



GDM Products Update Jan. 2017

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Gylling Data Management (GDM) creates, markets and supports ARM software for managing and summarizing agriculture research experiments.

Software that supports all phases and tasks for planned efficacy experiments

ARM: plan, create, manage, analyze, and report experiments

ST: analyze across multiple experiments

TDC: collect, verify, analyze data on tablet

ATD: organize, store experiments in SQL server database

- See [GDM Overview \(pdf\)](#) for information about GDM and our products, and [Trial Management Software Features \(pdf\)](#) for an overview of features our software provides.

ARM 2017 Is Released



ARM 2017 is for the 2017 field season. Clients with ARM 2016 automatically receive ARM 2017 from their annual maintenance fee. ARM 2016 clients are notified by ARM and Check for Updates when their maintenance payment is due.

- ARM 2017 works well on **Windows 10** - no problems installing or using ARM.
- See [ARM 2017 Features](#) and [ARM 2016 Overview \(pdf\)](#) of new features added in ARM 2017 and 2016.
- See [ARM Client License Maintenance and Renewal \(pdf\)](#) on gdmdata.com for an overview of the ARM maintenance renewal process.

ARM Connect to HarvestMaster Mirus Software

ARM can export a field or trial map to HarvestMaster Mirus, providing Mirus with treatment randomization and plot arrangement information for use with HarvestMaster Harvest Data Systems, research sprayers, and other research equipment.



Related new ARM features to support the Mirus connection are:

- An improved tool for arranging existing ARM trials onto a field map.
- Export any known plot, trial, or field GPS coordinates.
- Directly receive harvest results from Mirus (without requiring extra Excel edits).

ARM 9 and ST 8 Are **Obsolete**

ARM 9 and ST 8 become obsolete and unsupported after 31 December 2016. **Upgrade now to receive support.**

- ARM 9 licenses can be reassigned only when upgraded to the newest ARM version.
- No support for questions or install problems.
- Problems with protocols or trials created by obsolete ARM version (ver. 9 or older) are not supported. Note: protocols or trials in .prt9/.dat9 created by supported ARM versions are supported.
- Supported ARM versions will create protocols and trials in.prt0/.dat0 format in 2017, including ARM versions used by global sponsors.
- See [ARM 2017 Features Since ARM 9 \(pdf\)](#) for new features added to ARM since version 9.

Other topics in this newsletter are:

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Selected New ARM Features



Some highlight features introduced recently in ARM:

Assessment Data: View option so it is easier to find "interesting" trial data by hiding columns with no differences between treatments.

Study list: "Copy map info" location map, and can now use ARM while study list rebuilds.

Summary Reports: new option to merge headings over assessment columns with the same information:

Pest Name	Speckled leaf blotch of wheat					
Crop Name	Winter wheat					
Part Rated	LEAF C	PLANT C	LEAF3 P			
Rating Date	Jul-15-2014			May-13-2014		
Rating Type	PHYGEN	VIGOR	PESSEV			
Rating Unit				%		
ARM Action Codes	TAB[3]					
Trt Appl Treatment						
No. Code Name	Plot	1	2	3	4	
4 ABC Tilt 250	102	0.0	100.0	5.00		0.00



Reports: change treatment field order; print comments and images on Assessment Data Summary report:

4 Tilt 250	0.5 l/ha	ABC	103	50.0
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Animal damage to plot
50.5667. 4.6833

AOV Means Table report: identifies LSD range used to compare smallest and largest non-zero treatment mean pairs:

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

Summary Reports

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

GDM and HarvestMaster

ARM Connect to HarvestMaster

Mirus Software:

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

Study List: more indexed fields to identify trials: Trial Address, GEP Accreditation Link, Interval to Prev. Appl., Crop Stage Majority, Artificial Population.

Trial Map randomization quality:

- Arrange replicates as squares to reduce in-rep variation
- Identify treatments more subject to edge effect
- Create a more balanced treatment distribution

501 3	502 4	503 7	504 6	505 5	506 1	507 2
401 2	402 6	403 4	404 1	405 7	406 3	407 5
301 7	302 1	303 2	304 3	305 4	306 5	307 6
201 4	202 5	203 1	204 7	205 2	206 3	207 6
101 1	102 3	103 6	104 5	105 2	106 4	107 7

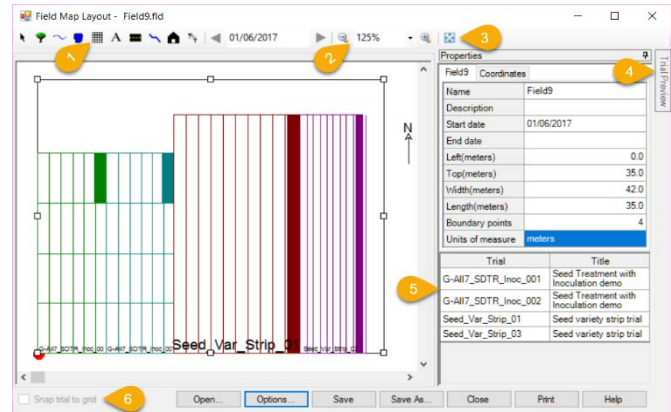
Trt	At Edge	Ave Dist.	StDev	Min	Max
1	2	22	2.15	20.4	25.5
2	3	23.8	3.57	18.7	27.2
3	3	24.4	1.76	22	27.2
4	3	22.4	3.47	18.7	25.5
5	3	22	3.4	18.7	27.2
6	3	21.3	2.58	18.7	25.5
7	3	22.7	2.56	18.7	25.5

Graphs

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

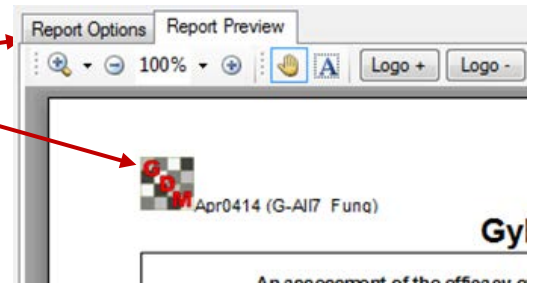
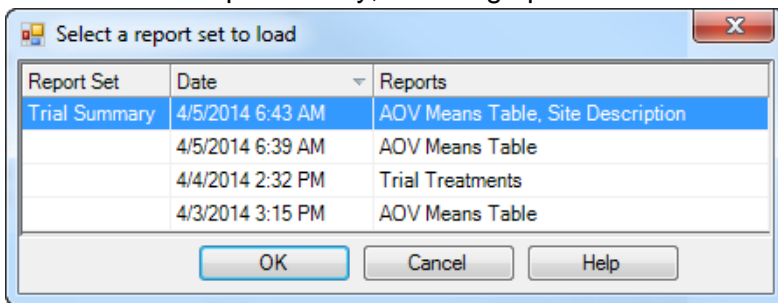
Field Map:

- Add trials from study list
- Larger zoom range, or manually type a value
- Size-to-Fit button automatically resizes map
- Trial Preview tab shows randomization
- Trial legend grid describes each trial
- Snap trial to grid auto-aligns onto plot grid
- Set default arrangement when adding trials



Reports:

- Directly change options for the current report
- Immediate preview quickly finds reports and labels you want
- Add your company logo and customize page heading
- Automatic report history, including options and formatting

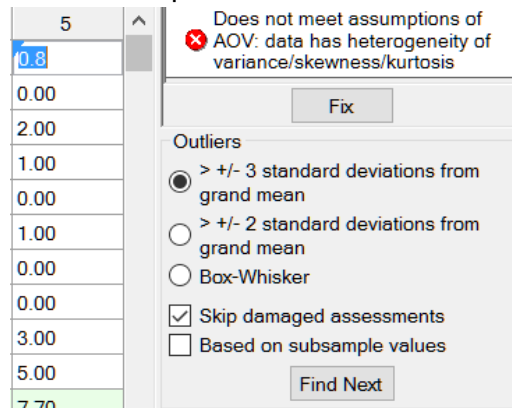
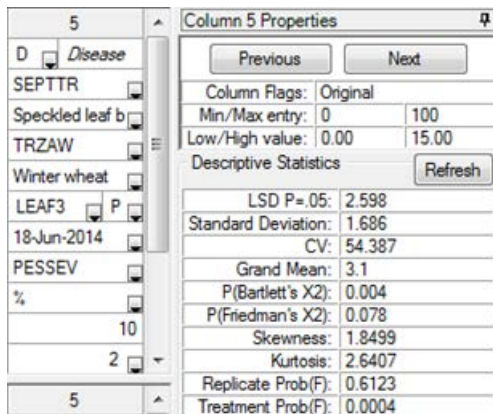


- Print Trial Map to Excel as actual formatted cells
- Post-hoc power analysis in AOV Means Table, to improve planning for follow-up experiments
- Identify report classification → **INTERNAL**

Crop Variety	CEZANNE
Trt No.	24
	2 85.33 a
	3 81.67 a
	4 98.00 a
	5 95.33 a
LSD P= .05 (% mean diff)	21.808 (25%)
Standard Deviation	10.915
CV	12.12
Grand Mean	90.083
Minimum Replicates (power = 80)	8
Largest Mean Difference (% mean diff)	16.333 (18%)
Treatment F	1.541
Treatment Prob(F)	0.2979

Assessment Data

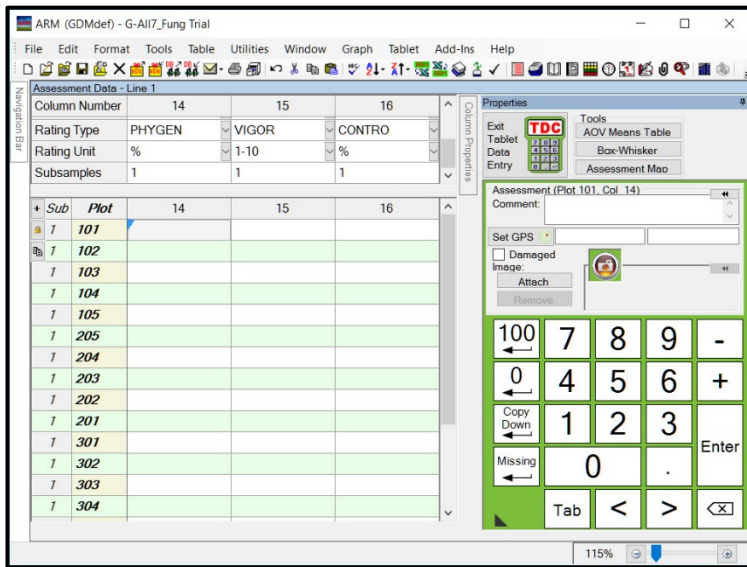
- One-click sorts by treatment, replicate, and other plot attributes
- Yield conversion can adjust for per-plot differences in harvested plot width and length
- Interactive tool to find outliers and fit data to AOV assumptions



The latest information is always at the ARM page gdmdata.com/Products/ARM (select Products button then ARM), or see additional details in the next section.

Check out the [ARM 2017 Features](#), [ARM 2016 Features](#) and [ARM 2015+ FAQ](#) links on ARM products page, and also on the gdmdata.com home page.

ARM Tablet Data Collector (TDC) on New Juniper Systems Mesa2 Tablet



ARM Tablet Data Collector (TDC) is a Windows 10 touch tablet computer plus the ARM Tablet Data Collector add-in (requires ARM 2016+ license). Use TDC to record all trial information at the trial site directly into the actual ARM trial.

At left is ARM in "Tablet Data Entry" mode, to directly enter assessment and other trial information on-site. Features:

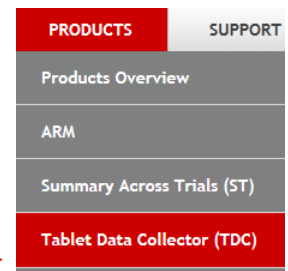
- Optimized for data entry.
- Integrated touch keypad.
- Auto-rename photos.
- GPS of trial and plot corners.

- Auto-saves and backups.
 - Enter all trial site details, even summary and conclusions.
 - Perform immediate data quality checks, graphs, outlier checks, and full statistical analysis.
 - Conveniently sized hardware includes a display that is readable in direct sunlight.
 - Includes a "smart" USB to USB transfer cable with built-in transfer software to copy ARM trials and images between your main PC and the tablet.
 - Includes WiFi to connect tablet with a wireless internet connection, which is required to keep TDC, ARM, and screen customizations up-to-date.

TDC is on the new Juniper Systems/HarvestMaster Mesa2 tablet with 7 inch screen:

- A very rugged lightweight tablet that is fully dust-proof and water-proof.
- Designed to use at temperatures from -20° to 50°C (-4° to 122°F).

You will benefit from using full ARM plus special data entry and review features that are only available on ARM Tablet Data Collector. For details, see <http://gdmdata.com>, select Products then [Tablet Data Collector](#).



Newest TDC Features: Pinch-to-zoom for resizing screens; 'Set GPS' button records location of current plot, assessment, or trial corner; much faster to take pictures, and can automatically start Windows camera app; remembers ARM and camera positions in both portrait and landscape mode.

Professional Meetings

See [Meeting Calendar](#) at <http://gdmdata.com> for the list of upcoming GDM free training sessions.

GDM posts [Meeting Handouts](#) on our website for your reference.

ARM FAQ, Class Use, Demo, Ordering, Support

ARM software for teaching tool

University researchers using the current ARM version can also use ARM for teaching research methods classes. Contact GDM for details.



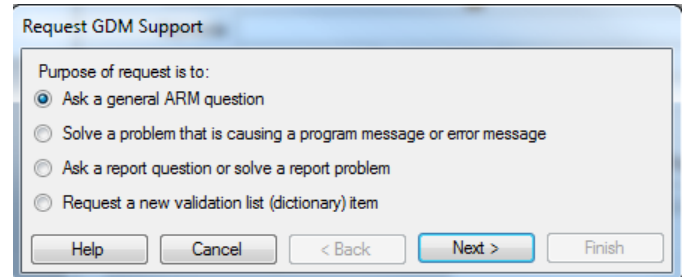
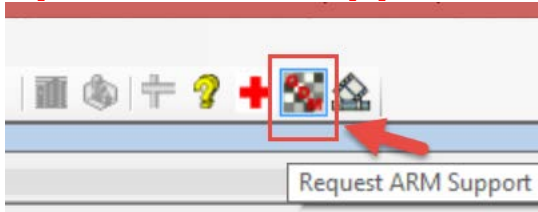
The [ARM FAQ](#) (Frequently Asked Questions) link on the [gdmdata.com](#) home page lists answers to common ARM questions, along with describes new license choices, maintenance, and activation support and upgrade changes.

➤ Use [Write to Us](#) page on [gdmdata.com](#) to ask questions, request a price list or demonstration version.

➤ Order ARM 2017 using the **Order Form** at [gdmdata.com/Sales/Ordering](#).

➤ ARM 2017 is **delivered online** & installed by [Check for Updates](#) at [gdmdata.com/ARMupdt/ARMupdt.exe](#).

Request GDM Support

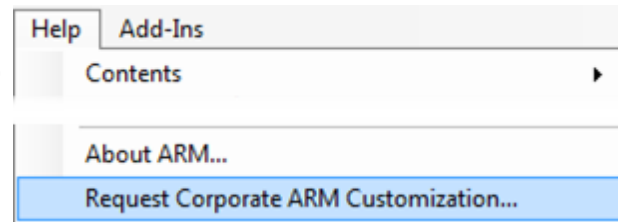


➤ The new **ARM Help - Request GDM Support** feature guides you through a series of typical requests for client support questions and issues. On the first dialog choose the purpose of the request, and ARM guide through selecting relevant items to include with the support question.

Request a Sponsor ARM Customization

Any contractor can use the new ARM Help - Request Corporate ARM Customization feature to send an email to their corporate sponsor representative and request the sponsor customization. The email includes all needed ARM license information for GDM to link the customization request to the researcher's ARM license:

[Request Sponsor Customizations \(pdf\)](#) Describes process for requesting and installing ARM corporate customizations from sponsors.



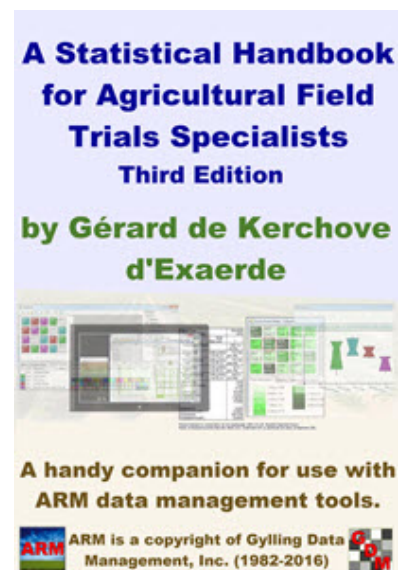
Statistical Handbook, Third Edition

In 2016 Gerard de Kerchove (author) and Andrew Norton of PDM Associates (editor) published the 3rd Edition of their very popular book **A Statistical Handbook for Agricultural Field Trials Specialists**. The handbook is updated with all screenshots and figures in color, as well as formatting improvements for e-book.

The statistical handbook uses a logical and understandable way to describe the basic statistical elements affecting field trials and their planning, implementation, and interpretation. The book is designed to be suitable for:

- Field Trials Specialists,
- Project Managers who may be interpreting results,
- and also for students who may be taking their first opportunity to get involved in this type of experimentation.

See [Statistical Handbook - Table of Contents \(pdf\)](#) for an overview of the Table of Contents, listing the different topics.



To order the e-book or printed version of the handbook (3rd Edition), purchase from:

Amazon - <https://www.amazon.com/Statistical-Handbook-Agricultural-Trials-Specialists-ebook/dp/B01KIHJRWQ/>

Kobo - <https://store.kobobooks.com/en-us/ebook/a-statistical-handbook-for-agricultural-field-trials-specialists>

ARM ST (Summary Across Trials)



ARM ST (Summary Across Trials) is an add-in to an installed ARM program.

- ST Properties panel shows the choices for matching selections that you enter to identify trials which should be included in the multi-trial summary.
- A simple Excel-like interface makes it easy to review and choose trials using the familiar ARM trial data entry windows and fields.
- The list of currently selected trials displays on each study editor as match information is defined or changed.
- 'Advanced ST 8' analysis method uses the AOV Table: Full Method: Advanced ST 8 tool to give an accurate, statistically adjusted analysis of trials with missing data or different number of replicates (same analysis as SAS® GLM for normally distributed data). The correct analysis method is automatically selected according to the experimental design of each summarized trial.
- Treatments * Trial graph helps identify location groups:

For details, see <http://gdmdata.com>, select Products then [Summary Across Trials](#).



ARM TD (Trial Database)



ARM TD is a relational database for storing and retrieving trials based on standard "GDMdef" ARM study definitions. ARM directly exports and imports trials in the database, and Microsoft Office™ products can be used to build customized reports for trials extracted from the database.

The trial database can centralize storage and retrieval of long-term trials, giving additional protection against losing unique trial information because of a computer hard drive failure. ST also connects directly to ATD, providing enhanced query and selection features for multi-trial summaries.

For details, see <http://gdmdata.com>, select Products then [Trial Database](#).

Contact GDM for information on pricing and availability using "Write to Us" on <http://gdmdata.com>.

