



Achieve an exceptionally high level of control with low-cost and environmentally friendly products

Programme overview

Outline

Disease management is a persistent issue for protected ornamental production – with the wide variety of plants grown meaning that a whole range of diseases must be managed to avoid damage to the crop.

Biopesticides, with their biological modes of action, are the perfect products for achieving control of disease as they harness natural plant defence processes to deliver exceptionally broad-spectrum protection. This level of control is achieved whilst limiting exposure of operators to hazardous chemicals and without risking any damage to the environment. However, only a correctly nourished plant is able to effectively undertake these processes, and so it's vital to ensure that fertilisation works in tandem with any of these products.

This programme will explain how you can utilise a combination of biopesticides that complement one another to achieve control over disease.

Products

Romeo

Active Ingredient: Cerevisane (denatured brewers yeast).

Mode of Action: Denatured yeast cells are recognised as fungus by the plant and elicit natural plant anti-pathogen defences.

Taegro

Active Ingredient: *Bacillus amyloliquefaciens* strain FZB24

Mode of Action: Bacteria colonises plant surface and secretes anti-fungal compounds to inhibit establishment of fungal spores.

SB Plant Invigorator

Contains: Mix of ecologically friendly and phyto-safe surfactants

Mode of Action: Surfactants will degrade fungal hyphae and spores

How does it work?

This programme is preventative and so must be started before symptoms of disease are present.

For the first round of spraying, Taegro and SB Plant invigorator are used in a tank mix. SB Plant invigorator will create clean plant surfaces that the *Bacillus* bacteria in Taegro is able to establish a population on. This population will provide a protective barrier for the plant to combat disease.

For the second round of spraying, Romeo is used. The degraded yeasts in Romeo will simulate a pathogen attack – causing the plant to upregulate its natural defences to improve its resilience to disease. These changes include alterations to leaf structure and secretion of metabolites, which enable improved establishment of the *Bacillus* bacteria in Taegro – prolonging the efficacy of each application.

These two rounds of sprays should be repeated with a spray either each week, if during a high disease risk period, or each fortnight, if during a lower disease risk period.

These biopesticides operate on natural processes and so require daytime temperatures of at least 15°C in the growing facility to be effective and this efficacy is greatly enhanced by correct fertilisation.

Efficacy is not guaranteed if cultural controls are inadequate – including fertilisation. The programme has been tested on a variety of crops but there may be some crops which do not respond as expected.

If an infection of disease develops then use an approved curative fungicide and then return to the spray programme.

Spray Programme

Product overview

| PRODUCT | ACTIVE INGREDIENT | LEGAL NO.APPLICATIONS | RATE |
|--------------------------|--|-----------------------|-----------|
| Taegro MAPP Number 19204 | <i>Bacillus amyloliquefaciens</i> strain FZB24 | 10 | 0.37kg/ha |
| Romeo MAPP Number 19170 | Cerevisane (denatured brewers yeast) | 8 | 0.75kg/ha |

| PRODUCT | CONTAINS | LEGAL NO.APPLICATIONS | RATE |
|-----------------------|------------------------------|-----------------------|-------|
| SB Plant Invigorator* | Mix of phytosafe surfactants | N/A | 1L/ha |

Romeo EAMU 20211455

Taegro EAMU 20222404

*Assumed water rate of 1000L/ha

Template spray schedule

High Disease Pressure Spray Schedule

| SPRAY PROGRAMME WEEK | TAEGRO | SB PLANT INVIGORATOR | ROMEIO |
|----------------------|----------|----------------------|--------|
| 1 | ● | ● | |
| 2 | | | ● |
| 3 | ● | ● | |
| 4 | | | ● |
| 5 | ● | ● | |
| 6 | | | ● |
| 7 | ● | ● | |
| 8 | | | ● |
| ... | Repeat ☞ | | |

Low/Medium Disease Pressure Spray Schedule

| SPRAY PROGRAMME WEEK | TAEGRO | SB PLANT INVIGORATOR | ROMEIO |
|----------------------|----------|----------------------|--------|
| 1 | ● | ● | |
| 2 | | | |
| 3 | | | ● |
| 4 | | | |
| 5 | ● | ● | |
| 6 | | | |
| 7 | | | ● |
| 8 | | | |
| ... | Repeat ☞ | | |

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 – but please be conscious of harvest intervals and application limits on production labels

THE PROGRAMME IN PRACTICE

Ferring Nurseries and Firewood

Littlehampton Rd, Ferring, Worthing, BN12 6PN

Crop: Cyclamen

(12,000 plants)

Growing Environment

Unheated greenhouse

Application Method

Hand held spray

Water Rate

1000L/ha

Growing Media

Peat-free mix (combination of wood fibre, bark, coir, green compost, perlite and clay)

Fertilisation

Integrated Organic Granules

- 3g/L DCM ECOR5 (NPK 8-5-6)
- 1g/L DCM Vivifos (NPK 4-30-0)
- 0.7g/L DCM Micromix

Integrated Mineral Granules

- 0.7kg/L Base fertiliser (NPK 17-10-14)
- 0.3g/L N fertiliser (NPK 31-0-0)

Liquid Mineral Fertiliser

- Calcium nitrate (1kg/10L dosed at 1% - every 3-4 days)



Spray Schedule

| WEEK (YEAR) | COMMENCING | WEEK (CROP) | TAEGR0 | SB PLANT INVIGORATOR | ROME0 |
|-------------|------------|-------------|--------|----------------------|-------|
| 27 | 03/07/2023 | 1 | | | |
| 28 | 10/07/2023 | 2 | | | |
| 29 | 17/07/2023 | 3 | | | |
| 30 | 24/07/2023 | 4 | | | |
| 31 | 31/07/2023 | 5 | • | • | |
| 32 | 07/08/2023 | 6 | | | • |
| 33 | 14/08/2023 | 7 | • | • | |
| 34 | 21/08/2023 | 8 | | | • |
| 35 | 28/08/2023 | 9 | • | • | |
| 36 | 04/09/2023 | 10 | | | • |
| 37 | 11/09/2023 | 11 | • | • | |
| 38 | 18/09/2023 | 12 | | | • |
| Sale | 25/09/2023 | 13 | | - | |

A correctly fertilised crop will increase efficacy of the spray programme

THE PROGRAMME IN PRACTICE

Ferring Nurseries and Firewood

Littlehampton Rd, Ferring, Worthing, BN12 6PN

‘The spray programme was easy to apply and achieved complete control. We lost no plants to disease.’

DAVID COURTENAY LUSCOMBE
GROWER MANAGER, FERRING NURSERIES AND FIREWOOD

Taegro MAPP Number 19204

Romeo MAPP Number 19170

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Natural & Effective Foliar Disease Control Programme [Page 5](#)

Results

Botrytis spotting of flowers is the primary disease concern with Cyclamen crops. We achieved 100% control with no flower damage observed in the crop – this is despite an unseasonably cool and humid July and August and no heating of the crop.

CONTROL LEVEL 100%



No *Botrytis* damage was observed on the foliage or flowers

Costings

PROGRAMME
TOTAL COST

£0.0006 per plant (£0.60 per 1,000 plants)

Benefits of Programme

- Lower cost than conventional programme
- No exposure of staff to hazardous materials
- No chemical residues on product
- Application is easy and practical
- Products work on natural plant processes and create stronger and more resilient plants – improving customer success when planting at home

USE PLANT PROTECTION PRODUCTS SAFELY.
ALWAYS READ THE LABEL AND PRODUCT INFORMATION BEFORE USE. FURTHER DETAIL ON WARNING SYMBOLS AND PHRASES IS INCLUDED ON THE LABELS AND LEAFLETS.