Welcome
Our Mission

“Provide the research community technology to improve efficiency and accelerate innovation”
ARM Software is Trusted by Over 10,000 Researchers and Scientists Worldwide
Use ARM for all stages of an experiment.

To **plan and create** protocols, to **randomize and manage** trials, to **analyze** data and **report** the results.
ARM software provides a defined structure to enter information consistently, with master list dictionaries to standardize vocabulary, and has tools for every step of an experiment.
The Last Year in Review
ARM the Industry Standard

The top 12 Agro-Chemical companies now depend on ARM Software worldwide.
Field License Bundle

This bundle brings ARM to the field to help improve efficiency and accuracy.
Leaf Wall Area

Software solution for an industry specific challenge. ARM facilitates the research techniques for future regulation of product applications.
Weather Data Import

Collaboration with ClearAg (Iteris) to build a new feature that allows you to import weather data.

ClearAg offers specific information by utilizing meteorology, agronomy, land surface modeling and crop production at specific GPS coordinates.
Marketing & Support

We hired a full-time sales and marketing associate to focus on our client communications.
The Year Ahead
Training Initiatives

Continue to expand our tools and resources to make it easier for our clients.

- Tutorials
- Coaching Events
- Webinars
Product Release

Work as a team to ensure every client is aware of the new features and how to use them to make their work more efficient.
Client Driven Development

Working closely with our clients to implement additional features and intuitive reporting.

Providing new features throughout the year.
ARM improves efficiency, increases accuracy, and promotes better quality of results.
ARM 2019 Enhancements
Study Rules
Study Rules

Merge Study Information
• Easily copy information from Study to Study.
• Replaces “Save As” function.

Enhancement
• Choose to not merge study rules if the study is originated by your company.
• Offers new flexibility for internal researchers.

Feature in action
Merge Study Rules

Enhancement

• Limit study rules merged to only selected protocol/site description sections.
Always Validate Studies

- Validation ensures all protocol criteria has been met.

Enhancement

- Validation messages now list the study rule number that triggered the error or warning message.

Feature in action
Rule Set

Rule Set Name Identification
• Identifies/Verification of the correct rule set used within study.

Enhancement
• The name of the loaded rule set now displays in the editor heading when a rule is selected within the table.

Feature in action
Tools
Existing blank treatments are automatically removed when performing a merge with another study.

Tools: Merge
Progress bar added during Weather import

- The weather is imported from outside the ARM software.
- This ensures you know that progress is being made 😊.
Spray Seeding Plan

Why minimum mix size calculator?
- This helps determine the minimum mix needed.
- Proactively plan for your trial with this calculation.

Enhancement
- ARM reports the bare minimum mix size needed to cover the area of all 4 reps.
Study Settings
Why is a specific time zone needed?

• Ensure the alignment of the trial location in relation to time zone to external data providers.
  o New Weather API will align location specific weather for a particular time, such as per application.
• Trial Settings > General tab
New Options - Liters

Liters as an Overage Option

• Clients may have equipment that requires a very large amount of overage. Instead of using ML’s (1000's), you now have the option of Liters. Example: 2150ML vs, 2.15L.

• Can be entered in the Settings > Application tab or, Appl. Equipment > Mix Overage, Unit or, Application Plan.
Mix Size Units

Enhancement

• Brings consistency to the unit names whether you are in the treatments editor, settings, or application plan.

• Settings > Application tab

• Appl. Equipment > Mix Overage, Unit or, Application Plan
Site Descriptions
Track Trial Progress

Why document trial progress?

• Requested by sponsors.
• Provides visibility and credibility to timely data entry.
• Added new fields to track status and progress throughout the season.
Track Trial Progress

Additional new fields to track status and progress throughout the season.

• Application tab > **Appl. Entry Date**

• Assessment Header > **Data Entry Date**
Protocol Instructions

Support Rich-Text Formatting

• Preserves the format from the original protocol through to the Trial.

![Example of rich-text formatting in protocol comments]

Provide weather data as follows (min. requirement):
- as from 1 day before application up to the final assessment average, main and max temperature and precipitation on a daily basis. => Data from the nearest weather recording station should be attached as a file in standard format (for example Excel table, Comma or tab separated lists ...) indicate the distance of the trial site to the weather station.

Comment on any extreme weather situation in trial comments. Mention every irrigation application including all details in the DAT file.

For assessments follow the Data header information in detail.

Data to Collect:
- Do an assessment on general Phytotox at every visit to the trial site. In case any phyto is visible, assess on each of these effects separately (for example smaller leaves and chlorosis). Assessments should be done on frequency and intensity of the symptom. Create an adequate header for these specific assessment. In case of insecurity of the codes to use, make sure to fully verbally describe the type of assessment in the footnote.
- Assess all effects on any other than the pre-defined target weeds as well as on beneficial insects!
- Report all other treatments in detail in the "crop maintenance" chapter of the DAT file.
Collapsible Repeating Sections

Fixed:

- Repeating section panels now resize after displaying hidden fields.
Trial Origin

Why track the trial origin?

• Helps answer budget questions.
• Valuable to the R&D division.
• ID’s in-house, contracted or by a public institution trials.

Header editor > Trial Origin or,
Trial Establishment Guidelines > Trial location Table
Auto-Fill default settings for application planning fields.

- Intuitive way of using Settings set to default and fill out the plan.

Enhancement

- Auto-fills with default entries when clicking in a blank field for mix size, mix overage and spray volumes.
Assessment Data
Show more than one type of entry when matching on a field.

How does it work?
Select multiple items for the “Match” column Filter.
AUDPC Transformation

Enhancement during AUDPC

• Allows selecting multiple values for match fields.
• Lists columns currently matched.
• View only selected/matched columns on the assessment data editor.

Where is this feature?

• Tools > Transform, select AUDPC
Tablet Data Collector (TDCx)
Display the current position in real-time

• Researchers now can determine the accuracy of the GPS device while documenting coordinates.
• TDCx will display: GPS coordinates, accuracy and altitude.

Where is this feature?
Choose “Tablet Read GPS Editor”
SE Definitions
SE Definitions

Plan and define standard evaluations (SEs) and tasks to use in the study
  • Simpler than importing SEs from file into assessment data editor

Use Tools > 'Build Header, Tasks' to create the SEs and tasks defined in this tab

Multiple rating timings create columns for each timing code
  • Two-column SE F097_C2 times 3 rating timings A1-A3 = 6 total data columns
SE Definitions

1. Display SE Name list
2. Select an SE, can search/filter descriptions
3. Preview assessment columns defined in SE

Can also define tasks on this tab to add to Schedule editor
Repeated Measures
Repeated Measures

Analyze repeated assessments across time

Enhancement

- Powerful statistical analysis which enable the control of factors which cause variability between treatments over time.
- Provides analysis of treatment means over time to determine if there is an overall time effect on the treatments performance.
Define assessments for analysis:

1. Select a column to find potential repeated assessments.
2. ARM proposes fields to match other columns.
3. Diagnose issues with column selection.
4. Or load from history of column matches.
Repeated Measures

Means and comparison letters for:
• Treatments    Rating Dates
• Treatment x Rating Date interaction

Apply correction to adjust for correlation (H-F-L or G-G)

Repeated Measures AOV table
Repeated Measures

Treatment x Time Graph
- Plot treatment means over time.
- Visually identify treatment interaction across assessment dates.
ARM 2018 Changes
Mix Size Calculator

Why use the Mix Size Calculator?
• Eliminates waste
• Predicts mix needed

Enhancement
• Calculate mix size based on current application settings.
• Press the Tool button in Mix Size field to open this dialog.
• Define **overage** so ARM can better auto-calculate product amounts canopy height changes.
Application Plan

What is the Application Plan?

• Displays all fields necessary for mix size and leaf wall area calculations.

Display from:

• Treatments Editor
• Protocol/Site Description Editor
• Spray/Seeding Plan Report
Spatially Balanced Randomization

Why use this randomization?
• For RCB designs, use a randomization optimized to uniformly disperse treatments across the trial.

Enhancement
• Balances average distance between all treatment pairs across replicates.

Where can you find it?
• Trial Map (Quality tab)
Homogeneity of Variance

Levene’s Test
- Is less sensitive to departures from normality than a Bartlett’s test and generally preferred.

Enhancement
- Default option and included as a descriptive statistic on the report.
- Located on the AOV Means Table Report.
Spatial Analysis

• It attempts to recover information about the hidden variables across the field.
AOV Means Table Report

**Trend Analysis**
- Analyze effects across whole field.

**Nearest Neighbor Analysis**
- Analyze effects only in space adjacent to individual plots.

**Automatic**
ARM will select best-performing model
- AIC – estimates relative quality of available models (lower is better).
Enhancement
• Now activate ARM license serial number on your touch-enabled Windows tablet.

How does it work?
• You buy and choose your tablet.
• Install and activate your ARM license on your tablet.
• Transfer current license or purchase a NEW ARM Field license bundle.

Recommended minimum requirements to use TDCx:
- Camera (6+ megapixel)
- GPS
- SD card or micro flash (backup)
- Stylus
- 64+ GB Internal Storage
- 4+ GB RAM
Weather Data Integration

Why do we offer Weather Data Integration?

• Weather analysis explains varying product performance within efficacy trials (year, location).
• Sponsors are requiring it.
• Increased emphasis on developing bio-stimulants, plant health products – highly responsive to weather conditions.
Weather Data Integration
Iteris ClearAg Collaboration

Who did we collaborate with?
• Iteris ClearAg weather and environmental content is now available by subscription to GDM clients

How does it work?
• 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
Daily and 30-Year average:

- Precipitation
- Air Temperature – Min/Max/Average
- Wind speed – Min/Max/Average
- Sunlight (Shortwave Radiation)

Others:

- % Cloud Cover
- Soil Temp – Average
- Soil Moisture – Scaled 0-10cm or 0-200cm
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