



UK Grapevine disease management overview

Disease management is a persistent issue in wine grape growing. The three most economically damaging diseases are powdery mildew, downy mildew and botrytis. At present, disease control is reliant on conventional chemical fungicides, however, these programmes are expensive, ecologically damaging and are experiencing an increase in resistance to key active ingredients.

Biopesticide use is yet to be widely adopted in the sector – but by using them we’ve delivered a high level of broad-spectrum control, whilst also being environmentally sustainable, low-cost and free of the risk of resistance. Commercially too, the use of biopesticides is aligned with the demands of consumers, who appreciate wines produced to a high environmental standard.

.....

Fargro’s ecological spray programme outline

Our programme combines three biopesticides (Taegro, Romeo, SB Plant Invigorator).



‘The spray programme was easy to apply and achieved a high level of control of powdery mildew, downy mildew and botrytis. We lost significantly less than 1% of bunches to disease.’

ADAM FODEN
GROWER, GUSBORNE



Modes of Action

Taegro

Bacillus amyloliquefaciens
strain FZB24

Bacteria colonises the plant surface and secretes anti-fungal compounds to inhibit establishment of spores

Romeo

Cerevisane
(denatured brewers yeast)

Denatured yeast cells are recognised as fungus by the plant and elicit natural plant anti-pathogen defences

SB Plant Invigorator

Mix of ecologically friendly and phyto-safe surfactants

Degrades fungal hyphae and spores

How does it work?

Starting at BBCH 53 (inflorescence emerging), Taegro is used first to establish a protective population of bacteria on the plant surfaces. This is then alternated weekly with Romeo to prolong the efficacy until the next Taegro application. SB Plant Invigorator is used throughout the spray programme, both for its physical mode of action against powdery mildew, to facilitate physical compatibility, and to help with Taegro establishment on the leaf.

Once BBCH 85 (softening of the berries) is reached, Taegro and Romeo are applied together to give strong protection of the grapes as harvest approaches. This is due to increased risk of botrytis when sugar levels are high.

.....

Benefits of Programme

- Lower cost than conventional programmes
- Application is easy and practical
- No chemical residues on product
- No damage to environment and beneficial soil life
- No exposure of staff to chemical pesticides
- Biopesticides that work with natural plant defences increase levels of desired polyphenols

Product overview

PRODUCT	ACTIVE INGREDIENT	MAX. NO. APPLICATIONS	RATE	HARVEST INTERVAL
Taegro	<i>Bacillus amyloliquefaciens</i> strain FZB24	10	0.37kg/ha	1 day
Romeo	Cerevisane (denatured brewers yeast)	10	0.25kg/ha	1 day
SB Plant Invigorator	Mix of ecologically friendly and phyto-safe surfactants	N/A	1ml/l	N/A

Template Spray Schedule

START: BBCH 53 (inflorescence emerging)				
SPRAY PROGRAMME WEEK	TAEGR0	ROME0	SB PLANT INVIGORATOR	DISEASE RISK
1	●		●	Downy mildew and powdery mildew risk period
2		●	●	
3	●		●	
4		●	●	
5	●		●	
6		●	●	
7	●		●	
8		●	●	
9	●		●	
10		●	●	
11	●		●	
12		●	●	
13	●		●	
...	Continue with programme until BBCH 85 (softening of the berries)			
14	●	●	●	Botrytis risk period
15	●	●	●	
...	Use Romeo and Taegro together between BBCH 85 and harvest			
Harvest	-	-	-	

Notes:

- Apply in tank mix and always add SB Plant Invigorator first
- For best results apply in late afternoon/evening
- Amount of applications is liable to change depending on development of crop
- Programme can be extended should harvest dates change – please be conscious of harvest intervals and application limits on production labels

THE PROGRAMME IN PRACTICE

Gusbourne - Sussex Site
Selhurst Park, Halnaker,
Chichester, PO18 0LZ

Application area

0.3ha split evenly across two adjacent fields, 75m elevation, west facing

Crop

Grapevine, variety: Chardonnay

Target

- Powdery mildew (*Erysiphe necator*)
- Downy mildew (*Plasmopara viticola*)
- Botrytis (*Botrytis cinerea*)

Application type

Boom spray (tractor mounted)

Spray start date

Week commencing 26.06.2023

Harvest

Week commencing 02.10.23

Water Rate

500L/ha

Notes:

- Apply in tank mix and always add SB Plant Invigorator first
- For best results apply in late afternoon/ evening
- Programme can be extended should harvest dates change – please be conscious of harvest intervals and application limits on production labels
- A biostimulant containing Ascophyllum nodosum and amino acids was also applied with each weekly application



Gusbourne Spray Schedule 2023

WEEK COMMENCING	SPRAY PROGRAMME WEEK	TAEGR0	ROME0	SB PLANT INVIGORATOR
26 June 2023	1	●		●
03 July 2023	2		●	●
10 July 2023	3	●		●
17 July 2023	4		●	●
24 July 2023	5	●		●
31 July 2023	6		●	●
07 August 2023	7	●		●
14 August 2023	8		●	●
21 August 2023	9	●		●
28 August 2023	10		●	●
04 September 2023	11	●		●
11 September 2023	12		●	●
18 September 2023	13	●		●
25 September 2023	14	●	●	●
02 October 2023	Harvest	-	-	-

THE PROGRAMME IN PRACTICE

Gusbourne - Sussex Site
Selhurst Park, Halnaker,
Chichester, PO18 0LZ

Powdery mildew pressure:

MEDIUM

The hot, humid, but dry start and end to the season encouraged powdery mildew but the heavy rainfall in July and August restricted its propagation in the middle months. The site has a history of susceptibility to the disease.

Downy mildew pressure:

HIGH

The very wet conditions and mild temperatures in July and August provided optimal conditions for the propagation and infection of the vines with downy mildew.

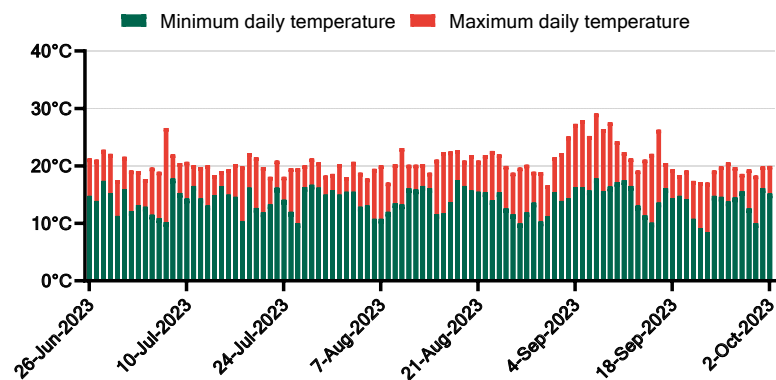
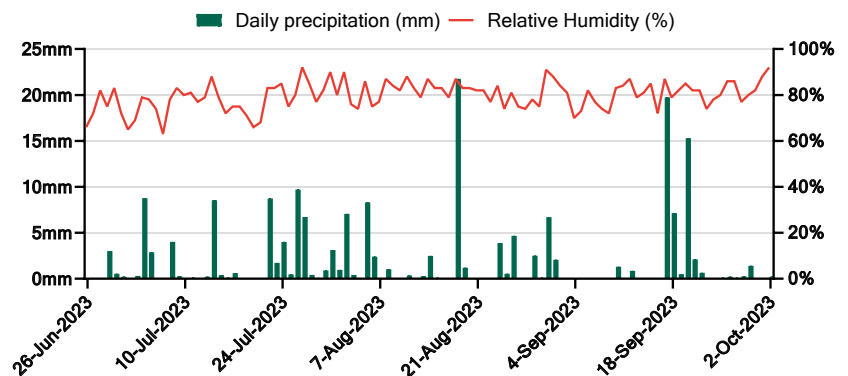
Botrytis pressure:

LOW

The warm temperatures and dryness during veraison and harvest suppressed the infection and spread of *Botrytis*.

Disease Pressure

The growing season started with high spring temperatures, but this gave way to an exceptionally mild and wet July and August before a hot and dry September and start of October.



THE PROGRAMME IN PRACTICE

Gusbourne - Sussex Site
Selhurst Park, Halnaker,
Chichester, PO18 0LZ

‘The spray programme was easy to apply and achieved a high level of control of powdery mildew, downy mildew and botrytis. We lost significantly less than 1% of bunches to disease.’

ADAM FODEN
GROWER, GUSBOURNE

Results

Exceptionally high levels of control were achieved for all three diseases. The programme performed equally as well as the conventional chemical programme in adjacent rows and blocks.

CONTROL LEVEL 99.6% of bunches harvested
(0.4% loss to pests, disease and cultural issues combined)

Costings

PRODUCT	RATES	COSTINGS
Taegro	8 applications at 0.37kg/ha	£755/ha ex VAT
Romeo	7 applications at 0.25kg/ha	£123/ha ex VAT
SB Plant Invigorator	14 applications at 0.5L/ha	£218/ha ex VAT

Costs based on 2023 RRP prices

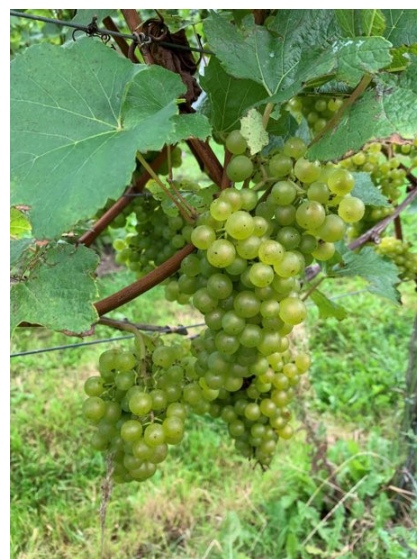
Total
£1,095/ha
ex VAT



End of July – clean foliage observed with little sign of powdery or downy mildew despite pressure from conditions



End of August – Disease free developing bunches



End of September – Clean bunches ready for harvest