


Verification of data calculations in ARM software

Version tested: ARM 2024

SOP Effective Date: 20 March 2024

Date	SOP Version	SOP Author	Signature
20 March 2024	9	Matt Elsinger	

1. Objective

To verify that ARM calculations on a client installation match the calculations obtained and validated by GDM when this verification SOP was defined, as identified by the report date and ARM version listed on page heading of **Verification.pdf** report.

2. Procedure

1. In ARM, open trial **Verification.dat0**.
2. Go to File > Print Reports.
3. Select the [More sets] option in the *Available sets* Window. Select **Verification.set** and press [Ok] button.
4. Click the [Next] button, and select the [Adobe PDF] button to print the report to pdf.
5. Check that calculations on your PC match those included on **Verification.pdf**:
 - Print page 2 of the current standard operating procedure (this document).
 - Fill out the first table with name and ARM version information.
 - Check the data, and record values in the second table, as displayed on your screen.
 - Compare observed values with the listed theoretical values.
 - Date and sign the report sheet for archiving.

Contact information:

In case of question, please contact

Matt Elsinger - GDM Solutions - GDM.ARM.Support@gdmdata.com - +1 605-692-4021

3. Data verification

Date:	
Responsible:	
ARM revision number: (Information available in Help About ARM)	
ARM revision date:	
Serial number:	
GDM ID Code:	

	Item	Reference value	Observed value
1	Quantity of Treatment 2 – 1 application	6.074 g/mx	
2	Quantity of Treatment 4 – 1 application	5.375 g/mx	
3	Quantity of Treatment 5 – Adjuvant – 1 application	23.65 g/mx	
4	Total quantity of product TUB – 3 applications + overage	40.313 ml	
5	Treatment 2 – Mean of Column 4	57.982	
6	Treatment 3 – Minimum value - Column 4	52.174	
7	Treatment 4 – Standard Deviation - Column 4	10.388	
8	Treatment 4 – Abbott's transformation – Column 8	85.108	
9	CV calculation – Column 8	10.36	
10	Yield calculation – Treatment 1 – Column 12 – Plot 104	86.176	

Comments:

.....

.....

Name:

Signature:

4. Calculations

1. Treatment 2 – Liquid product - Quantity for one application – based on mix size (mx)

$$\left(2.15 \frac{L}{mx} * 0.5 \frac{L}{ha} * 1.13 \frac{g}{ml} * 10^3 \frac{ml}{L}\right) / 200 \frac{L}{ha} = 6.074 \frac{g}{mx}$$

2. Treatment 4 – Solid product - Quantity for one application – based on mix size (mx)

$$\left(2.15 \frac{L}{mx} * 0.5 \frac{kg}{ha} * 10^3 \frac{g}{kg}\right) / 200 \frac{L}{ha} = 5.375 \frac{g}{mx}$$

3. Treatment 5 – Liquid product - Adjuvant in % volume - Quantity for one application – based on mix size (mx)

$$2.15 \frac{L}{mx} * 1 \% * 1.10 \frac{g}{ml} * 10^3 \frac{ml}{L} = 23.65 \frac{g}{mx}$$

4. Total quantity of Treatment 3 - TUB – 3 applications + overage of 25 %

$$\left(\left(2.15 \frac{L}{mx} * 1 \frac{L}{ha} * 10^3 \frac{ml}{L}\right) / 200 \frac{L}{ha}\right) * 3 mx \text{ applications} * 1.25 = 40.313 ml$$

5. Treatment 2 – Mean of Column 4

$$\frac{(74.000 + 80.488 + 15.217 + 62.222)}{4} = 57.982$$

6. Treatment 3 – Minimum value - Column 4

$$\text{Min} (54.00; 73.171; 52.174; 88.889) = 52.174$$

7. Treatment 4 – Standard Deviation - Column 4

$$\sqrt{\frac{((72.000-59.518)^2+(58.537-59.518)^2+(60.870-59.518)^2+(46.667-59.518)^2)}{(4-1)}} \\ = 10.388$$

8. Treatment 4 – Abbott's transformation – Column 8

$$\left(1 - \left(\frac{\left(\frac{1.96}{10.23}\right) + \left(\frac{2.20}{13.85}\right) + \left(\frac{0.31}{16.25}\right) + \left(\frac{4.91}{21.71}\right)}{4}\right)\right) * 100 = 85.108$$

9. CV calculation – Column 8 (= Standard deviation/ Grand Mean in percent)

$$\frac{8.9006}{85.89} * 100 = 10.36$$

10. Yield calculation – Treatment 1 – Column 12 – Plot 104

$$\left(8.25 \frac{kg}{plot} * \frac{1 plot}{(1.1 * 9)m^2} * \frac{10^4 m^2}{ha} * \frac{10^{-2} deciton}{kg}\right) * \left(\frac{(100 - 12.1)}{(100 - 15)}\right) = 86.176 \frac{decton}{ha}$$