Efficient Weed Research Management with ARM 9

See www.gdmdata.com/resources/meetings.htm for presentation copy (Meeting Calendar link on left navigation panel of www.gdmdata.com)

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Gylling Data Management, Inc.
Total ARM User Licenses Over Time

- ARM 1
- ARM 2
- ARM 3
- ARM 4
- ARM 5
- ARM 6
- ARM 7
- ARM 8

ARM 9 Design Objectives

- More user friendly
  e.g. automation and "guides"

- More manageable
  e.g. connect tasks to Outlook

- Better data quality
  e.g. automatic data checking
Treatments Editor

- Color bands also display in non-scrolling region (Trt No. to Treatment Name)

<table>
<thead>
<tr>
<th>Trt Line</th>
<th>Trt No.</th>
<th>Type</th>
<th>Treatment Name</th>
<th>Form Conc</th>
<th>Form Unit</th>
<th>Form Type</th>
<th>Rate</th>
<th>Rate Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>CHK</td>
<td>Untreated Check</td>
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<td>250</td>
<td>G/L</td>
<td>EC</td>
<td>0.5</td>
<td>L/ha</td>
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<td>EC</td>
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<td>L/ha</td>
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<td>G/L</td>
<td>EC</td>
<td>0.5</td>
<td>L/ha</td>
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<td>600</td>
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<td>EC</td>
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<td>L/ha</td>
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<td>6</td>
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<td>FUNG</td>
<td>FUNGOL</td>
<td>200</td>
<td>G/L</td>
<td>SC</td>
<td>1.25</td>
<td>L/ha</td>
</tr>
</tbody>
</table>
Assessments

- Much greater flexibility to link additional related information to an assessment, such as:
  - Digital photograph.
  - “Damaged plot” marker (plot drowned out or treatment was misapplied).
  - Bar code label ID.
  - GPS Coordinates.
  - Comment.

- Enter dates as assessment values
Assessment Data Images

- Enhanced for defining multiple images per plot
  - Specify number of images per plot when subsamples are defined
Assessment Data Images

- Example of 2 images for plot 101 col. 6
Assessment Data Images

- More ‘Rename images’ choices
Assessment Data Images

- View data images grouped by treatment

March 2013
Assessment Data Editor (8.5.0+)

- When cursor is in a calculated column, column heading of source column(s) are highlighted (like Excel formulas)

- Calculated columns also identified
Experimental “Plot” Unit ID

- Expanded flexibility to describe an experimental “plot” unit:
  - Plot ID (number) that is number or text e.g. A1
  - Globally unique plot ID assigned centrally by corporate headquarters
  - Permanent ID (bar code, RFID tag, or tree ID)
  - GPS boundaries of experimental unit
  - Database Globally Unique ID (e.g. Microsoft GUID)
Use WSSA Weed Codes

- Default weed code list is based on EPPO plant list (formerly from Bayer)
  - EPPO = European Plant Protection Org.
  - Includes weeds for essentially all countries
  - Expansion of Bayer code dictionary

- Select Utilities – “Use WSSA Weed Codes and Names in G-All7” to instead use WSSA weed codes
Assessment Map

- Assessment Description tab selects data header fields to describe each column on map and map report.
Trial Map Enhancements

Check/Ref (read from Settings)

Color palette
Trial Map Enhancements

Outside border plots

Numbering

Define custom palette

March 2013
Trial Map Enhancements

- Click-and-drag to move objects.
- Define color to use for each treatment.
- Zoom in/out.
- Auto-fit trial map dialog to current map size and shape.
- Save trial map dialog size and zoom level in each trial.
Trial Map Enhancements

- Special colors to identify check and reference treatments - map and graph
- Treatment color selection palette of 999 unique color + symbol combinations
- Border plot options on right-click menu
Tasks

- Re-designed Schedule Tasks editor
Tasks

- Schedule tasks relative to:
  - Fixed date
  - Application Date
  - Emergence Date
  - Planting Date
Tasks

- Relative tasks adjust to date changes
  - Initial planned dates:

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Timing</th>
<th>-</th>
<th>Planned</th>
<th>+</th>
<th>Completed</th>
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</thead>
<tbody>
<tr>
<td>Treatment application - for A</td>
<td>First application - Regrowth</td>
<td>04/15/13</td>
<td></td>
<td>04/15/13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessment - for 1</td>
<td>% control and phyto assessment</td>
<td>7 Days After A</td>
<td></td>
<td>04/22/13</td>
<td></td>
<td></td>
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<tr>
<td>Assessment - for 2</td>
<td>% control and phyto assessment</td>
<td>14 Days After A</td>
<td></td>
<td>04/29/13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessment - for 3</td>
<td>% control and phyto assessment</td>
<td>21 Days After A</td>
<td></td>
<td>05/06/13</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Revised plan after application is made:

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
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<th>-</th>
<th>Planned</th>
<th>+</th>
<th>Completed</th>
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</thead>
<tbody>
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<td>Treatment application - for A</td>
<td>First application - Regrowth</td>
<td>04/15/13</td>
<td></td>
<td>04/15/13</td>
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<tr>
<td>Assessment - for 1</td>
<td>% control and phyto assessment</td>
<td>7 Days After A</td>
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<td>04/27/13</td>
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<tr>
<td>Assessment - for 2</td>
<td>% control and phyto assessment</td>
<td>14 Days After A</td>
<td></td>
<td>05/04/13</td>
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<td></td>
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<tr>
<td>Assessment - for 3</td>
<td>% control and phyto assessment</td>
<td>21 Days After A</td>
<td></td>
<td>05/11/13</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Tasks

- Display tasks on Master Calendar
Tasks

- Create Outlook appointments from tasks

![Schedule Tasks dialog box with details on creating Outlook appointments from tasks.

- Type: Treatment application - for Appl Code:
- Timing: Date: 04/15/13
- Properties: Total hours: 5.25
- Outlook: Profile name:
- Password:
- Calendar name:
- Create Appointments button

Table showing completed tasks with types like Treatment application, Assessment - for 1, Assessment - for 2, Assessment - for 3.
Linked Outlook Appointments

- Changes to scheduled task dates in ARM are automatically applied to linked Outlook tasks when trial is saved.

- Changes made by moving ARM-linked Outlook appointments are copied back to tasks in ARM trial the next time that trial is opened in ARM.
Attachments

- Attachments editor is an index of photos, documents, other related files.

- To attach:
  - Drag-and-drop files from Windows Explorer
  - Select “Attach” button on editor, then browse to file to link
  - Paste image into rich text field such as Comments or Conclusions

March 2013
Images/photos of assessments should be attached in Assessment Data editor:

- Click into relevant plot and data column
- Select Attach button on Properties panel
- Select image in Open dialog
- Confirm position on Image Import Preview
- Select image file rename options to clearly identify trial and plot linkage
Creator Views to Simplify/Tailor

Create saved editor views hide unused editor fields (simplify editor screens).

1. To hide un-needed fields either:
   - Clear checkboxes on View Options dialog for the editor.
   - Right-click and Hide Field on editor itself.
   - Fill desired fields, then use "Hide empty fields" view.
Editor Views to Simplify/Tailor

2. On View Options dialog for the editor select "Save View" button

3. Assign a useful name: "My view", "Turf view", "Cereals", etc.
   ■ Also use views to select site description, assessment header, and treatment fields to print on reports
Create Protocol – Design tab

- Define number of treatments in single-factor protocols in Design tab of Settings dialog
- Treatments editor is pre-filled
Create Protocol – Design tab

- Define number of levels per factor
- Treatments editor is pre-filled
Create Trial - Merge Factor to

- New Settings option to define auto-merge actions for combining factors when creating a multi-factor trial (e.g. copying rates or growth stages to factor that defines tested products)
Create Trial - Merge Factor to

- These protocol treatments:

<table>
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<th>Form Conc</th>
<th>Form Unit</th>
<th>Form Type</th>
<th>Rate</th>
<th>Rate Unit</th>
<th>Growth Stage</th>
<th>Appl Code</th>
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<tbody>
<tr>
<td>1</td>
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<td></td>
<td>Start of Factor A (Herbicide)</td>
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<td></td>
<td>Start of Factor B (Rate)</td>
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<tr>
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<td>7</td>
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<td>Start of Factor C (Stage)</td>
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Create Trial - Merge Factor to

Result in these trial treatments

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</tr>
</tbody>
</table>
Study Rule Required and Recommended Field Colors (8.5.0+)

- Required = pink background:
  - Latitude of LL Corner °:
  - Longitude of LL Corner °:

- Recommended = blue background:
  - Overall Moisture Conditions:
Study List

- Use study list as the ARM desktop when current study is closed
- More study list entry fields, to give more flexible filters and sorts
- Easier filtering method to locate ARM studies that meet desired criteria
Study List as ARM desktop
Study List

- Enter ‘filters’ to find desired studies
- Tutorial mode shows only studies in Tutorial folder, for ARM and ST
Find Trials using Study List

- How to find trials with treatment(s), crop(s), and weed(s) of interest:
  1. Display only trials
  2. Display unique treatment names
Find Trials using Study List

3. Select trials with desired treatment(s)

4. Identify desired crop(s)
Find Trials using Study List

3. Identify desired weed(s)

4. Open matching trials from grid
Export Assessment Data

- File - Export - Data Export
- Create file to open in other programs
- Settings to analyze with SAS, R, etc.
Export Assessment Data

- Settings to graph means of treatments