



Dec-27-2021 (Verification)

ARM 2022.0 Spray/Seeding Plan Page 1 of 10

GDM Solutions, Inc.**An assessment of the efficacy of TUB and other fungicides for the control of Septoria Diseases in Winter wheat**

Title No. 2:
 Trial ID: Verification Location: Gembloux Trial Year: 2013
 Protocol ID: Verification_1 Investigator (Creator): Matthew Elsinger
 Project ID: Study Director: R.E. Cearch
 Official Trial ID: Sponsor Contact:

Reps: 4 Plots: 2.5 by 10 meters
 Appl. Amount: 200 L/ha Mix Size: 2.15 L (total for 4 plots; minimum=2 L, overage=150 mL)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Form Specific Gravity	Rate Unit	Appl Code	Appl Amount	Appl Unit	Mix Amount	Mix Unit	Amt Product to Measure	Rep 1	Rep 2	Rep 3	Rep 4
1	Untreated Check						ABC						104		301	403
2	ERO	200 G	A/L	SL	1.13	0.5 l/ha	ABC	200 L	L/HA	2.15 L		6.074 g/mx	104	1	304	402
3	TUB	250 G	/L	EC		1 l/ha	ABC	200 L	L/HA			10.75 mL/mx	101		302	405
4	ZIRAMO	760 G	A/KG	WG		0.5 kg/ha	ABC	200 L	L/HA			5.375 g/mx	105	202	305	401
5	MICO 60	600 G	/L	EC		0.6 l/100 l	AB	200 L	L/HA			12.9 mL/mx	102		303	404
	STIC 2000	100 %	V/V	EW	1.1	1 % v/v	AB	200 L	L/HA	2.15 L		23.65 g/mx		3		

Sort Order: Treatment

**GDM Solutions, Inc.****An assessment of the efficacy of TUB and other fungicides for the control of Septoria Diseases in Winter wheat**

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Trt #	Equation ID	Calculated Amount
2	prod/area $2.15 * 0.5 * 1000 * (10000 / 10000) / 200 * 1.13$	6.074 g/mx
3	prod/area $2.15 * 1 * 1000 * (10000 / 10000) / 200$	10.75 mL/mx
4	prod/area $2.15 * 0.5 * 1000 * (10000 / 10000) / 200$	5.375 g/mx
5	/100 gal-L $2.15 * 0.6 * 1000 / (200 * (100 / 200)) / 1$	12.9 mL/mx
5	percent $2.15 * 1 * 10 * 1.1$	23.65 g/mx

Product quantities required for listed treatments and applications of trials included in this table:

Amount*	Unit	Treatment Name	Form Conc	Form Unit	Form Type	Lot Code
20.156	mL	ERO	200	GA/L	SL	
40.313	mL		250	GA/L	EC	
20.156	g	ZIRAZ	760	GA/KG	WG	
32.250	mL	MICO 60	600	GA/L	EC	
53.750	mL	STIC 2000	100	%/V/V	EW	

* 'Per area' calculations based on application amount= 200 L/HA, mix size= 2.15 L (mix size basis).

* Product amount calculations increased 25 % for overage adjustment.

* 'Per volume' calculations use spray volume= 200 L/HA, mix size= 2.15 L.

* Adjusted for multiple applications in treatment list.

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Title No. 2:		Trial ID: Verification		Location: Gembloux		Trial Year: 2013	
Protocol ID: Verification_1		Investigator (Creator): Matthew Elsinger		Study Director: R.E. Cearch			
Project ID:		Official Trial ID:		Sponsor Contact:			
Pest Type				D, Disease	D, Disease	D, Disease	D, Disease
Pest Code				SEPTTR	SEPTTR	SEPTTR	SEPTTR
Pest Scientific Name				Zymoseptoria tr>	Zymoseptoria tr>	Zymoseptoria tr>	Zymoseptoria tr>
Pest Name				Speckled leaf b>	Speckled leaf b>	Speckled leaf b>	Speckled leaf b>
Crop Type, Code		C, TRZAW	C, TRZAW	C, TRZAW	C, TRZAW	C, TRZAW	C, TRZAW
BBCH Scale		BCER	BCER	BCER	BCER	BCER	BCER
Crop Scientific Name		Triticum aestiv>	Triticum aestiv>	Triticum aestiv>	Triticum aestiv>	Triticum aestiv>	Triticum aestiv>
Crop Name		Winter wheat	Winter wheat	Winter wheat	Winter wheat	Winter wheat	Winter wheat
Rating Date		May-1-2013	May-1-2013	May-13-2013	May-13-2013	Jun-18-2013	Jun-18-2013
Part Rated		LEAF, C	PLANT, C	LEAF3, P	LEAF3, P	LEAF3, P	LEAF3, P
Rating Type		PHYGEN	VIGOR	PESSE V	PESSE V	PESSE V	PESSE V
Rating Unit/Min/Max		% , 0, 100	% , 0, 100	% , 0, 100	%UNCK, -, -	% , 0, 100	%UNCK, -, -
Sample Size				10 LEAF	10 LEAF	10 LEAF	10 LEAF
Reporting Basis							
Number of Subsamples		1	1	10	1	10	1
Crop Stage Scale				BBCH	BBCH	BBCH	BBCH
Crop Stage Majority/Min/Max				32, -, -	32, -, -	59, -, -	59, -, -
Pest Density				4.42 %	4.42 %	8.25 %	8.25 %
Footnote Number							
Rating Timing				1	1	2	2
Days After First/Last Applic.		16, 16	16, 16	28, 28	28, 28	64, 15	64, 15
Trt-Eval Interval		16 D-A-A	16 D-A-A	28 D-A-A	28 D-A-A	15 D-A-B	15 D-A-B
Plant-E val Interval		213 DP-1	213 DP-1	225 DP-1	225 DP-1	261 DP-1	261 DP-1
ARM Action Codes					TAB[3] EC		TAB[5] EC
Number of Decimals				2	3	2	3
Trt Treatment	Rate	Appl					
No. Name	Rate Unit	Code					
1 Untreated Check		ABC	1	2	3	4	5
			0.0 a	100.0 a	4.55 a	0.000	8.25 a
			0.0 Min	100.0 Min	0.00 Min	0.000 Min	0.00 Min
			0.0 Max	100.0 Max	12.00 Max	0.000 Max	15.00 Max
			0.0 StDev	0.0 StDev	3.81 StDev	0.000 StDev	3.93 StDev
2 ERO	0.5 l/ha	ABC	0.0 a	100.0 a	57.982 a	1.83 b	71.651 a
			0.0 Min	100.0 Min	0.00 Min	0.00 Min	36.175 Min
			0.0 Max	100.0 Max	12.00 Max	7.00 Max	90.398 Max
			0.0 StDev	0.0 StDev	2.80 StDev	1.95 StDev	24.392 StDev
3 TUB	1 l/ha	ABC	0.0 a	100.0 a	67.058 a	1.46 b	80.069 a
			0.0 Min	100.0 Min	0.00 Min	0.00 Min	67.512 Min
			0.0 Max	100.0 Max	6.00 Max	8.00 Max	87.026 Max
			0.0 StDev	0.0 StDev	1.75 StDev	1.67 StDev	8.599 StDev
4 ZRAMO	0.5 kg/ha	ABC	0.0 a	100.0 a	59.518 a	2.30 b	70.596 a
			0.0 Min	100.0 Min	0.00 Min	0.00 Min	50.922 Min
			0.0 Max	100.0 Max	10.00 Max	6.20 Max	90.571 Max
			0.0 StDev	0.0 StDev	2.80 StDev	2.11 StDev	17.002 StDev
5 MICO 60	0.6 l/100 l	AB	0.0 a	100.0 a	39.923 a	1.67 b	71.490 a
STIC 2000	1 % v/v	AB	0.0 Min	100.0 Min	17.073 Min	0.00 Min	21.889 Min
			0.0 Max	100.0 Max	10.00 Max	6.20 Max	94.175 Max
			0.0 StDev	0.0 StDev	2.80 StDev	1.64 StDev	33.355 StDev
LSD P=.05				1.264	33.2297	2.598	21.4619
Standard Deviation			0.00	0.821	20.7739	1.686	13.4172
CV			0.0	32.76	37.02	54.39	18.27
Levene's F			0.00	1.153	0.614	3.29	0.389
Levene's Prob(F)			0.00*	0.37	0.619	0.04*	0.763
Skewness				0.4943	-0.6128	1.8499*	-1.4879*
Kurtosis				-0.8027	0.3826	2.6407*	1.5309
Replicate F			0.000	0.000	0.757	0.625	8.502
Replicate Prob(F)			1.0000	1.0000	0.5394	0.6733	0.0054
Treatment F			0.000	0.000	8.877	1.227	11.778
Treatment Prob(F)			1.0000	1.0000	0.0014	0.3555	0.7318

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Column 4: TAB[3] = Abbott (% of Untreated)[3]

Column 6: TAB[5] = Abbott (% of Untreated)[5]

Column 8: TAB[7] = Abbott (% of Untreated)[7]

**GDM Solutions, Inc.****An assessment of the efficacy of TUB and other fungicides for the control of Septoria Diseases in Winter wheat**

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 Trial ID: Verification Location: Gembloux Trial Year: 2013
 Protocol ID: Verification_1 Investigator (Creator): Matthew Elsinger
 Project ID: Study Director: R.E. Cearch
 Official Trial ID: Sponsor Contact:

Pest Type	D, Disease			D, Disease		D, Disease		
Pest Code	SEPTTR			SEPTTR		ZZYFY		
Pest Scientific Name	Zymoseptoria tr>			Zymoseptoria tr>		Complex of know>		
Pest Name	Speckled leaf b>			Speckled leaf b>		Complex, dif. f>		
Crop Type, Code	C, TRZAW			C, TRZAW		C, TRZAW		C, TRZAW
BBCH Scale	BCER			BCER		BCER		BCER
Crop Scientific Name	Triticum aestiv>			Triticum aestiv>		Triticum aestiv>		Triticum aestiv>
Crop Name	Winter wheat			Winter wheat		Winter wheat		Winter wheat
Rating Date	Jul-2-2013			Jul-2-2013		Jul-15-2013		Aug-7-2013
Part Rated	LEAF2, P			LEAF2, P		LEAGRE, P		GRAIN, C
Rating Type	PESSEV			PESSEV		AREA		YIELD
Rating Unit/Min/Max	%, 0, 100			%UNCK, -, -		%AREA, -, -		KG, -, -
Sample Size	10 LEAF			10 LEAF		5 LEAF		
Reporting Basis								1 PLOT
Number of Subsamples	10			1		5		1
Crop Stage Scale	BBCH			BBCH		BBCH		BBCH
Crop Stage Majority/Min/Max	70, -, -			70, -, -		84, -, -		99, -, -
Pest Density	15.5 %			15.5 %		1.75 %		
Footnote Number						2		
Rating Timing	3			3		4		5
Days After First/Last Applic.	78, 29			78, 29		91, 7		114, 30
Trt-Eval Interval	29 DA-B			29 DA-B		7 DA-C		30 DA-C
Plant-Eval Interval	275 DP-1			275 DP-1		288 DP-1		311 DP-1
ARM Action Codes				TAB[7] EC				
Number of Decimals	2			3		2		2
Trt Treatment No. Name	Rate Unit	Appl Code	7	8	9	10	11	
1 Untreated Check		ABC	15.51 a 8.00 Min 30.50 Max 5.67 StDev	0.000 0.000 Min 0.000 Max 0.000 StDev	2.50 b 0.00 Min 20.00 Max 5.26 StDev	7.55 b 7.10 Min 8.25 Max 0.50 StDev	11.7 a 11.3 Min 12.1 Max 0.3 StDev	
2 ERO	0.5 l/ha	ABC	1.74 b 0.00 Min 6.00 Max 1.52 StDev	88.744 ab 85.337 Min 95.090 Max 4.395 StDev	22.50 ab 0.00 Min 80.00 Max 26.53 StDev	8.20 a 7.75 Min 8.95 Max 0.53 StDev	11.6 a 11.2 Min 12.3 Max 0.5 StDev	
3 TUB	1 l/ha	ABC	0.83 b 0.00 Min 4.30 Max 1.40 StDev	95.616 a 89.544 Min 99.422 Max 4.538 StDev	33.00 a 0.00 Min 90.00 Max 31.81 StDev	8.16 a 7.75 Min 8.70 Max 0.39 StDev	12.2 a 11.4 Min 13.0 Max 0.7 StDev	
4 ZRAMO	0.5 kg/ha	ABC	8 0.00 Min 7.20 Max 2.28 StDev	85.108 ab 77.384 Min 98.092 Max 9.082 StDev	29.00 ab 0.00 Min 80.00 Max 26.98 StDev	8.20 a 7.70 Min 8.50 Max 0.36 StDev	12.1 a 11.7 Min 13.3 Max 0.8 StDev	
5 MICO 60 STIC 2000	0.6 l/100 l 1 % w/v	AB AB	3.88 b 0.00 Min 13.20 Max 3.18 StDev	74.085 b 52.590 Min 90.686 Max 17.218 StDev	17.50 ab 0.00 Min 90.00 Max 25.11 StDev	8.16 a 7.40 Min 9.10 Max 0.80 StDev	12.5 a 11.1 Min 15.0 Max 1.7 StDev	
LSD P=.05			3.146	14.2372	19.666	0.360	1.46	
Standard Deviation			0.242	8.9006	12.765	0.233	0.95	
CV				10.36	61.07	2.9	7.86	
Levene's F			3.444	2.032	1.28	1.126		
Levene's Prob(F)			0.085	0.052	0.141	0.321	0.381	
Skewness			1.7361*	-1.4806*	0.3594	0.1737	2.0681*	
Kurtosis			2.3213*	2.7562*	-1.0412	-0.5835	5.3045*	
Replicate F			4.360	2.287	0.626	22.649	0.945	
Replicate Prob(F)			0.0270	0.1474	0.6121	0.0001	0.4494	
Treatment F			35.175	4.085	3.466	5.873	0.695	
Treatment Prob(F)			0.0001	0.0437	0.0421	0.0074	0.6094	



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 Protocol ID: Verification_1 Investigator (Creator): Matthew Elsinger
 Project ID: Study Director: R.E. Cearch
 Official Trial ID: Sponsor Contact:

Pest Type			
Pest Code			
Pest Scientific Name			
Pest Name			
Crop Type, Code	C, TRZAW	C, TRZAW	
BBCH Scale	BCER	BCER	
Crop Scientific Name	Triticum aestiv>	Triticum aestiv>	
Crop Name	Winter wheat	Winter wheat	
Rating Date	Aug-7-2013	Aug-7-2013	
Part Rated	GRAIN, C	GRAIN, C	
Rating Type	YIELD	YIELD	
Rating Unit/Min/Max	Q-MET, -, -	%UNCK, -, -	
Sample Size	1 HA		
Reporting Basis			
Number of Subsamples	1	1	
Crop Stage Scale	BBCH	BBCH	
Crop Stage Majority/Min/Max	99, -, -	99, -, -	
Pest Density			
Footnote Number	1	1	
Rating Timing	5	5	
Days After First/Last Applic.	114, 30	114, 30	
Trt-Eval Interval	30 DA-C	30 DA-C	
Plant-E val Interval	311 DP-1	311 DP-1	
ARM Action Codes	TY1	@UPOCR	
Number of Decimals	3	2	
Trt Treatment No. Name	Rate Unit	Appl Code	
1 Untreated Check	ABC		
2 ERO	0.5 l/ha ABC		
3 TUB	1 l/ha ABC		
4 ZRAMO	0.5 kg/ha ABC		
5 MICO 60 STIC 2000	0.6 l/100 l AB 1 % v/v AB		
LSD P=.05	3.6576	4.640	
Standard Deviation	2.3740	3.012	
CV	2.82	2.83	
Levene's F	1.362	2.005	
Levene's Prob(F)	0.294	0.145	
Skewness	0.0812	-0.1934	
Kurtosis	-0.6516	-0.872	
Replicate F	20.694	0.803	
Replicate Prob(F)	0.0001	0.5161	
Treatment F	5.587	5.584	
Treatment Prob(F)	0.0089	0.0089	

**GDM Solutions, Inc.****An assessment of the efficacy of TUB and other fungicides for the control of Septoria Diseases in Winter wheat**

Title No. 2:

Trial ID: Verification

Location: Gembloux

Trial Year: 2013

Protocol ID: Verification_1 Investigator (Creator): Matthew Elsinger

Project ID:

Study Director: R.E. Cearch

Official Trial ID:

Sponsor Contact:

Column 9 Footnote: % Green Leaf Area

Column 12: $TY1 = 10.10101 * [C10] * (100 - [C11])^{.85}$

Footnote: Adjusted at 15 % Moisture

Column 13: $@UPOCR = .8100 * @AvgSub([12]) / [TUC12]$

Footnote: Adjusted at 15 % Moisture

Could not calculate LSD (% mean diff) for columns 1,2 because error mean square = 0.

Additional Treatment InformationRate Unit

L/ha = Liters Product per Hectare (US=GAL/A)[T

kg/ha = Kilograms Dry Product per Hectare (US=kg/A)[

L/100 L = Liters Product per 100 Liters Mix (US=GAL/100 GAL)[X

% V/V = Percent, Volume Product per Volume Mix Basis (US=same)[Z



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 Protocol ID: Verification_1 Investigator (Creator): Matthew Elsinger
 Project ID: Study Director: R.E. Cearch
 Official Trial ID: Sponsor Contact:

Pest Type	D, Disease	D, Disease	D, Disease	D, Disease	
Pest Code	SEPTTR	SEPTTR	SEPTTR	ZZYYFY	
Pest Scientific Name	Zymoseptoria tr>	Zymoseptoria tr>	Zymoseptoria tr>	Complex of know>	
Pest Name	Speckled leaf b>	Speckled leaf b>	Speckled leaf b>	Complex, dif. f>	
Crop Type, Code	C, TRZAW	C, TRZAW	C, TRZAW	C, TRZAW	C, TRZAW
BBCH Scale	BCER	BCER	BCER	BCER	BCER
Crop Scientific Name	Triticum aestiv>	Triticum aestiv>	Triticum aestiv>	Triticum aestiv>	Triticum aestiv>
Crop Name	Winter wheat	Winter wheat	Winter wheat	Winter wheat	Winter wheat
Rating Date	Jun-18-2013	Jul-2-2013	Jul-2-2013	Jul-15-2013	Aug-7-2013
Part Rated	LEAF3, P	LEAF2, P	LEAF2, P	LEAGRE, P	GRAIN, C
Rating Type	PESSEV	PESSEV	PESSEV	AREA	YIELD
Rating Unit/Min/Max	%UNCK, -, -	%, 0, 100	%UNCK, -, -	%AREA, -, -	KG, -, -
Sample Size	10 LEAF	10 LEAF	10 LEAF	5 LEAF	1 PLOT
Reporting Basis					
Number of Subsamples	1	10	1	5	1
Crop Stage Scale	BBCH	BBCH	BBCH	BBCH	BBCH
Crop Stage Majority/Min/Max	59, -, -	70, -, -	70, -, -	84, -, -	99, -, -
Pest Density	8.25 %	15.5 %	15.5 %	1.75 %	
Footnote Number				2	
Rating Timing	2	3	3	4	5
Days After First/Last Applic.	64, 15	78, 29	78, 29	91, 7	114, 30
Trt-Eval Interval	15 DA-B	29 DA-B	29 DA-B	7 DA-C	30 DA-C
Plant-Eval Interval	261 DP-1	275 DP-1	275 DP-1	288 DP-1	311 DP-1
ARM Action Codes	TAB[5] EC		TAB[7] EC		
Number of Decimals	3	2	3	2	2
Trt Treatment	Rate	Appl			
No. Name	Rate Unit	Code Plot			
1 Untreated Check	ABC	104			
		203			
		301			
		403			
Mean =		0.000			
2 ERO	0.5 l/ha	ABC			
		103			
		201			
		304			
		402			
Mean =		75.830			
3 TUB	1 l/ha	ABC			
		101			
		205			
		302			
		405			
Mean =		83.001			
4 ZRAMO	0.5 kg/ha	ABC			
		105			
		202			
		305			
		401			
Mean =		90.571			
5 MICO 60	0.6 l/100 l	AB			
STIC 2000	1 % w/v	AB			
		102			
		204			
		303			
		404			
Mean =		85.525			



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Title No. 2:
 Trial ID: Verification Location: Gembloux Trial Year: 2013
 Protocol ID: Verification_1 Investigator (Creator): Matthew Elsingher
 Project ID: Study Director: R.E. Cearch
 Official Trial ID: Sponsor Contact:

Pest Type			
Pest Code			
Pest Scientific Name			
Pest Name			
Crop Type, Code	C, TRZAW	C, TRZAW	C, TRZAW
BBCH Scale	BCER	BCER	BCER
Crop Scientific Name	Triticum aestiv>	Triticum aestiv>	Triticum aestiv>
Crop Name	Winter wheat	Winter wheat	Winter wheat
Rating Date	Aug-7-2013	Aug-7-2013	Aug-7-2013
Part Rated	GRAIN, C	GRAIN, C	GRAIN, C
Rating Type	MOICON	YIELD	YIELD
Rating Unit/Min/Max	% 0, 100	Q-MET, -, -	%UNCK, -, -
Sample Size		1 HA	
Reporting Basis			
Number of Subsamples	1	1	1
Crop Stage Scale	BBCH	BBCH	BBCH
Crop Stage Majority/Min/Max	99, -, -	99, -, -	99, -, -
Pest Density			
Footnote Number		1	1
Rating Timing	5	5	5
Days After First/Last Applic.	114, 30	114, 30	114, 30
Trt-Eval Interval	30 DA-C	30 DA-C	30 DA-C
Plant-Eval Interval	311 DP-1	311 DP-1	311 DP-1
ARM Action Codes		TY1	@UPOCR
Number of Decimals	1	3	2
Trt Treatment			
No. Name	Rate Unit	Code Plot	
1 Untreated Check	ABC	104	
		203	
		301	
		403	
Mean =		11.7	
2 ERO	0.5 l/ha	ABC	103
		201	
		304	
		402	
Mean =		11.6	
3 TUB	1 l/ha	ABC	101
		205	
		302	
		405	
Mean =		12.2	
4 ZRAMO	0.5 kg/ha	ABC	105
		202	
		305	
		401	
Mean =		12.1	
5 MICO 60	0.6 l/100 l	AB	102
STIC 2000	1 % v/v	AB	204
		303	
		404	
Mean =		12.5	

10

12

13

86.176

100.00

100.00

100.00

100.00

100.00

100.00

109.60

108.07

108.90

108.17

108.68

104.37

106.56

109.83

109.28

107.51

103.50

109.24

111.70

108.21

108.16

106.66

114.01

103.76

103.17

106.90



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Location: Gembloux

Trial Year: 2013

Protocol ID: Verification_1 Investigator (Creator): Matthew Elsinger

Project ID:

Study Director: R.E. Cearch

Official Trial ID:

Sponsor Contact:

Additional Treatment Information

Rate Unit

L/ha = Liters Product per Hectare (US=GAL/A)T

kg/ha = Kilograms Dry Product per Hectare (US=kg/A)

L/100 L = Liters Product per 100 Liters Mix (US=GAL/100 GAL)X

% V/V = Percent, Volume Product per Volume Mix Basis (US=same)Z