GDM Products Update Apr. 2018

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

Software SOLUTION for planned efficacy experiments from start to finish

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 New! (mp4) on gdmdata.com for information about GDM and our products, and Trial Management Software Features (pdf) for an overview of features our software provides.

ARM version 2018 is now available!

ARM version 2018 is now available for free through the Check for Updates with an up-to-date paid annual maintenance license. See ARM 2018 Features for a list of features added in ARM 2018.

ARM connects with Iteris ClearAg weather data

Iteris ClearAg weather content is now available by subscription to GDM clients. Directly import ClearAg's **historical** and **current weather information** and **soil data** from around the world through ARM software.

Request more information about ClearAg at: http://info.clearag.com/ARMinfo.html

Introducing TDCx – new ARM license add-in

TDCx is a new ARM add-in that includes Tablet Data Collector (TDC) software for:
- An activated ARM license serial number – TDCx installs onto the same computer as ARM
- That is installed only once on either your touch-enabled Windows tablet, or a laptop computer.

The "x" in "TDCx" indicates that you:
1. Purchase a touch-enabled Windows tablet or laptop computer of your choice, then
2. Install and activate your ARM license on this computer - either:
   a. Transfer your current ARM license to this computer and purchase the TDCx Add-In, or
   b. Purchase an ARM Field license which is an ARM Technician license plus TDCx Add-In.

See ARM Tablet Data Collector (TDCx) for more information.

Other topics in this newsletter are:

New ARM Features in ARM 2018

1. Integrated Weather Data
- Import current or historical weather data based on geo location
- Batch imports function allows for efficiently integrating weather data for past trials

2. Mix Size Calculator tool
- Calculate mix size based on current application settings by pressing the Tool button in Mix Size field to open this dialog
- Define overage (mL or %) in ARM so can better calculate product amounts

3. Application Plan:
- Display all fields necessary for mix size and leaf wall area (LWA) calculations
- Opens from:
  - Treatments editor
  - Protocol/Site Description editor
  - Spray/Seeding Plan report

4. Mix Size for Leaf Wall Area

- Enter Mix Size as **total mix** for LWA and Canopy Height treatments
- Previously was entered as mix per 10000 m2 LWA, or per 1 meter canopy height

5. Spray/Seeding Plan report
- Include Treated Leaf Wall Area Per Plot, when applicable
- Include amount of mix overage, when defined in the study
- Option to include Diluent quantity for liquid treatments

Reps: 4		Appl Code: A		Plots: 3.1 by 12.5 meters			Treated Leaf Wall Area per Plot, Unit: 50 m2/plot			
Spray vol: 200 L/ha				Mix Size: 3.5 L/12903 m2 LWA (total for 4 plots, includes 450 mL overage)						
Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate Unit	Amt Product to Measure	Diluent	Rep 1	2	3	4
2	Cyprodinil	750	WG	0.20 kg/10000 m2 lwa	3.5 g/mx	3496.5 mL	102	206	312	408
3	Cyprodinil	750	WG	0.30 kg/10000 m2 lwa	5.25 g/mx	3494.8 mL	101	204	308	401
4	Dodine 544 SC	544	SC	0.85 l/ha/m ch	14.88 mL/mx	3485.1 mL	106	209	307	412
5	Syllit	400	SC	2.88 l/10000 m2 lwa	50.4 mL/mx	3449.6 mL	108	211	302	405
6	Syllit	400	SC	3.75 l/10000 m2 lwa	65.63 mL/mx	3434.4 mL	111	203	310	402

6. AOV Means Table report
- Perform the **Levene's test** for homogeneity of variance
  - Printed as a descriptive statistic
  - Levene's test is less sensitive to departures from normality than Bartlett's test, so is generally preferred

- **Spatial analysis** attempts to recover information about hidden variables across a field
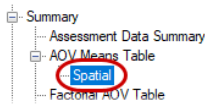
- *Trend* analysis - analyze pattern covering whole field
- *Nearest Neighbor* analysis - analyze effects only in space adjacent to individual plots
- *Automatic* – ARM will select best-performing model

Original   Neighbor-adjusted

7. Spatially balance treatment randomization
- For RCB designs, use a randomization optimized to uniformly disperse treatments across the trial
- Balances average distance between all treatment pairs across replicates (see Trial Map – Quality tab)

The latest changes to ARM are always on our website gdmdata.com/Products/ARM/Updates/Release Notes

ARM Tablet Data Collector (TDCx)

TDCx is the new ARM add-in that adds **Tablet Data Collector (TDC)** features to an ARM license installed a touch-enabled computer of your choice ("x"). Use TDC to record all trial information at the trial site directly into the actual ARM trial.
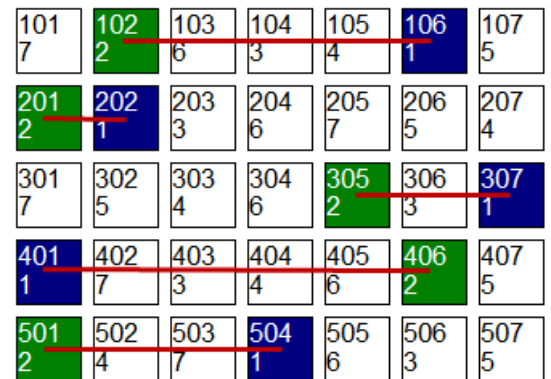
At left is "Tablet Data Entry" mode, to directly enter assessment and other trial information on-site.

Features include:

➢ Integrated touch keypad (with size adjustment).
➢ Optimized for data entry:
  o Single keypress actions.
  o Enter multiple assessments at one time.
  o Data limits using action codes.
➢ Take plot photos directly into ARM trial entries and rename picture files to associate with plot.
➢ Record GPS of plots and trial corners.
➢ Auto-save and backup data after each plot.
➢ Enter all trial site details, even summary and conclusions.
➢ Perform immediate data quality checks on-site:
  o Heat-map of assessment values.
  o Check for outliers.
  o Box-whisker graph.
  o Full statistical analysis.
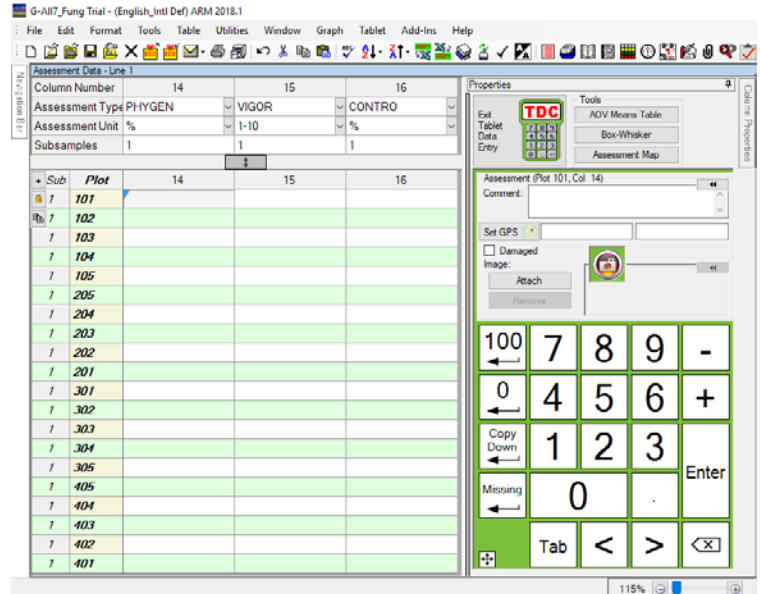
You will benefit from using full ARM plus special data entry and review features that are only available on ARM Tablet Data Collector. For details, see gdmdata.com/Products/Tablet Data Collector (TDC).

Newest TDC Features: Audible verification of key press, display Windows keyboard when entering assessment columns to assess, and improved panel resizing.

ARM Summary Across Trials (ST)

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.
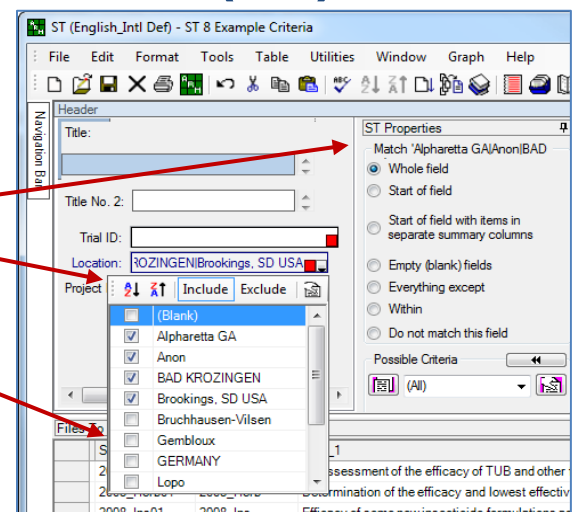
'Advanced ST 8' analysis method uses the R statistics tool to give an accurate, statistically adjusted analysis of trials with missing data or different number of replicates (same analysis as SAS® GLM for normally distributed data).

AOV
Table: Full
Method: Advanced ST 8
Advanced ST 8
Combined ST 7
Classic ST 6-

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 gdmdata.com/Products/Summary Across Trials (ST).

ARM Trial Database (ATD)

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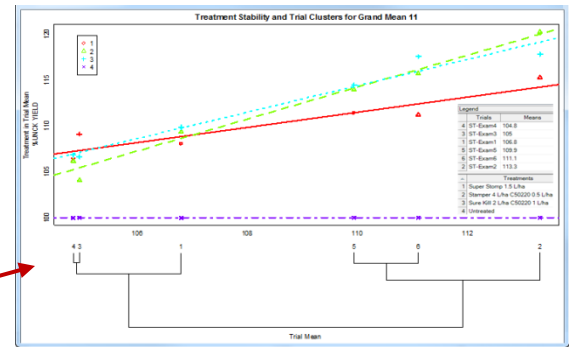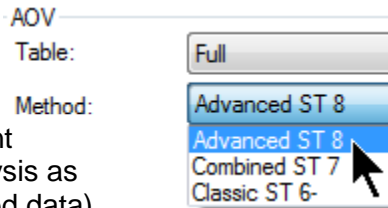trials in the database, and Microsoft Office™ products can be used to build customized reports for trials extracted from the database.

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 gdmdata.com/Products/Trial Database (ATD).

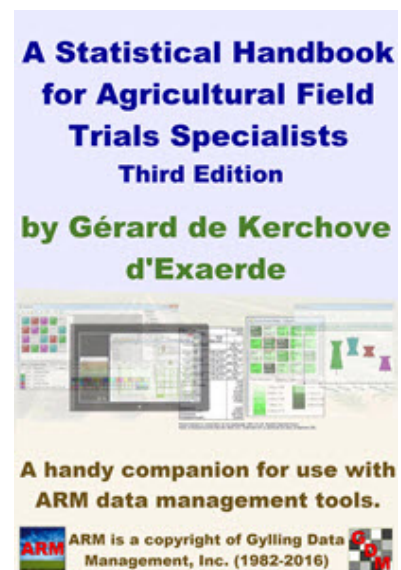Contact GDM for information on pricing and availability using "Write to Us" on gdmdata.com.

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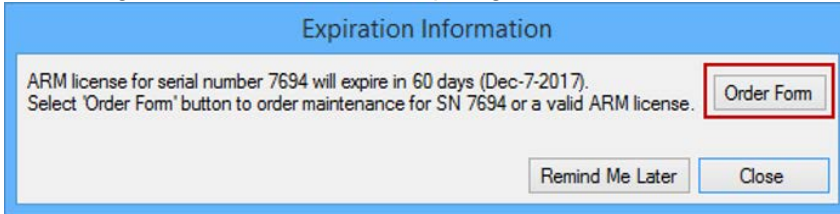Kobo - https://store.kobobooks.com/en-us/ebook/a-statistical-handbook-for-agricultural-field-trials-specialists

ARM Maintenance Renewal

ARM includes a software maintenance plan. Key maintenance benefits are:
- ➢ All new software features are immediately available, delivered in the next update.
- ➢ Software updates and upgrades are delivered for free (including ARM 2018!).
- ➢ Regardless of when you purchase ARM or ST, you receive all the newest software enhancements.

View your Maintenance Expiration date from Help – About ARM dialog. When <60 days remain, ARM will give a warning that maintenance is expiring soon.

Expiration Information

ARM license for serial number 7694 will expire in 60 days (Dec-7-2017).
Select 'Order Form' button to order maintenance for SN 7694 or a valid ARM license.

Order Form

Remind Me Later   Close

Select 'Order Form' to display maintenance invoice or request an updated invoice.
- ➢ Tech licenses should contact Full licensee to order maintenance.

For more information see gdmdata.com/media/documents/ARM_Client_License_Maintenance_and_Renewal.pdf

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Video: Getting Started with ARM

Learn the basics of the ARM program with our new video series Getting Started with ARM. Topics range from describing the ARM window, to describing the most important program options and help features, to a beginner's look at the Study List tool and backup features.

This series is designed for those opening ARM for the first time, but can also be an excellent refresher for any ARM user!

Watch our latest tutorial videos, Getting Started with ARM.
Or view all of our tutorial videos at https://gdmdata.com/Resources/Video-Tutorials.