimer and click the **Accept** button on **Disclaimer** screen to agree.
- 3. Read the **ID** and **Password** to the GDM support person.
- 4. The password is different every time Support Viewer starts, so it is impossible for GDM to see the screen until the password is read.
- 5. The session can be ended **at any time** by clicking the X in the TeamViewer screen.

TeamViewer								
🗙 🖿 🕲 🖓 🗣 🗉	>>							
▼ Session list								
506 656 981 💌								

Backing up Studies

ARM can store automatic backups and histories of studies whenever they are changed.

										?	×
Gener	al Study List	File	Display	Editor	Toolbar	Send To	Data Collector	Special Configuration			
Study	data:	C:\Users\Matt\Documents\ARM Data\							¥	Browse	
		✓ Set as default									
Backup:		E:\ARMbackup\								Browse	
		60 🖨	Backup	interval	(minutes)						

Select Tools – Options – File tab.

Define the path and interval that backups will occur.

Selecting a backup location



All drives eventually fail, even solid state drives such as flash drives, so always store backups on a completely separate device. A different partition of a hard drive is not a separate device; if the hard drive fails then all partitions are lost.

- If your studies are stored on a local hard drive, then use a different device, such as a flash drive or SD card as a backup device.
- If your studies are saved on a shared network drive, then either the C drive of your PC or another separate network drive can be used as a backup device.

Remember that just storing studies on a network drive does not provide the previous versions you can easily obtain by defining a backup device for ARM to use.

Restoring Previous Versions

Use the **Previous Versions** dialog to view a prior version of a file and restore or copy an archived study.

	Name	Time	
1	G-All Example 8.dat8	12/20/2007 3:43:16 PM	
2	G-All Example 8.dat8	12/20/2007 5:03:04 PM	
3	G-All Example 8.dat8	12/20/2007 5:26:30 PM	
4	G-All Example 8.dat8	12/28/2007 4:09:22 PM	
5	G-All Example 8.dat8	12/31/2007 9:19:46 AM	
6	G-All Example 8.dat8	1/18/2008 11:09:48 AM	
7	G-All Example 8.dat8	1/21/2008 1:24:48 PM	
8	G-All Example 8.dat8	1/21/2008 1:30:22 PM	
9	G-All Example 8.dat8	2/27/2008 9:36:04 AM	
10	G-All Example 8.dat8	2/27/2008 9:37:06 AM	
11	G-All Example 8.dat8	2/28/2008 4:11:04 PM	
12	G-All Example 8.dat8	3/9/2008 10:44:30 PM	

From the study list, right-click on a file and select **Previous Versions**.

Lists all previous versions of a study currently stored in the ARM backup folder.

View

Open the selected archived study in separate ARM window as read-only.

Сору

Copy the selected archived study to a different folder.

Restore

Overwrite the current version of the selected ARM study with the selected archived study file.

Emailing a Study Using "Send To"

The **Send To** command creates an email message containing the current study and related files.

	Import Study	•			
	Send To	•	Exte	rnal Sponsor/C	Cooperator
5	Print Reports	rl+P	In-h	ouse GDMdef	Researcher
	Utilities	Window	Graph	Add-Ins	
	ž 🖂 -	6 A IN	👗 🗈	🛍 😻 🤌	

External Sponsor/Cooperator...

In-house GDMdef Researcher...

)a

be

Select File - Send To, or select the envelope button on the toolbar. Then choose what type of person will receive the study:

- External Cooperator is someone who may be using different study definitions with their ARM program, or not using the latest ARM version.
- In-House Researcher is someone who is in the same company, or who is using the same ARM study definitions

Customizing and Sending the Message

	Send To
External Sponsor/Coordinates Sending a trial	operator
Files to attach:	
 Attachments 	Original Protocol
✓ EDE	Attachments
Reports as PDF	✓ EDP
Report set:	
%DefRootPath%\GDM	def\Trial Summary.set
Mail subject:	Browse
ARM Trial Results	
Encrypt and password Password:	d protect files
venity Password:	
Destination	
	Erro O. Gulling
Login name:	
Login password:	
Web-based Mail	
) File	

1. Recommended options:



- a. Include Attachments, EDE, and Reports as PDF using a summary report set such as "Trial Summary.set"
- b. When sending multiple attachments, like pictures, use the **Zip attachments** option.
- 2. If your email program is not running, then enter any login information needed to start Outlook, or select **Web-based Mail** to utilize email in a browser.
- 3. Click OK.
- 4. ARM validates the trial.
- 5. ARM exports the .ede in GDM30*.tbe format and prints any reports.
- The ARM Message viewer displays any messages from actions that occur when creating the email (validation, exporting .ede, printing reports). Click OK to close the message dialog.
- 7. A new message containing the study will be created in the destination program/location.
- 8. Send the email after filling in the **To...** field, and any message contents.

Which .tbe to Choose when Creating .ede file?

When sending an .ede to someone using ARM, use the **GDM30AII** format to ensure that all trial information is included in the .ede. (Use File - Export - EDE to begin exporting to .ede.)

• Use ARMtoFieldPro.tbe when sending trials to FieldPro software.

When sending an .ede to a non-ARM user, use the **Ede30*** or **Ede31*** format for transfers.

EDE Definition Table (*.tbe) to Use for Trial (*.ede) Export									
Company	TBE	Jescription							
	GDMver9+Trial.tbe	DM trial EDE 4.0 Unicode format exports ARM 9+ trials for all disciplines (9 July 2014)							
GDM	GDM30All.tbe	DM trial EDE 3.0 format exports ARM 8, ARM 7 and ARM 6 trials for all disciplines (29 October 2010)							
	ARMtoFieldPro.tbe	GDM trial EDE 3.0 format for FieldPro (Apr 28 11)							
Browse		OK Cancel Help							

ARM Study Definitions

ARM includes updated study definition (templates) features and new data entry fields that are requested by our clients. All standard GDM study definitions used since 1990 are included with ARM, so ARM can open ARM and PRM protocols and trials.

GDM Recommends/Supports G-All7, G-Gen7, and G-Seed7 Definitions

GDM	Description
Recommended	Select a Study Definition to use
- G-All7	GDM ARM 9 Multiple Discipline Study Definition,
G-Gen7	GDM ARM 9 General (non-chemical) study defn,
G-Seed7	GDM ARM 9 Seed/Variety study definition, rev. 3
Old	

The G-All7.def definition is a multi-discipline study definition. It uses full EPPO Bayer pest code lists, crop specific BBCH growth stage code lists, new data entry fields, and word processor formatting in many comment fields.



- EPPO/Bayer species codes and BBCH growth stage codes are in master database tables. The pest codes are separated by discipline to reduce validation list size.
- For many data entry fields there is a tool tip describing the information field. Click into a field and hold the mouse cursor over the field to show any tool tip.

Treatment Editor—Treatment Type Field (G-All7)

In the Treatment Editor, the **Treatment Type** field defines the discipline, or category of product, that determines which validation list to display for Treatment Name. Free-form entries are not allowed.



•		Prot	cocol Settings	?	×
(General	Design Treatment A	oplication Layout		_
	Randor	mized Complete Block (RC	B)	×	
	Fact	tors: 1	Treatments	Merge Factor fields to	
	B:		P	ersonal List	C:\ProgramData\ARMdef\GDMdef\FACTDESC.LST
	C:			Description 1	Description 2
	The Tr	eatment editor Type colur			Treatment Type defaults are below for GDM validation lists ***
	default	entry.	Adjuvant	ADJ	
			Application Technique	APPL	
			Check/Untreated	СНК	
			Crop	CROP	
			Cultural Practice	CULT	
			Fertilizer	FERT	
			Fumigant	FUMI	
			Fungicide	FUNG	
			(All)		
			Active Filter	Ne	w Delete OK Cancel
		Save as Default		nop	

To select a treatment type in the Treatments editor:

- 1. Place the cursor in the **Type** column.
- 2. Press F9 or the drop-down arrow and choose from the list.
- 3. Press OK to continue.

To define a default **Treatment Type** entry that ARM will enter in a new treatment line when creating a new protocol:

- 1. Select Window Settings.
- 2. On the Design Tab, click in **Factor A** and press **F9** or drop-down arrow.
- 3. Select a category from the lower half of the list and press **OK**.
- 4. Press the **Save as Default** button to set the current settings as the default for new protocols.

Press OK to continue.

Assessment Data Editor – Pest Type (G-AII7)

The Pest Type field identifies which validation list for Pest Name and Pest Code is used.

Assessment Data - Line 1									
Column Numb	er	1		4	5 6 7				
Pest Type				~	J	V	<u> </u>	v	~
Pest Code		Pest Typ	e Pers	sonal List (C·\P	ProgramData\4	RMdef\GDN	Idef\G-PestTn I	st8) ?	×
Pest Name					rogrambata,		der (e r estrpi		
Crop Code	Pest Type	Pest Type	Descr	iption					<u>^</u>
Crop Name	D	Disease	Disea	se, such as a fungi	us, bacteria, or viru	s			
Part Rated	-	Insect	Insect						
Rating Date	0	Other	Other	animal or nemator	le				
Rating Type	W	Weed	Weed	or volunteer crop					
Rating Unit									M
Number of Su									M
Assessed By									
Rating Timing									
Davs After Fi							_		× ×
Trt-Eval Inter	🕺 (All) 😝 (All) 😝 (All)							to the clipboard	
Davs After Er	Active Filter	*		New	Delete	ОК	Cancel	a 茾 👪 🦉	2
ARM Action (
Number of De	Number of Decimals								

Press F9 or press down arrow in the Pest Type field to choose the pest discipline, such as Disease (D), Insect (I), Other animal or nematode (O), or Weed or volunteer crop (W).

The **Copy Validation List to Clipboard** button copies the entire list to the Windows clipboard.

Assessment Data Editor – Copying a Single Column

									ARM	A 9.1.1	From the Assessment Data
E File	Edit	Format	Tools	Table	Utilities	Windo	w (Graph	Add-Ins	Help	Pest Type to copy the entire
i 🗅 🕻	Ĵ 🖻	🖬 🛍 I	× 💰 i	08 7 DI	ii 🖂 - 🗐	5 🗊	n a	, D	🛍 💞	A↓ Z↑	data column heading at left
Navigati	on Bar		무 Ass	essment D)ata - Line 1						entered in the first header
🗏 📑 ARI	М		Col	umn Numb	er			1		2	field). Then press Enter.
- E +	leader		Pes	t Type				Insect	"1 🗔		

Assessment Data Editor – Copying Multiple Columns

Assessment Data - Line 2									
Column Number	1 2		5	A Line de Transiere					
Pest Type	📕 Insect	📕 Insect	• •	Undo Typing					
Pest Code			*	Cut					
Pest Name				Сору					
Crop Code				Copy Current [
Crop Name			Ê.	Paste					
D . D . I									

Mark a series of data columns by dragging across the **Column Number** headings. Right-click a highlighted cell, select **Copy**, and then right-click in new column and select **Paste**.

3	}	4							
ŝ	Undo T	yping							
*	Cut								
8	Сору								
	Copy C	urrent	Data Colu	mn					
8	Paste								
	3 20 8 8 8	3 ♥ Undo T & Cut ■ Copy Copy C ■ Paste	3 Undo Typing Cut Copy Copy Current Paste	3 4 Undo Typing 从 Cut Copy Copy Current Data Colu Paste					

Choosing Fields in G-All7

There may be entry fields that you do not use in your research.

Assessment Data Editor – Assessment Data View

Assessment	t Data - Line 1								From the Assessment Data
Column Nur	mber	1	2	3	4	5	6	Properties 4	
Pest Type				ARM Options			? ×	Assessment View Hidden Fields	Editor's Properties Panel,
Pest Code								View Options BBCH Scale	coloct View Ontions
Pest Nam	General Study List	Hie Display	Editor Ic	olbar Send To Treatr	nent View Protoco	I Description View		Ignore Match Crop Scientific N	select view options.
Crop Code		Data Collector	r Special Co	Infiguration GDMder Sti	Jales			Refresh Crop Variety	
Crop Nam	View subsamples			Prompt	Mat	ch Sort	Visible ^	Hidden: Row < >	O allo at the maximum to the statistical
Part Rated	By column		~		(AID)		v	1êrwa	Select the rows to be visible
Rating Da	Data origin			Pest Type	(All)			Views 4	from the Visible column
Rating Ty	Both		~	Past Code				All fields	
Rating Un	Entry status			Pest Code	(All)			Hidden fields with information Hide empty fields	
Number of	Both		~	Pest Scientific Name	(All)			Default - All visible	Save View will save current
Assessed					(All)			Default - Bret fields visible Default - Fertilizer fields visible	Save view will save cullent
Rating Tin	Cursor order			Crop Code	(AII)			Default - Non-pest fields visible	view settings in a *.pdv file
Days Afte	By column across	'Plot'	~	BBCH Scale	(All)			longTrt	for future upo Lloo Lood
Trt-Eval In	Columns: 1			Crop Scientific Name	(All)				for future use. Use Load
Days Afte	Use color bands		I'	Cron Name	(All)		Chann All		View to retrieve saved or
ARM Actic	By 'Plot' experime	ntal unit	× 1	Ignore match	Clea		SHOW AI		
Number of	Dista ta sec. 1			Display sort as tabs			Hide All		suggested default settings
	Plain lines:	Colored lines:	• •						for cortain disciplings
	Display using de	cimals accuracy							ior certain disciplines.
<	Automatically re	name images		Prompt v					Bross Save As Default if
		Save as De	afault	Clear Default	Load View		we View		Fless Save AS Delault II
	1	54Ve 45 De	brauk	Cical Derault	Lodd View		ave view		these settings are to be used
	Reset				ОК	Cancel	Help		for all now protocolo groated
					JI	00.1001	. Joip	1	for all new protocols created.

Options – Protocol Description View

	ARM Options	? ×
Assessment Data View Data Collector General Study List File Display	Special Configuration GDMdef Studies Editor Toolbar Send To Treatment View Protocol D	lescription View
Auto-size protocol description and si Visible description fields Visible description Header Protocol Description Protocol Descriptin Protocol Description Protocol Description Protocol	e description grid columns 	Show All Save as Default
Vest Stage at Appl. Vest Stage at Appl. Vest Stage at Appl. Vest Stage at Appl. Vest State Information V		Clear Default Load View Save View
Reset	ОК	Cancel Help

In a Protocol, select Tools – Options – Protocol Description View.

Choose items to be used. Uncheck any item to not be included.

Press **Save As Default** to keep choices for all new protocols created.

To save and use multiple formats, use the **Save View** and **Load View** buttons.

Options – Site Description View



In a Trial, select Tools – Options – Site Description View.

Choose items to be used. Uncheck any item to not be included.

Press **Save As Default** to keep choices for all new protocols created.

To save and use multiple formats, use the **Save View** and **Load View** buttons.

Hiding Fields in an Editor: Mouse Right-Click

Title:	
n	Undo Paste
6	Cut
Đ	Сору
Pr 🛍	Paste
	Hide Current Field
•	Display All Fields
	Display Hidden Fields with Information
	Set As Default
	Header View Options
	Show Validation List
	Show Tooltip
	Remove Split

Right-click in a field on any editor.

Select the **Hide Current Field** option to hide the selected field from view.

Select the **Display All Fields** option to display all currently hidden fields.

Select the **Display Hidden Fields with Information** option to display all hidden fields that contain information.

ARM Options

Select Tools – Options to open the **Options** dialog.

Options – General Tab

.						ARM O	ptions			? ×
Assessme	ent Data View	Data	Collector	Specia	al Configura	ation GD	Mdef Studies	8		
General	Study List	File	Display	Editor	Toolbar	Send To	Treatment	View	Site Description View	
Measur O Met	ement unit ric	(US sta	ndard				Lang US E	uage English	~
Change	e treatment uni	its in a s	study usin <u>g</u>	g Window	w - Setting	S.				
Other								Chec	k for updates	
Auto	o-format numb	ers						Wee	kly	~
✓ Sort ✓ Incl	t available prin ude study defi f menus	inition d	s lirectory or	ı main m	enu			□ <mark>I</mark> r c	nstall updates without prompting for confirmation	
Use	explorer-style	open a	and save d	lialogs				_ a	heck for study definition updates duri	ng
Recent	ly used file list	:					9 🌲	└─ st	artup	
Save	ouesve etudu o	hande								
Sav	re report-relate	ed settin	ngs in stud	y						
Assistar	nce									
Sho	w startup wiza	ard								
Auto	o-display a list	of upco	oming task	s at star	tup					
Rese	et							0	KCancel	Help

 Image: Specific State
 Arm 9.1.1 (GDMdef) - G-All7, Herb Trial

 File
 Edit
 Format
 Tools

 Tools
 Table
 Ublities
 Window
 Graph

 Tools
 Table
 Ublities
 Window
 Graph

 Tools
 Tools
 Table
 Ublities
 Window

 Site
 Description
 Format
 Profile

 ObjectivesConclusor
 Read from Scanner...
 Assessment Data Column...

 Corrlacts
 Options...
 Curl+L

Select Tools – Options – General Tab.

Language

Set the **Language** to use for ARM menus.

Measurement unit

Set the **Measurement unit** for page setup dialogs on reports. Note: See <u>Treatment Unit</u> to set the default unit for study definitions.

Check for updates

Set the frequency that ARM checks for the availability of free updates.

Options – Display Tab

	ARM Options									×
Assessm	ent Data Vie	w Dat	a Collector	Specia	l Configur	ation GDN	Idef Studies			
General	Study List	File	Display	Editor	Toolbar	Send To	Treatment View	Protocol Description Vie	ew	
Date ar Date fo Separa V 4 di Ado Time fo	nd time ormat: itor: igit year (M) d leading zero ormat:	M - H - H	on-DD-YY Hyphen 2 Hour		* *	Program Microsoft Default ri Microsoft Editor sc -	font: : Sans Serif ch text font: : Sans Serif reen fill character:	v v		
GPS for	mat:	De	egrees Deci	imal Deg	ree (44.16	Editor rea Italic 649°)	ad-only field format	:		
Colors Screer Requir ForeCo	ed fields olor:			×	The sa Resele "Samp	ample below ect ForeColo ile" in the e	is a preview of the r or BackColor if y xample display. Sample	e selected colors. ou cannot read		
F	Reset Colors et						0	K Cancel	He	эlp

Select Tools - Options - Display Tab.

Date and time

Set the format of dates and times displayed on ARM editors and reports.

Why are Data Entry Fields Different Colors?

Colored fields represent fields marked as **Required** by the Study Rules.

Options – Treatment View Tab

General Study List File Display Editor Toolbar Send To Treatment View Protocol Description View Ingredients for pre-mixes Image: Setting Visible Treatment Fields Image: Setting Visible Image:	Assessme	ent Data Viev	w Data	Collector	Specia	l Configur	ation GDI	Mdef Studi	es					
Ingredients for pre-mixes Treatment Fields Image: Ingredients grid Treatment Field Range Setting Visible Image: Ingredient rate unit Image: Im	General	Study List	File	Display	Editor	Toolbar	Send To	Treatmer	nt View	Protoco	Description	View		
Image: Hide Ingredients grid Image: Setting Visible Image: Ima	Ingredie	nts for pre-m	ixes			Treat	ment Fields							
Ingredient rate unit It No. (1-4) 3 It Image: Ingredient rate unit It No. It No. It All It Image: Ingredient rate unit It No. It No. It All It Image: Ingredient rate unit It No. It No.<	✓ Hide	e Ingredients	grid			Treat	tment Field				Range	Setting	Visible	^
Type (8-8) 8 Image: Construction of the second of th	Ingredi	ent rate unit				Trt N	o .				(1-4)	3	-	
Image: Save View Load View		e pre-mix rate	e unit			Туре					(8-8)	8	-	
Base product calculations on Other Rate and unit fields Form Conc (0-10) 10 Image: Concent of Co	For	ce rate to A	1			Treat	ment Name	е			(0-75)	30	✓	
Base product calculations on Other Rate and unt fields Form Unit (0-8) 8 Image: Constraint of the con						Form	Conc				(0-10)	10	-	
Save View Load View	Base	product calc	ulatione	on Other F	Rate and	Form	Unit				(0-8)	8	✓	
Freeze Field: Interference Field: Interfereence Field:	unit fi	elds	alations	on other r	ate ana	Form	Туре				(0-3)	3	-	
Treatment Name Image: Construct of the second s	Freeze Fi	eld:				Lot C	ode				(0-20)	20	-	
By treatment (0-20) 12 By treatment (0-12) 12 By treatment (0-12) 12 Description (0-75) 15 Cost (0-12) 12 Description (0-12) 12 Cost (0-12) 12 Cost (0-12) 12 Cost Unit (0-12) 12 Identification Code (0-23) 2 Cost Unit (0-12) 12 Cost Unit (0-12) 12 Identification Code (0-23) 3 Cost Unit (0-12) 12 Identification Code (0-23) 3 Cost Unit (D-12) 12 Identification Code (0-23) 3 Cost Unit (D-12) 12 Identification Code (0-23) 3 Cost Visible' column to hide treatment fields column. Show All Clear Visible' column to hide treatment fields on each report. Treatment field print options Use treatment 'Fields to Print' from options for each report Image visible treatment fields (current view)	Treatmer	nt Name			~	Dens	ity				(0-6)	6	-	
By treatment Image: Construction of the						Regi	Registration Number					12		
by treatment Description (0-75) 15 Image: Cost in the second seco	Use color	r bands:				Re-E	Re-Entry Interval					12		
Auto-hide Properties panel Cost (0-12) 12 Image: Cost Unit Image: Cost Unit Image: Cost Unit (0-12) 12 Image: Cost Unit	By treatm	ient			~	Desc	Description					15	✓	
Cost Unit (0-12) 12	Auto-	hide Properti	es panel			Cost					(0-12)	12	✓	
Identification Code (0-23) 23						Cost	Unit				(0-12)	12		
Superliar (0.2) 3 Image: Stress of the						Ident	ification Co	de			(0-23)	23		
Show All Show All Clear Visible' column to hide treatment fields (columns) on treatment ditor. Edit report options (field on each report. Hide All Treatment field print options Use treatment 'Fields to Print' from options for each report Image: Save View Load View						Enter	lier desired field	lenaths in	the Set	tina colun	(U-3)	12		*
Clear 'Visible' column to hide treatment fields (columns) on treatment editor. Edit report options (field - Print Reports) to hide treatment fields on each report. Hide All Treatment field print options Use treatment 'Fields to Print' from options for each report Save View Load View						Critor		i longalo il		ang oolan			Show All	
Save View Load View						Clear treatm hide t	Clear Visible' column to hide treatment fields (columns) on treatment editor. Edit report options (File - Print Reports) to hide treatment fields on each report.							
Save View Load View						Trea	Treatment field print options							
Save View Load View Use visible treatment fields (current view) on all printed reports						0 U	O Use treatment 'Fields to Print' from options for each report							
	Sav	e View		Load Viev	v	• U	$\textcircled{\begin{tabular}{ll} \bullet \\ \bullet $							
								_						

Select Tools – Options – Treatment View Tab.

Select the columns to display on the Treatments Editor using the **Visible** column of the **Treatment Fields** options.

Printing Treatment Fields

Use the **Treatment field print options** to define what treatment fields are printed.

 Note that selecting Use visible treatment fields (current view) on all printed reports will override any Fields to Print option on all reports.

Options – File Tab

•	ARM Options									
Assessment Data Vi General Study List	ew Data Collector Special Configuration GDMdef Studies File Display Editor Toolbar Send To Treatment View Protocol Description View									
Study data:	c:\users\matt\documents\arm data\	Browse								
Backup:	F:\ARMbackup\	Browse								
	60 Sackup interval (minutes)									

Select Tools – Options – File Tab.

Define where to store backup data and the time interval that backups will occur.



An SD card is recommended for backup as an inexpensive and secure storage option. The Backup interval should be a minimum of every 60 minutes.

Backup data must be stored in a folder named 'ARMbackup' to clearly identify the backup folder for ARM studies. Select File – Open Study From List and right-click on the file to open and select **Previous Versions** to view the backed up versions of the study.

This feature offers the advantage of being able to go back to *any* time in the historical life of the file. Making a backup of a computer's files will only save the *last* saved copy, which may or may not be the desired version.

Settings – Treatment Unit: Metric or US Standard

The treatment unit is set by study in the Window – Settings dialog. A default unit can be set for each study definition. The treatment unit sets a default formulation concentration unit for chemical products entered as treatments. It also sets which treatment units are displayed for the primary treatment rate unit.

•	Protocol Se	ttings	? ×
General Design	Freatment Application	Layout	
Paired Checks:		None	\sim
Untreated treatments	s:	1	
Reference treatment Treatment units Metric	: number: OUS standard		-
Treatment Fields Treatment View	w Options		
	Dry Formulation unit Specify formulation unit treatment informativ	lation Unit Settin unit used for dry formulai on, such as 80% or 800	g × tions in g/kg.
	Percent	O Grams Al/kg	ncel
Save as De	fault OK	Cancel	Help

Changing Your Login Password

	User List Inform	nation	
ARM Program Licensee: Gylling Data Management, Inc. Matthew ElsingerGYELMA			
Authorized user 1 of 0	Matthew Flatered		Cancel
Login name:	Matthew Elsinger		Help
Login password			
Password:			
Verify password:	•••••		
Unique user ID:	MRE		
User rights			
Read			
Enter data			
All edits		Add	
GLP/GEP Studies		Update	
Previous	Next	Delete	

To set treatment units:

- 1. Begin a new protocol or open an existing study.
- 2. Choose Window Settings and click the Treatment tab.
- 3. Set the **Treatment units** option to **Metric** or **US standard**.
- For Metric, also define a default unit for dry chemical formulations (% or grams Al/kg) by pressing the Settings button.

For study definitions with a second rate and unit field, the treatment unit setting does not restrict which rate unit displays in the list.

Press the **Save as Default** button for all new files to use these settings.

Select Edit – User List.

Type the desired login password into both the **Password** and **Verify password** boxes to change the password needed to log in to ARM.

Enter a unique user ID for each user to identify each edit made by this user in the GLP/GEP audit trail log.

The user's initials is the recommended ID.

Click **Update** if button is not grayed out. Otherwise click **Add**.

Study List

Use the Study List table to select one or more ARM studies to open.

Locating Studies in Study List

Select File – Open – Study from List. Use the following features to locate studies when the study list is large:

Filter

\$	Heade	er					1
Stu	idy ID		Pare	nt	Protocol	Study	
	Title						
\$	Site D	escription - General(1)					
		Location	F				
:	₽↓	K Include Exclude OK R	ange	L			
Г		Brookings, SD 57006	^	r			
Ŀ		Gembloux		r		=	
L		GERMANY		L			
c		GROOTPAN		Ē	Organization		
5		Huin		F			
		Kutsugan					
1		Le Vezier		H			
L		Lopo		-			
-		MOISDON LA RIVIERE				-	~
1		Pinxton				>	
		Sudbury					

Define one or more filters to display only studies that match the contents of the specified fields.

In the Study List editor, click on the yellow filter icon in the field to filter. Select one or more items from the filter list and select:

- **Include** will display all studies containing the selected items.
- **Exclude** will display all studies that *do not* contain the selected items.

Press **OK** to display the results.

					Display only studies that include the specified
Stu	dy ID 🔺	Title		7	text in the current study list column.
G-/	All7 Funa	Ana	Filter by Trial	d other fungicides for the control of	Enter a phrase including several words
G-/	All7 Herb	Dete	Filter For	effective dose rate of HERB 1 agai	(such as "on wheat") to display only studies
G-/	_ All7_Herb	Dete	Remove Filter	effective dose rate of HERB1 agai	, that contain the exact phrase.
G- G-	•		Filter 'Title'	× al	To display studies with "wheat" in the title:
G-			Filter For:		
G-		Con			1. Right click on the Title column.
G-		Sere	Reserve File	OK Cancel	2. Select "Filter For."
ST	EXHIPT		Archive File	pring Number 1	3. Type "wheat."
			An nive file		4. Press Enter or select OK.

Use **Filter For** in combination with **Filter** to further reduce the number of studies displayed. To display studies that include "wheat" in the title and are in one location, use **Filter** on the **Location** field, then use **Filter For** on the **Title** column.

Sort

Apply a sort to change the order studies display in the list.

In the grid section that displays items in the list, click once on a column heading to sort the list in ascending order (from A to Z) according to information entered in the column. Click the column heading again to sort in descending order (from Z to A). The list is sorted by **Last Opened** by default.

Filter For

Find

•		Find	? ×
Find Replace Find what:	cotton		~
Opuons.	Search Down	More Find Next	Cancel
	Browse Rebuild	Clipboard OK	Help

In the lower right corner of the study list, click the binoculars button to use the **Find** command. ARM will search for the first study that contains the specified item in any column of the list.

For example, using the Find dialog to search for "cotton" locates the first study with the word cotton in any of its columns.

Rebuilding the Study List

	Rebuild Study List	?	×		
Se	arch Location				
0	Search specified path				
	C:\Users\Matt\Documents\ARM Data\	Browse			
۲	Search all known paths				
	C:\Users\Matt\Documents\ARM Data\ C:\Users\Matt\Documents\ARM Data\2013\ C:\Users\Matt\Documents\ARM Data\Tutorial\				
Search subfolders					
Rebuild Method					
O Update existing studies and rebuild entire study list O Update existing study list, keeping all existing studies					
	identified in the study list	,			
	Update information in study list for studies that have change last time the study was opened with the current study list	jed since the	e		
\checkmark Add studies from the search location that are not in the current study list					
	OK Cancel	Help			

Select Utilities – Rebuilt Study List.

Search Location

Define the file path(s) ARM will search for studies.

- Search specified path will search for studies only in the listed path.
- Search all known data paths will search in a list of paths from which you have previously opened studies.

Rebuild Method

Define what to do with the list of existing studies that are currently in the study.

- Clear existing studies will start from an empty list.
- Update existing study list will add onto the current list, keeping the existing studies.

Note: This feature *does not delete* any studies, only alters what studies are in the Study List.

Validating Studies

What is Validation?

Validation is a checking process to help you avoid mistakes while editing study information. ARM contains lookup tables, called validation lists, to help enter information consistently. These lists also function as cross-checks for common mistakes.

Keyboard Commands to use with validation lists

F9	Validate current field entry against corresponding validation list
Shift F9	Display validation list for current data entry field
Ctrl F9	Add validation items to the corresponding Master List
Ctrl C	Copy validation list to clipboard (only when validation list is displayed)
Ctrl A	Validate study, and stop at first error
Ctrl E	Validate study, and list all errors in the message viewer

Master Validation Lists – EPPO Bayer and BBCH Crop Growth Stage Lists

EPPO pest Bayer code lists and BBCH crop growth stage lists are very large lists that are maintained in a database. For example, the EPPO weed (plant) list contains more than 27000 records. These lists are not editable within ARM.

Note: Validation lists in the database display as Master validation lists.

Use the EPPO Plant Protection Thesaurus to search for EPPO codes.

The website is http://eppt.eppo.org/search.php.

Select Help – BBCH Growth Stage to review the PDF documentation.



 Help

 Contents

 Search for Help On...

 Topic

 F1

 Study Definition

 F5

 References (pdf)

 How To Topics

 Tutorial

 Media

 BBCH Growth Stages (pdf)

Personal validation lists

GDM recommends adding frequently used items to a personal validation list so the validation lists display faster, and show items you typically select.

🖳 Pest Co	de Master List (EPPO_CODES)	4 4	8 X
Pest Code	Pest Scientific Name	Pest Name	Language
1MANRG	Mandarivirus	Mandarivirus	US 🛄
ABCLM0	Apricot chlorotic leaf mottle	Chlorotic leaf mottle apricot	US
ABMMO0	Apricot Moorpark mottle agent	Moorpark mottle of apricot	US
ABMV00	Abutilon mosaic virus	Abutilon mosaic virus	US
ABPL00	Apricot pucker leaf agent	Pucker leaf of apricot	US
ARRP00	Apricot ringpox agent	Ringnov of apricot	TIS
All/No F 👻	All/No Filter 🗸	All/No Filter 🗸	All/No F 👻
Display Pe	rsonal Add to Personal	OK Cancel	a 茾 🎮 😰

- Begin a new protocol using G-All7.def, or open an existing study.
- In the Assessment Data Editor, click into **Pest Type**, press **F9**, and select an entry.
- 3. Click into **Pest Code**, press **F9**.
- 4. If there is a **Display Maste**r button visible (if a personal

list is currently displayed), then click this button.

5. Highlight a commonly used pest, and then click **Add to Personal** button.

The next time you display this pest code list, the personal list will display with the selected pest in the list.

🖳 Pest Co	de Personal List (C:\ProgramDat	a\ARMdef\GDMdef\G-BYRD7.ls	t) ? 🗙
Pest Code	Pest Scientific Name	Pest Name	Language 🖍
1MANRG	Mandarivirus	Mandarivirus	US
			E
			· · · · · · · · · · · · · · · · · · ·
All/No F 👻	All/No Filter 👻	All/No Filter 🗸	All/No F 👻
Display M	laster Delete	OK Cancel	a 茾 🖊 🙎

Finding Items in a Validation List

Press **F9** in a validated field to display a validation list, and then use one of the search commands to search through both validated items and comments:

Search by

- Type the first letter of an item to step to the item that begins with that letter.
- Type the first few letters of an item to step to the next item that matches. ARM stops searching when you pause typing letters.

Find

- Press Ctrl+F to use the Find command on the Edit Menu, or
- Click the Find button (binoculars button) at bottom right of validation list.

Use Down Arrow / Up Arrow or Page Down / Page Up keys to scroll through the validation list.

Changing Information in Editable Validation List

To add a new entry to a personal validation list:



To remove an item from an editable personal list:

- Assessed	By Personal List (C:\Prog	ogramData\ARMdef\GDMdef\G-ApplBy.lst)
Assessed By	Comment	
FranGylling	Example Assessed By	
Jenkins, B.	Example entry	
		_
		_
		· · · · · · · · · · · · · · · · · · ·
All/No Filte 👻	All/No Filter -	•
New	Delete	OK Cancel 🗈 茾 🕅 🦿

Press **F9** to display the validation list.

Select the desired item, and press the **Delete** button.

Select **OK** to confirm deletion.

Keyboard Commands

General Keyboard Commands

F1	Topic specific help
F5	Study definition specific help (if present)
Tab / Shift+Tab	Within help file, select the next / previous link
Esc	Leave dialog box without making modifications
Alt Down Arrow	Display list in a combo box (an edit box with down arrow at right side)
Ctrl+Z	ARM Undo feature (or Edit – Undo)

Common Study Editor Commands

The following editor commands work with all study editors:

Enter	Advance to the next field
Shift+Tab / Alt+Left Arrow	Move to previous field or column in current line
Tab / Alt+Right Arrow	Move to next field or column within current line
Up Arrow / Down Arrow	Next line / Previous line
Right Arrow / Left Arrow	Left/right within current field, or previous/next field if at start/end of field
Page Up / Page Down	Next screen / Previous screen
Backspace	Erase character to left of the cursor
Alt Backspace	Undo the last change made in the editor text box for the current field
Delete	Erase character to the right of the cursor
F6	Spell check
F11 / F12	Move to previous / next field
Shift+Up Arrow/Shift+Down Arrow	Begin / extend block marks in direction of arrows

Header, Protocol and Site Description Editor Commands

Enter	Close paragraph in wrapped text block
Shift+Enter	Extend block mark
Ctrl+Left Arrow	Previous word in current text field
Ctrl+Right Arrow	Next word in current text field
Shift+F7	Insert one instance of a repeating section (only in an elastic site description
	section)
Shift+F8	Delete one instance of a repeating section (only in an elastic site description
	section)
Shift+Esc	Exit wrapped text field and move to previous
Esc	Exit wrapped text field or grid and move to next field

Treatment Editor Commands

"	In Treatment Name field, duplicate entire treatment line above
"	Duplicate single corresponding field from above
Alt+C	Display ingredients dialog, to calculate a premix rate for current treatment line from a
	desired ingredient rate
Home	First character in current treatment field
End	Last character in current treatment field
Ctrl+Home	Current field in first treatment line
Ctrl+End	Current field in last treatment line
Alt+Home	First field in current treatment line (left side)
Alt+End	Last field in current treatment line (right side)
Ctrl+Alt+Home	First field in first treatment line (upper left corner)
Ctrl+Alt+End	Last field in last treatment line (lower right corner)
F7	Insert blank lines above current treatment line
Ctrl+F7	Insert blank treatment separator lines
F8	Delete treatment lines
F9	Validate current treatment field entry
Shift+F9	Display validation list for current treatment field
Ctrl+F9	Add to master validation list for current treatment field
Ctrl+T	Sort into treatment order
Shift+Down Arrow	If current field is Treatment Number, will mark entire line
Ctrl+Del	If current field is Treatment Number, delete treatment line without confirmation

Assessment Data Editor Commands

The Treatment Editor commands listed above apply, as well as:

"	Duplicate entire data header at left (only when entered in first / top header field)	
6	Duplicate header entry at left of data column	
'or * or o Duplicate assessment data entry from assessment data line above current line		
Z or O Enter 0 into current blank assessment data entry cell and advance to next entry cell ("Z" for Zero, the letter O for number 0)		
C or H or I Enter 100 into current blank assessment data entry cell and advance to next entry cell ("C" for "Centi-", "H" for "Hundred", the letter "I" looks like number 1)		
Tab	Move right to the next assessment data column	
Ctrl+Page Down	Move right 1 screen page	
Ctrl+Page Up	Move left 1 screen page	
Alt+A	Move cursor to next blank data column	
# Enter	View footnote # (typed into footnote number field)	
	Missing data identifier	
Shift+Alt+Left /	Extend block mark to another column	
Right Arrow		
F2	If in an assessment data cell, display Subsample Editor	
Mouse shortcut	Click on the assessment data header prompts to scroll one column left	

Right Mouse Button

The right-click menu shows context-specific actions that are available. See <u>Right Click Menu</u> for more information.

Entering Treatments

Inserting Treatments versus Treatment Lines

Each treatment line defines one component of a treatment so one treatment can consist of more than one line of treatment information.



Open the Treatments editor, right-click in any cell and select:

Insert Treatment to add a *new* treatment to the current study. In a trial, assessments for the new treatment are added at the end of each replicate.

Insert Treatment...

Insert Line to add more treatment lines to an *existing* treatment

Insert Line...

Arranging Treatment Information

_	_		
	Ю	Undo	Open the treatment editor, click the right mouse button, and then select from the right-click menu:
	*	Cut	<i>,</i> , , , , , , , , , ,
			Renumber to re-assign treatment numbers. A new treatment number is assigned at each blank
		Insert Treatment Separators	line or number change.
_	-	Hide Current Field	Renumber
-	-	Display All Fields	Sort by Treatment to arrange treatments in
		Display Hidden Fields with Information	consecutive order.
		Auto-Size Column Width	Sort by Treatment
		Treatment View Options	
		Renumber	-
	-	Sort by Treatment	

Treatments & Plots in Split Plot or Factorial Trial

The number of treatments is calculated by multiplying the number of levels in each factor as below:

(Factor A * Factor B * Factor C) + Comparison Treatments

The number of plots in a trial is calculated by multiplying:

Number of Treatments * Number of Replications

Calculating Ingredient Rates in a Pre-mix

For treatment products that contain more than one ingredient, the rate of each ingredient can be calculated from the product rate. The products must be defined in the validation list with ingredient information entered in the correct format.

In ARM, press **F1** to display help, and then find **Validation List Item Format** in the **Index**. See the "Sure-Kill" example for the correct ingredient format.

To display the ingredient dialog when it is hidden:

- 1. Right-click mouse on treatment editor.
- 2. Select Treatment View Options.
- 3. Clear the checkbox for Hide Ingredients grid.
- 4. Open the Properties Panel and click the pin button to keep the panel in view.

Treat	Treatments - Line 1								
Trt Line	Trt No.	Туре	Treatment Name	Form Conc	Form Unit	Form Type	Description	Rate	Rat ^ Uni
1	1								
Prop	Properties +								
No ir	ngred	lient inforr	nation		Vie	ew Opti	Hidden Fields Hidden Fields Lot Code Density Registratio Re-Entry Ir Cost Cost Unit	n Num nterval	ber
< Prop	pertie	s							>

Rate / Rate Unit and Other Rate / Other Rate Unit

Many study definitions include two pairs of rate and unit fields.

- Two different views of the same rate for each treatment line can be helpful. Examples include: an AI-based unit (g AI/ha) and a product-based unit (L/ha), or a metric unit and a US standard unit.
- The first (left-most) rate fields are the primary rate and unit fields for product amount calculations.
- The second (right-most) rate fields are calculated from the primary rate and unit entries.
- In GDMdef study definitions the right-most unit fields are named **Other Rate**. In older study definitions they were named **Product Rate**.

New Rate Units

Contact GDM for any modifications to the list of rate units that are displayed in the treatments editor. Please do **<u>not</u>** attempt to add new rate units yourself! The rate unit definition includes values that greatly influence product amount calculations.

Copying Information from a Similar Study



Select Tools – Merge – from ARM Study to copy information like the header, treatments, site description, tasks, comments, and assessment data with columns and data headers from an existing study.

Editing a Randomization

Before trial is established



After trial is established



Open a protocol; select File – Create Trial or choose **Create Trial** icon to assign a randomization.

Open a trial; select Window – Trial Map.

To switch the positions of two treatments:

- 1. Check the **Auto-Select** box and then choose **Treatment**.
- 2. Click on a treatment number.
- 3. Drag the treatment number to a new plot.

The cursor will display a slashed circle if the treatment cannot be moved to the current cursor location.

Experimental units and replicates can be also be moved using the **Auto-Select** option.

Entering Assessment Data

Inserting Today's Date

Rating Date							
4		N		2014			
Sun	Mon	Tue	Wed	Thu	Fri	Sat	
26	27	28	29	30	31	1	
2	3	4	5	6	7	8	
9	10	11	12	13	14	15	
16	17	18	19	20	21	22	
23	24	25	26	27	28	29	
30	1	2	3	4	5	6	
Today: 11/25/2014							
	 ✓ Sun 26 2 9 16 23 30 	 ✓ ✓ Sun Mon 26 27 2 3 9 10 16 17 23 24 30 1 	✓ Nove Sun Mon Tue 26 27 28 2 3 4 9 10 11 16 17 18 23 24 25 30 1 2	Image: Normalized system November Sun Mon Tue Wed 26 27 28 29 2 3 4 5 9 10 11 12 16 17 18 19 23 24 25 26 30 1 2 3	Movember 2014 Sun Mon Tue Wed Thu 26 27 28 29 30 2 3 4 5 6 9 10 11 12 13 16 17 18 19 20 23 24 25 26 27 30 1 2 3 4 Today: 11/25/ 11/25/ 11/25/ 11/25/	Movember 2014 Sun Mon Tue Wed Thu Fri 26 27 28 29 30 31 2 3 4 5 6 7 9 10 11 12 13 14 16 17 18 19 20 21 23 24 25 26 27 28 30 1 2 3 4 5 Today: 11/25/2014	

Press the **spacebar** in any study editor date field to insert today's date in the current date format.

Rating Date

Nov/25/2014

Or click the down arrow in a date field and click the **Today** button.

Using ARM Action Codes in Assessment Data Headers

S)

ARM Action Codes identifies special actions that ARM should perform. In the **ARM Action Codes** field of the assessment data header, press **F9** for the validation list. The list contains special actions for columns of data:

ARM /	Action C	odes									
Numb	er of De	cimals		🖳 ARM Action Code	s Personal List (C:\ARMdef\GDMdef\G-DataTp.lst8)						
Sub	Rp	<u>Bk</u>	Со	ARM Action Codes	Description						
1	7	7			*** Following are Defined Rating Limits that ARM will Enforce ***						
1	2	2		С	Rating scale of 0 to 10						
1	3	3		P	Rating scale of 0 to 100 (e.g. % control or injury)						
1	4	4		R	Rating scale of 1 to 5						
				1	Rating scale of 1 to 6 (e.g. lowa Corn Rootworm)						
				S	Rating scale of 0 to 5 (e.g. Idaho SB Root Maggot)						
				В	Rating scale of 1 to 9 (e.g. turf, sheath blight)						
				М	Rating scale of 0 to 9 (e.g. mole crickets)						
				+	Only positive values (0 to 3.402823E38)						
				Y	Yes/No rating scale of 1 or 0, where 1=Yes and 0=No (e.g. EPPO taint test)						
					*** Following Identify Non-Analyzable Data for Summary Reports ***						
				EC	Do not analyze untreated check, and report check treatment mean on AOV Means Table						
				ES	Automatically exclude (remove) this data column from all Summary reports						
				ССТ	Automatically avaluate (remove) this data column from all ADM ST (Summary Across Trials) summaries						
•											
All/No Filter											
_	_	_			New Delete OK Cancel						

- Defined rating limits, such as limiting entries to a range of 0 - 100.
- Special AOV Means Table calculations for percent control.
- Transformation ID codes for built-in transformations.
- Mean comparison ID codes for Standardized Summaries.
- Indexes for EPPO rating scales.
- General calculations. Identify nonanalyzable data for summary reports.

Treatment Evaluation Interval (TEI)

🖷 Trt-Eval Interval Personal List (TEI							
Trt-Eval Interval	Comment						
21 DA-C	C 14-09-11						
54 DA-B	B 12-08-11						
72 DA-A	A 25-07-11						

TEI is the number of days after (or before) an application when the assessment was performed. ARM will automatically add the TEI or list the choices in the drop down list when there are multiple application dates in a trial.

If this dialog display, then enter an Assessment Date in the current data column so TEI can be calculated relative to date of the assessment.



Footnotes

Footnote	Number		1		
Assesse		Footnote 1		×	
SE Nam				~	
Trt-Eval					
ARM A					
+ Sub					
₿ 1					
1					
1				~	

In the Assessment Header, type a footnote number in the Footnote field. Then press **Enter** to display the footnote textbox. **Note**: Several data columns can

reference the same footnote number.

Sorting Assessment Data Headers

Select Tools - Options - Assessment Data View.

•	ARM Options			?	×		
General Study List File Display Editor Assessment Data View Data Collector Special	Toolbar Send To Treatmer Configuration GDMdef Studie	nt View Protocol Description	View				
View subsamples By column Data origin Both Entry status Both V	Prompt Crop Code BBCH Scale Crop Scientific Name Crop Name Crop Variety	Match (AII) (AII) (AII) (AII) (AII)	Sort 2	Visible Visible Visible			
Cursor order By column across 'Plot' Columns: 1	Description Part Rated Rating Date	(AII) (AII) (AII) (AII)	1	\ \ \ \	~		
Use color bands By 'Plot' experimental unit Plain lines: 1 Colored lines: 0 Display using decimals accuracy	☐ Ignore match ✓ Display sort as tabs	Clear	Clear	Show A Hide Al			
✓ Automatically rename images Prompt Save as Default Clear Default Load View Save View							
Reset	[OK Cance		Help			

Click the **Clear** button below the **Sort** column to remove any current sort.

Put cursor in the **Sort** column of the data header field you wish to sort (such as **Rating Date**).

Enter a **1** to identify this as the first sort field.

If you wish to apply a sort within rating date, then put **2** in the second sort field (**Crop Code**).

Set the **Display sort as tabs** option to create a separate editor tab for each rating date.

Select **OK** to apply the sort.

Viewing Subsamples

Select Tools – Options – Assessment Data View.

ARM Options					?	×	
General Study List File Display Assessment Data View Data Collector	Editor Special	T C	oolbar Send To Treatment onfiguration GDMdef Studie	: View Site Description View s			
- View subsamples By column	~	ſ	Prompt Reporting Basis, Unit	Match	Sort	Visible	^
Data origin Both	~		Number of Subsamples	(AII) (AII)			
Entry status			Crop Stage Majority	(AII)			

Set the View subsamples option to By column.



Check that **Number Recommends** of **Subsamples** data header row is visible (grid in upper right of dialog).

Enter the number of subsamples to view in the assessment data header of each data column.

Whoops, Missed a Plot when Entering Data

Assessme	ent Data Column Tools	? ×
Action Copy column Move column Fill header row Shift data down Shift data dup Archive subsamples	Information Data header Assessment data Both	OK Cancel Help
Data columns Number to do: Entire column group	1 🜲	
Starting at number: Store in data column number:	1 ↓ 1 ↓	

Open the Assessment Data editor and place the cursor in the missed assessment cell.

Select Tools – Assessment Data Column – Shift Data Up or Shift Data Down. Indicate the data column for action and how many times the column should be shifted. Press **OK** to shift the data.

Properties Panel: Additional Assessment Information

9	~	Assessmen	it (Plot 104, C	ol 9)	
75.00		Comment:	Plot is in a sm	all depression that	-
60.00			was under wa	ater 3 days in May	
70.00					Ŧ
65		Barcode:	-		
0.00		000 50	100.000	0.504000	
65.00		GPS: 52	490406	8.584602	
70.00	=	Damag	jed		
70.00		Image:			•
0.00		Att	ach		-
55.00		Rer	nove	- Alerta	The
65.00				State Barris	
60.00		Displa	ent		
0.00		troutin		1	

Select the **Properties** button on the Assessment Data editor to display the Properties Panel.

		_	
8		^	P
D	D		oper
SEPTTR	Zž		ties
Septoria tritici	Сс		
Speckled leaf bl	Сс		hr

Enter additional information for an assessment.

- Digital photograph
- Comment
- Damaged value marker
 - o A damaged assessment is not analyzed
- GPS Coordinates
- Bar Code label ID

Attaching Images

Assessment	(Plot 101, Col 1)					
Comment:	~					
l	¥					
Barcode:						
GPS:						
Damage	ed					
Image:						
Atta	ach					
Rem	iove					
Ren	ame					
Display by treatment						

To attach an image to an individual assessment:

- From the Assessment Data editor, click the **Attach** button on the Assessment Data Properties Panel.
- Drag and drop image file(s) onto a specific assessment data cell within the Assessment Data editor.
- Take a photo with the **Tablet Data Collector** (available only on TDC installations).

File name components

Defines the way image files are renamed when they are attached.

Copy to trial folder Rename image						
File name components						
✓ Trial ID:	1 🚖 🗹 Plot:	4 ≑				
Trt:	2 🚔 🗌 Sub:	5 🜲				
Asm. Date:	3 🜩					
Add T, P, S	Add T, P, S (Trt, Plot, Sub) prefix to file name components					
G-All7_Herb_T0	04_Apr-18-2008_P	101				

Rename Image

Rename the image file according to the **File name components** options. When **Copy to trial folder** is not selected, this option will keep the images in their original folder.

Copy to trial folder

Copy the image files to the folder where the currently loaded trial is located. The files are automatically renamed according to the **File name components** options.

Attaching multiple images

Direction By column across 'Plot' experimental unit Across columns within 'Plot' experimental unit Columns: 1	
Number of images per 'Plot' experimental unit within an assessment column:	1 🜲

By column across 'Plot' experimental unit Subsequent images that are attached will default to the next line in the Assessment Data editor within the current column.

Across columns within 'Plot' experimental unit Subsequent images that are attached will default to the next column, within the current experimental unit, for the number of columns specified by the Columns option.

To attach more than one image to a single experimental unit per column, increase the Number of images per 'Plot' experimental unit option to the desired number of images.

Copying and Pasting from Spreadsheet



Mark a block to copy in Excel, right-click into the destination cell in the Assessment Data editor and select **Paste**. Include "Plot" as the column heading in the block copied from Excel to identify a column of plot numbers.

Press F1 in Assessment Data Editor for hints and more information.

Transferring Information from ARM to Excel/PDA

Select the **Push** button Main with the ARM toolbar to push a trial to an Excel rating shell, PDA, or Psion Workabout Enhanced Rating Shell.

After collecting ratings, select the **Pull** button **Markov** to pull ratings into the original trial.

Data Quality

ARM provides several tools to review assessment data to ensure the quality of data. These tools can be accessed from the **Tools** section on the Properties Panel of the Assessment Data editor. If the panel is not opened, click on the Properties tab to open the panel.

Properties		- P
Assessment View	Hidden Fields 🛛 📢	
View Options	Pest Scientific N 🔺	
Ignore Match	Crop Scientific N	
Refresh	Crop Variety	
Hidden: Row	< >	
Views	*	
Original	^	
Hidden fields with inform	nation	
Hide empty fields Default - All visible	~	
	Tools	
Tablet TDC	AOV Means Table	
Data 7 8 9	Box-Whisker	
	Assessment Map	

AOV Means Table

The AOV Means Table button displays a preview of the AOV Means Table report beginning at the current data column, and including all columns after the current that contain data. This report uses the current AOV Means Table Report Options settings on the Print Reports dialog.

Box-Whisker Graph

The **Box-Whisker** button displays a box-whisker graph of the current data column. A Box-Whisker graph illustrates the spread of treatment data groups around their medians, using a "box" and "whiskers" to break down each data group by percentiles. The **box** extends from 25th to the 75th percentile and is divided by the median. The **whiskers** extend from ends of the box to largest and smallest observation.



- Each box is one treatment, numbered from left to right.
- Height of box indicates amount of variability for the treatment. Any plus symbol + identifies a possible plot or subsample outlier.
- The narrow "waist" of box is the 50th percentile. A low plot data value will force waist below the midpoint of box.
- Treatment name will not display at bottom of graph if too many fields are included per treatment. Select Tools – Options – Labels Tab to edit labels.

A Box-Whisker graph:

 Shows variability within a treatment, thus is a measure of assessment consistency within each treatment. Waist position is skewed when one replicate is somewhat higher or lower than others.

(E.g. when waist is "high", then value in one of the replicates is somewhat lower than in other replicates.)

- Provides a visual mean comparison, since treatments where boxes overlap are likely not significantly different.
- Simplest method to identify heterogeneous treatments.



Assessment Map



The **Assessment Map** button displays assessment data values on a trial map to help identify spatial effects that can occur from variations within the trial site. For example, if crop yield appears consistently lower in one corner of the trial, it may indicate a lower soil quality in that area of the trial.

- Differences in assessment values are indicated by color intensity. Lower values display in lighter colors than higher values.
- For example, note that the box for treatment 2 "Tub.5" in the third replicate (plot 302) is substantially darker than treatment 2 in the other replicates. This indicates that replicate 3 could be causing the larger data value for this plot.

Column Properties

		17	^	Column 17 Properties 4
		W 🖉 Weed		Previous Next
		BROST		Column ID: 43
		Anisantha ster		Column Flags: Original
		Poverty brome	-	Min/Max entry: 0 100
		BRSNW	-	Low/High value: 0.00 97.00
		BRAP	-	Descriptive Statistics Refresh
		Provide paper	-	LSD: 4.296
		brassica napu	-	Standard Deviation: 2.760
		Winter rape	-	CV: 4.248
				Partlett's X2: 2 295
		PLAGRA F		P(Batlett's X2): 0.514
		May/10/2014		Friedman's X2: 16.0
		CONTRO	-	P(Friedman's X2): 0.003
			-	Skewness: -1.2449
			-	Kurtosis: -0.0304
		v	-	Replicate F: 0.334
				Treatment E: 757 209
		1		Treatment Prob(F): 0.0001
		62	¥	 Does not meet assumptions of
Diet .	74	17		AOV: data has skewness
F101 ←	111	1/		Ex
101	2	65.00	-	
102	5	75.00	-	Outliers
103	1	0.00		Box-whisker Solution (2 standard deviations from
104	3	88.00		> +/- 2 standard deviations from grand mean
105	4	95.00		>+/- 3 standard deviations from
201	5	80.00		└ grand mean
202	1	0.00		 Skip damaged assessments
203	4	93.00		Based on subsample values
204	3	85.00		Find Next
	-		-	TITUTICAL

The assessment data editor includes an optional **Column Properties** panel that is docked beside he Assessment Data Properties panel. This panel provides in-depth information about the data column that the cursor is in.

Mouse over the **Column Properties** tab to display the properties panel if it is hidden.



Click the pin button on the caption bar to pin or auto-hide the bar.

Use the **Previous** and **Next** buttons to move the cursor to the column that is left or right of the current data column.

Descriptive Statistics lists all descriptive statistics available for the AOV Means Table report.

Press **Refresh** button if changes have been made to the current assessment column that affect AOV analysis to re-generate the descriptive statistics.

Press **Fix** button to allow ARM to suggest a data correction technique to use so the data will fit the assumptions of AOV.

Use the **Outliers** tool to find possible outliers in the currently selected data column. Select a method for determining whether a data point is considered an outlier.

Entering Site Description

Increasing and Decreasing Repeating Sections

Protocol / Site Description editors use repeating sections to add more instances of data entry rows or columns, such as applications.

- Press Shift+F7 with the cursor in a repeating section to add one section.
- Press Shift+F8 with the cursor in a repeating section to delete the current repeating section.
- Put the cursor in the Ins/Del Columns here field to increase or decrease number of columns using the **Shift+F7** or **Shift+F8** command.

The right-click menu also has commands to "Insert Repeating Section" and "Delete Repeating Section".

Using Tables and Fonts in Rich Text Fields

The ARM GDMdef study definitions support rich text in large comment fields such as the **Comments**, **Objectives** and **Conclusions** editors.

Use the **Table** menu commands from the toolbar to add, edit, and delete tables. Use the **Format** menu to define font size, color, and other font features.

Choices on the Format and Table menu are disabled if a data entry field does not support rich text.



Field Map

Creating a Field Map

lame:		Johnny Overby E)inky Plot	
)escription:		Test Plot for Man	vel, and Spinkota	Wheat
tart date:		Oct-14-2013		
nd date:				
leasureme	nt units:	meters	¥	
Field boun	dary points			
Number of	f points:	4 🜩		
C	e system:	meters		~
Coordinate	,			
Points		X (meters)	Y (r	neters)
Points 1*	0	X (meters)	Y (r	neters)
Points 1* 2	0 12.5	X (meters)	Y (r 0	neters)
Points 1* 2 3	0 12.5 12.5	X (meters)	Y (r 0 40	neters)
Points 1* 2 3 4	0 12.5 12.5 0	X (meters)	Y (r 0 40 40	neters)

Select File – New Field Map. Define corners of the field with point 1 (the origin) beginning at the lower left corner of the field. Enter either as X and Y coordinates or GPS coordinates.

Select **OK** to create the field map. Then name the file to save and press **OK** to continue.

Adding a Trial to Field Map



- 1. Click the grid toolbar button to define a trial.
- 2. Click and drag the left mouse button from top left corner of the trial in the field map to the bottom right corner of the trial on the map to draw the trial on the map.
- 3. Double-click the trial grid to display a trial map.
- 4. Click the Add Study button, and select the trial to add.
- 5. Click the Accept Current button to use this trial.
- 6. Click **Save** to save the updated field map.

Printing Reports

Setting Print Options



Each report has its own set of options.

Highlight the report then either:

Right click the report name and choose **Report Options**.

or

Edit report options in report options window

Global Settings

The three Global Settings tabs control general settings that apply across all ARM reports.

• ••		Print Reports
Available Reports Protocol Trial Assessment Footnotes Data Collection Labels Map Multi-Trial Labels Other	Add -> Remove	Clear Set
Product Amount Totals	Clobal Rapart Satti	Ciobal Neport Settings
Global - General Global - Page Treatments Print al Identify when selected tree	GIODAI REPORT Setti Heading Global - Borders O Print selected eatments are summarized	

Global – General

Define how treatments and assessment data headers will print.

Global – Page Heading

Define how the header information and page numbering will print.

Global – Borders

Define how the borders will print with the assessment data.

Portrait or Landscape Printing

To set the Orientation option for all reports:

•	Print	? 🗙
Current printer HP Officejet 6700 (Network)		Print After print:
Orientation Print range		Close Print dialog ↓
Landscape	O Pages	Preview

From the **Print Reports** dialog, select **Next**.

On the **Print** dialog, use the **Orientation** option to set the page orientation for <u>all</u> reports.

To set the **Orientation** option for a particular report:

Spray/S	Seeding Plan Repor	rt Opt	tions	?	×
Product Amount Totals Global - General Spray/Seeding Plan	Pre-mix Ingredient Global - Page Heading Spray/S	Fiel) Seeding	ds to Print Global - g Plan Page S	Sort Borders etup	
✓ Use report specific options]				
Orientation Orientation Orientation Orientation Orientation Orientation	ł				

Changing Fonts on Reports

	Current printer			Print	
	□ □ □ Landscape	O Pages		Preview	
	Page order Down, then over	Con	pies: 1 🖨	Page Setup	
		Page Setu	n	3	
		i uge betu			
	nt printer	i uge setu		Labels	
Curren HP C	nt printer Micejet 6700 (Network)	i uge seta		Labels Primary Font	
Currer HP C Margi Left:	nt printer Vfficejet 6700 (Network) ns	Right: .5"		Labels Primary Font Fixed-Width Font	
Currer HP C Margi Left: Top:	nt printer fficejet 6700 (Network) ns <u>013</u> * <u>5</u> "	Right: .5" Bottom: .5"		Labels Primary Font Fixed-Width Font Bar Code Font	

Report Sets

Report Set		- T-U-	Available sets	•
Add -> Remove	2 AOV Mean	IS I ADIE	More sets Previous sets Container Export Labels Container Multi-Row 4x2 Container Weight Audit Re Protocol Defaults	¢
	Clear Set		Trial Defaults	~
✓ Confidential	✓ Logo	Global Report Settings	Save Set.	

Press Edit Report Options – Page Setup tab.

Check **Use report specific options** to override the default setting for all reports, and use the **Orientation** option selected on this screen.

Select File - Page Setup.

Use **Primary Font** and **Fixed-Width Font** to define desired font and size to use on reports.

A **Report Set** is a collection of reports that are selected to print.

Click on a report in the **Available Reports** list, then click **Add** button to add the report to the end of the report set list.

Press the **Insert** key on the keyboard to add the currently selected report in the **Available Reports** section to above the cursor position in the report set.

The **Save Set** button will save the report set list with all options for the reports in the set. Use the **Available sets** button to select and load these reports sets to print at another time.

Click **Clear Set** to clear the current selection of reports.

Printing the Site Description

There are several different forms that customize the way the site description can be printed.

Custom Form

This form uses the Site Description report options set by the user. This is the report that was called "Site Description" in previous ARM versions.

There are several common scenarios for printing the Site Description. The other available forms are pre-set configurations of the Site Description report options for these common scenarios.

Blank Form

All Site Description fields are included, and empty fields are printed with a blank following the prompt. This form is intended to be used as a fill-in form for entering information (example: % Sand _____). **Note:** The Site Description report options are not available for this report, and no changes are made to the current report options when this form is used.

Standard Form

Blank fields are compressed out of the report, leaving only those Site Description fields that contain data. This is the most concise way to display all information entered into the Site Description.

Note: The Site Description report options are not available for this report, and no changes are made to the current report options when this form is used.

Named View

Select a Site Description view to determine the particular set of fields to print. These view files can be created and modified from the <u>Site Description View options</u> of the Options dialog. The Site Description report options are available for this report when a Named View is selected.

Note: This will not change, or use, the current view in ARM—only access a saved view *.ddv file.

Selected Tabs

Print only selected sections, or tabs, of the Site Description. This can be used to interleave the Site Description tabs throughout a report. This form uses the Site Description report options, which can be set by right-clicking the Custom Form report and selecting **Edit Report Options** before selecting tabs.

Add .>	Site Description	- Selected Tabs - 1234	- Available sets	+
Remove	Trial Treatments Site Description Spray/Seeding Site Description	- Selected Tabs - 10,11 Plan - Standard - Selected Tabs - 13,14	More sets_ Previous sets_ Container Export Labels Container Multi-Row 4xi Container Weight Audit Protocol Defaults Protocol Summan	2 Rep
	Clear Set		Trial Defaults	~

- Click the small plus sign
 ■ next to the Selected Tabs option in the Available Reports section of the Print Reports dialog to display the selection prompt.
- 2. Choose the tabs to include for the particular section, and press **OK**.
- 3. These tabs are then added in one entry on the current report set. More reports can then be added as desired.

Print Menu

The **Print** menu includes shortcut buttons for printing reports to file. Each file choice has specific options.

- a. Excel button "pushes" report directly into Excel.
- b. Word Processor button creates *.rtf file and opens the file in Word.
- c. Adobe button creates standard Adobe *.pdf file and opens the default *.pdf reader program.



Spray/Seeding Plan Report Questions

Why no product amount calculations?

- A recognized formulation type (such as EC), rate, and rate unit must be entered before ARM can calculate a product amount for formulated chemicals.
- For active ingredient rates, the formulation concentration must also be entered. Ensure the **mix size** option on the Application tab of the Settings dialog is larger than zero to obtain any mix basis rate units.
- For seed rate units (SEEDS/M2, SEEDS/HA), a rate and unit must be defined. Enter the Thousand Grain Weight (TGW) to obtain calculation of grams seed.

Why are dry product amounts 10 times too large (or small)?

- Insure that the default metric dry formulation unit is set correctly in the Settings dialog.
- Enter the actual formulation concentration unit in the treatments editor.

How do I control which treatment fields are printed?

• Use the **Treatment Fields to Print** button on report options to identify which treatment, rate, and unit fields to include on a report.

Summary Results

Always confirm your Summary Report options. What are the selected options for the Mean Comparison Test?

Standardized Summary

This report uses mean comparison test identifier codes listed in **ARM Action Codes** field in each assessment data column to determine how that column should be analyzed. The report prints in a format that is very similar to the AOV Means Table report.

Printing Both Sets of Treatment Rates and Units

	Protocol Treatm	nents Report Option	ns ? ×
Protocol Pro	oduct Amount Totals	Pre-mix Ingredient	Fields to Print
Treatments List ingre List valid	dients for pre-mixes ation comments		Options
		Fields	To Print

ARM can support study definitions with two sets of treatment rate and unit fields. (Typically to list both active ingredient and product rates, or metric and US units.)

Use the **Treatment Fields to Print** button on report options to identify the rate and unit fields to include on a report.

AOV Means Table

Analyze all single factor designs, or 2 factor designs with significant A*B interactions, or 3 factor designs with significant A*B*C interactions. Some key options are:

• Mean comparison test

The first four mean comparison tests are listed in order of most liberal to most conservative. A liberal test is more likely to identify random differences as significant, while a conservative test is more likely to ignore actual treatment differences.

Notes regarding the LSD (Least Significant Difference) test:

- (1) Use with "Only when significant AOV treatment P(F)" option for Fisher's Protected LSD test.
- (2) Use when analyzing only 2 treatments (General -Global Print selected) for Paired t-Test.
- (3) When using LSD to make an unplanned comparison of the highest and lowest mean in a trial with more than two treatments, the difference between treatments can be substantial even when there is no treatment effect. Some statisticians have determined that when using 5% LSD for a trial with:
 - (a) Three treatments, the significance level is actually 13%
 - (b) Six treatments, the significance level is 40%
 - (c) Ten treatments, the significance level is 60%
 - (d) Twenty treatments the significance level is 90%.
- ii. Use FAOV complete error term for split-plot trials option automatically uses appropriate error term for AOV Means Table analysis of a split-plot or strip-block trial.
- Only when significant AOV treatment P(F) option give a "protected" mean comparison test, since mean comparisons are only performed when analysis indicates there are significant differences between treatments at probability level specified for the mean comparison test.

Note: Using this option with LSD mean comparison test gives "Fisher's Protected LSD" test.

Mean comparison test		
Test:	Duncan's New MRT	~
Significance level: Use FAOV complete er Only when significant A Mean symbol identifying wh	None LSD Duncan's New MRT Student-Newman-Keuls Tukey's HSD Waller-Duncan k=100	
differences between mean	Dunnett's vs. Control Dunnett's vs. Reference	

	AOV N	leans Table Repo	ort Opti	ons	? 🗙
Pre-mix Ingredient AOV Means Table Mean comparison test	Fields to Print Report Options	Global - General General Summ	Globa ary Mean sort	I - Page Heading General Sum ing	Global - Borders mary Page Setup
Test: Significance level: Use FAOV complete Only when significan Mean symbol identifying	Duncan's New MR error for split-plot trials t AOV treatment P(F) when AOV cannot determine	T ♥ 5% ♥ ect a	None Ascer Desce Print c	nding ending yne sorted mean colui d %'s	mn per page

- iv. **Bartlett's homogeneity of variance** option helps identify treatment heterogeneity, important because homogeneous treatment variance is an assumption for AOV.
- v. **Mean sorting** option sorts treatment means from low-to-high or high-to-low on the report.
- b. Factorial AOV to perform initial analysis of all multi-factor designs, identify if there are significant interactions between factors (A*B, A*B*C, etc.), and calculate means for each factor level averaged across remaining factors.
- c. Correlations to determine degree of association between data columns.
- d. Dose-Response Analysis to estimate the treatment rate that provides the desired response level.
- e. Standardized Summary an AOV means table report that performs only the mean comparison test identified by ARM Action Code in each data column.

-	
Available	Reports
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	Status Report Summary

Assumptions of AOV - data are random, independent, normally distributed, and have a common variance. Detect violations of AOV assumptions using:

a. Bartlett's test of homogeneity of variance

Assessment data columns with probability >=95% of treatment heterogeneity or non-normal data are indicated by * in descriptive statistics section at bottom of AOV Means Table report.

Trt Treatment No. Name	11	12	13	14
1 Untreated	106.3 a	106.3	105.5 a	105.9 a
2	13.5 bc	13.5 b	12.6 cd	13.0 cd
3	17.0 bc	17.0 b	17.0 bc	17.0 c
4	9.5 c	9.5 b	9.0 d	9.2 d
5	24.0 b	24.0 a	22.8 b	23.4 b
LSD (P=.05) Badlett's X2	8.93	6.15	0.14t	0.621
P (Bart lett's X2) Skewness Kurtosis	0.016* 1.6078* 1.0506	0.09 0.677 -0.0687	0.103 0.8784 -0.2758	0.231 1.34* 0.399

b. Skewness and Kurtosis tests of normality

 Skewness measures asymmetry of the data distribution, meaning that the peak on a data distribution graph is shifted either right or left:



ii. Kurtosis measures "peakedness" of data distribution, meaning the peak is either flatter or sharper than a normal distribution: (ARM reports *excess kurtosis* as shown below.)



Limiting Number of Decimals for Data Reports

Assessment Data - Line 15									
Column Number						9	^		
Rating T	ìming	2							
Days After First/Last Applic.						13	13		
Trt-Eval	Interva	13 DA-A							
Plant-Eval Interval						236 DP-1			
ARM Action Codes						Р			
Number of Decimals						2		v	
+ Sub	Rp	Bk	Col	Plot ∆	Trt	9	^		
● 1	1	1	1	101	4	75.00			
1	1	1	2	102	2	60.00			

To limit the number of decimals of accuracy by column:



In the Assessment Data header, use the **Number of Decimals** field for each column.

By default ARM prints one more decimal of accuracy than the most precise data item.

To limit the number of decimals of accuracy <u>across all reports</u>:

Fields to Print	Global - General	Global	D 11 F	
on options	General Summary	Giobai	- Page Heading General Sumi	Global - Borders mary Page Setup
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View	Print data headers	once pe	r column	
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uracy to:				
	View	View Print data header r	Assessment data header rows List View Print data headers once pe	Assessment data header rows

Select File – Print Reports. Select a summary report, press the **Edit Report Options** button, and click on the **General Summary** tab.

Then enter the number of decimals in the **Force number of decimals accuracy to** field.

Printing Excel Report Link Workbook

The report link workbook is a method to create customized site description reports that are printed in Microsoft Word. A template document is used to define the report format, and to link with a special Microsoft Excel report link template where ARM prints trial information.

Open the ReportLink.xls and example ReportLinkTemplate.doc in the GDMdef study definition directory for an example. The ReportLink.xls includes cell comments describing how to use the workbook. Hold the mouse cursor over cells with a red mark in the upper left to view comments. The Word template document must link to cells in column D of ReportLink.xls to obtain trial site description information.

Graphing Data

- 1. Graph types and recommended uses:
 - a. Bar most suitable for discrete treatments, such as comparison of different treatment products
 - b. Line used to show trends in values over a continuous scale, like different rates of a treatment product



- c. <u>Box-Whisker</u> A Box-Whisker graph illustrates the spread of treatment data groups around their medians, using a "box" and "whiskers" to break down each data group by percentiles. The **box** extends from 25th to the 75th percentile and is divided by the median. The **whiskers** extend from ends of the box to largest and smallest observation.
- 2. Graph tips:
 - a. Use **Horizontal** bar graph to better display long treatment names.
 - b. Use Next Data/Previous Data buttons on Graph window to display the same graph for other data columns.
 - c. The Clipboard button is the easiest way to copy graphs to another program; select Paste in destination program to include the graph.
 - d. Treatment selection order (e.g. 5 4 3 2 1) determines treatment order on a graph.



- e. Use "Error Bar" tab on Graph Options to display standard deviation or standard error bars **Note**: The error bars on ARM graphs are calculated using appropriate error terms from AOV. On many graph programs (such as Excel) error bars are *only correct for Completely Random design*.
- f. The Treatment Description on Trial Map is used for treatment labels on graph, giving a brief 1-line description of each treatment. Edit the treatment description to adjust (typically shorten) treatment labels for graphs and map reports.
- g. Use "Show data labels" on Labels tab of Graph Options to display treatment mean values.
- h. Use "Display AOV mean comparison letters" on Labels tab of Graph Options to display mean comparison letters from AOV. Options button displays AOV Means Table Report options, to / choose a different mean comparison test or significance level.
- 3. To export graphs to other software, display the graph, then:
 - a. Press the Clipboard button to copy the graph to the clipboard, to paste into another program.
 - b. Press **Save As** button and select **File** for the **Target** option to save the graph to a file on disk.

Remember: Typically 20% of ARM features are enough to perform all needed activities. Increasing to 30% helps you perform those activities most efficiently.

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	4	HERB 1 10	0 g Al/ha						- 1
	2 HERB 1 50 g Al/ha								-
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		Show data l	abels				К	eselect	
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