Spring Wheat Demonstration Trials 2017 Study Plan

Objectives To evaluate the efficacy of biological treatments when compared to standard chemistry and IPM.

Study schedule

Description	Suggested target date
Start of field experiment	April 2017
End of field experiment	Sep 2017
Draft report sent to sponsor	Nov 2017

Test system characterisation

Principal Investigator	Location	Crop / Test System
Eurofins	Cockle Park	Spring Wheat (*Triticum aestivum Spring*) - TRZAS varieties Mulika and willow
Eurofins	Nafferton Site	
Stockbridge Technology Centre	STC, Cawood, York	

Study Conduct

GEP compliance is claimed in respect of this study.

National regulatory guidelines are also followed for the countries involved in the study.

Relevant EPPO guideline(s)		Deviation from EPPO
PP 1/152(4)	Design and analysis of efficacy evaluation trials	Yes
PP 1/181(4)	Conduct and reporting of efficacy evaluation trials	Yes
PP 1/135(4)	Phytotoxicity assessment	No

Experimental Design

Type of study	Field
Variety	Mulika and Willow
Location	Newcastle University sites Nafferton and Cockle Park and STC
Replicates	One
Minimum plot size	3m x 24m Actual plot size to be recorded in the raw data.
Soil characterisation required	Indication of soil type, no laboratory characterisation required Farms to provide information.
Weather data required	Daily for the duration of the trial

Limitation on competing chemistry by the farmer	No fungicides or insecticides
Information on pesticide history required	Current season
Trial Design	Not randomised – See appendix
Destruction of harvest	Crop destruct
Special Requirements	Treatment 1 = IPM (Integrated Pest Management) Treatment 2 = Conventional treatments Treatment 3 = Biological treatments
Total number of plots	2 varieties (paired) 3 treatment regimes One replicate = 6 plots each 3 x 24 m^2

Test Item(s) and Reference Item(s)

Treatment Name*	**Reference Approval Number**	**Active ingredient(s)**	**Content of a.i nominal**	**Formulation type**	**Batch number**	**Crop Destruct**
Chemical fungicide 1	16430	fludioxonil	25g/l	FS	To be recorded	No
Chemical fungicide 2	15238	cyflufenamid	50g/l	EC		No
Chemical fungicide 3	14582	azoxystrobin chlorothalonil	100g/l 500g/l	SC		No
Chemical fungicide 4	14548	chlorothalonil	500g/l	EC		No
Chemical fungicide 5	17109	epoxiconazole fluxapyroxad	62.5g/l 62.5g/l	EC		No
Chemical fungicide 6	14790	prothioconazole	275g/l	EC		No
Botanical biofungicide 1	-	-	-	-		Yes
Microbial biofungicide 1	-	-	-	-		Yes
Botanical bioinsecticide 2	-	-	-	-		No

*Treatment name on request

Application Details

Application volume	Spray volume is fixed, do not vary, check with SD in case of problem
Mode of application	Seed treatment and plot sprayer of appropriate width
Type of nozzle	Select to reflect local practice and select appropriate nozzle ISO size. Nozzle type and size to be recorded in raw data.
Application placement	Broadcast foliar

Drilling details	Record drilling details (rate, depth), equipment used and conditions at drilling in ARM
Special Requirements	Seeds will be received after treatment. ● If a medium to high disease risk 7-10 days after A3 then an additional biopesticides should be applied to the Biological plots. ● Before harvest, desiccate plots with herbicide if necessary – all plots including biological. Discards to be maintained with conventional chemistry, arrange overspray forms before each application. If high insect pressure please consult SD for insecticide options.

Application Schedule

Treatment No.	**Active Ingredient**	**Rate of product**	**Dosage a.i. in g/ha**	**Application Timing**		**Rate / trt made up to 3 L**
				ARM code	**EAS code**	
1	Fludioxonil	2.0 ml/kg	0.025	A	A1	n/a -
	Microbial biofungicide	tbc	-			n/a -
2	Fludioxonil	2.0 ml/kg	0.025	A	A1	n/a -
3	Microbial biofungicide	-	-	A	A1	n/a -
Application timing (letter / number) and spray volume						
A / A1	Seed Treatment			**Spray volume**	n/a	

Treatment No.	**Active ingredient(s)**	**Rate of product/ha**	**Dosage a.i. in g/ha**	**Application Timing**		**Rate / trt made up to 3 L**
				ARM code	**EAS code**	
1	Cyflufenamid	0.35 l	17.5	B	A2	5.25 ml
	Azoxystrobin chlorothalonil	1.0 l	600			15.0 ml
2	Cyflufenamid	0.35 l	17.5	B	A2	5.25 ml
	Azoxystrobin chlorothalonil	1.0 l	600			15.0 ml
3	Botanical biofungicide	-	-	B	A2	XX ml
Application timing (letter / number) and spray volume						
B / A2	GS 29-31 BBCH			**Spray volume**	200 L/ha	

Treatment No.	**Active ingredient(s)**	**Rate of product/ha**	**Dosage a.i. in g/ha**	**Application Timing**	**Rate / trt made up to 3 L**

				ARM code	EAS code	
1	epoxiconazole	1.5 l	187.5	C	A3	22.5 ml
	chlorothalonil	1.0 l	500			15.0 ml
2	epoxiconazole	1.5 l	187.5	C	A3	22.5 ml
	chlorothalonil	1.0 l	500			15.0 ml
3	Botanical biofungicide	-	-	C	A3	XX ml
Application timing (letter / number) and spray volume						
C / A3	GS 37-39 BBCH			**Spray volume**	200 L/ha	

Treatment No.	**Product / Formulation**	**Rate of product/ha**	**Dosage a.i. in g/ha**	**Application Timing**		**Rate / trt made up to 3 L**
				ARM code	**EAS code**	
1-2	Untreated	- -	-	-	-	- -
3	Microbial biofungicide	-	-	D	A4	XX ml
Application timing (letter / number) and spray volume						
D / A4	7+-1DAA3 (optional if high disease risk)			**Spray volume**	200 L/ha	

Treatment No.	**Product / Formulation**	**Rate of product/ha**	**Dosage a.i. in g/ha**	**Application Timing**		**Rate / trt made up to 3 L**
				ARM code	**EAS code**	
1-2	Untreated	- -	-	-	-	- -
3	Botanical biofungicide	-	-	E	A5	XX ml
Application timing (letter / number) and spray volume						
E / A5	GS 55-59 BBCH			**Spray volume**	200 L/ha	

Treatment No.	**Product / Formulation**	**Rate of product/ha**	**Dosage a.i. in g/ha**	**Application Timing**		**Rate / trt made up to 3 L**
				ARM code	**EAS code**	
1	Microbial biofungicide	-	-	F	A6	XX ml
2	Proline 275	0.72 l	198	F	A6	10.8 ml
3	Botanical biofungicide	-	-	F	A6	XX ml
Application timing (letter / number) and spray volume						

F / A6	GS 63-65 BBCH	**Spray volume**	200 L/ha

Visit Schedule

Visit timing	Activity code	Application timing (Stage / Description)	Evaluation Description [a]	Evaluation Timing (Stage / Description)
1	A / A1	Seed treatment	-	-
2	EV1	-	1	Emergence
3	B / A2	GS 29-31	-	-
4	EV2	-	2, 3 and 4	7-10DAA2
5	C / A3	GS 39	-	-
6	D / A4	7+-1DAA3 (optional)	-	-
7	EV3	-	2, 3 and 4	7-10DAA3
8	E / A5	GS 55-59	-	-
9	EV4	-	2, 3 and 4	7-10DAA5 / GS 63-65
10	F / A6	GS 63-65	-	-
11	EV5	-	5	GS 79-83
12	EV6	-	6 and 7	NCH

[a] See Evaluation table below for description

Evaluations

Evaluation No.	Evaluation Description	EAS SE code
1	Count the number of plants emerged in 4 x 0.25m2 (0.5m x 0.5m) marked quadrats/plot; place the quadrats parallel to the rows. (Ensuring that the number of rows in each area quadrat is the same). Record the number of rows in the quadrat and the distance between the rows, to allow calculation of the plant population/m2	B04 Emergence SQM
2	Phytotoxicity as % of total leaf area affected by chlorosis and / or necrosis. Record any other symptom or plot differences observed using a scale appropriate to symptom	A01 General Phyto % A02 Chlorosis % A03 Necrosis %
3	Crop vigour on a 0-100 linear scale, where 0 = no crop and 100 = the most vigorous plot within each replicate	A08 Vigour 0-100
4	Estimate the mean % area of specified leaves affected by individual diseases, on an overall plot basis, derived from a minimum of 4 points per plot	H01 Disease severity
5	Estimate the mean % green leaf area of specified leaves on an overall plot basis, derived from a minimum of 4 points per plot	H03 Green leaf area
6	Assess yield by harvesting the central 1.5-2m wide strip from each plot and weighing the seed. Sample approximately 1kg of seed from each plot. As soon as possible after harvest, determine moisture content, record the thousand grain/seed weight and hectolitre weight	C01 Grain yield C02 Grain moisture C04 TGW C03 HLW

Special Requirements

- Take 1 or 2 photos at 1 or 2 relevant timings to illustrate visual differences between plots (efficacy or crop safety) and upload to eSM. If no differences are observed, upload a general trial view at a relevant timing.
- Record in ARM file any comments on observed effect on the incidence of other pests or other non-target organisms.

Raw Data and Supporting Documentation

The study raw data and supporting documentation will be recorded.

The raw data and supporting documentation to be recorded during the conduct of the study will include (but not necessarily be limited to);

- Trial plan(s) and location map(s) or GPS data for each site, and procedure(s) for relocation
- Test system characterisation details, if appropriate
- Test (and reference) item dose preparation documentation
- Permit to apply unregistered test item, if appropriate
- Application details for each application
- A summary of any results obtained, with statistical analysis, if appropriate
- Study amendments, deviations and notes to file

Data Handling

- Data to be analysed using Analysis of Variance, with an appropriate multiple range comparison test

Reporting

The study will be reported using 1 report per trial. A copy of the final report and the study data along with any other relevant study information will be dispatched to the Sponsor in accordance with the Study Schedule.

Plot Layout