

# Taegro

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# We'll cover...

What is Taegro?

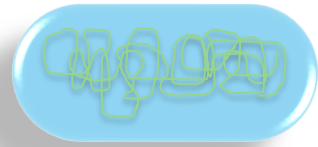
What does it do?

How to get the best out of it?

# What is Taegro?

# Biofungicide

Taegro = Biofungicide



Microorganism-based fungicide **Vs** foliar fungicide  
(Bacteria in this case)



# Always read the label

On label for a range of edible crops including grapevines



Product registration number: MAPP 19204  
 Taegro® is a microorganism based fungicide formulated as a wettable powder containing 130 g/kg *Bacillus amyloqueliciens* strain FZB24 (13% w/w, minimum of  $1 \times 10^{12}$  cfu/kg).  
 Taegro® suppresses diseases on cucurbits, solanaceae, lettuce and strawberry in protected situations and in grapevine in unprotected situations. The (COSHH) Control of Substances Hazardous to Health Regulations may apply to the use of this product at work.  
**In case of toxic or transport emergency ring +44 (0)1484 538444 any time.**

**SAFETY PRECAUTIONS**  
**(a) Operator protection**  
 Engineering control of operator exposure must be used where reasonably practicable in addition to the following personal protective equipment: OPERATORS MUST WEAR SUITABLE RESPIRATORY PROTECTIVE EQUIPMENT\* when handling the concentrate or applying the product.  
 \*Disposable filtering facepiece respirator to at least EN149 FFP3 or equivalent. However, engineering controls may replace personal protective equipment if a COSHH assessment shows they provide an equal or higher standard of protection.  
 • AVOID CONTACT with SKIN and EYES.  
 • IF YOU FEEL UNWELL, seek medical advice immediately (show the label where possible).  
 • WASH HANDS AND EXPOSED SKIN before meals and after work.

**(b) Environmental protection**  
 Do not contaminate water with the product or its container. Do not clean application equipment near surface water. Avoid contamination via drains from farmyards and roads.  
**For Ireland only**  
**When applying outdoors:** To protect aquatic organisms respect an unsprayed buffer zone of 5m to surface water bodies.  
**(c) Storage and disposal**  
 - KEEP AWAY FROM FOOD, DRINK AND ANIMAL FEEDING STUFFS.  
 - Keep in a cool, dry, well-ventilated place  
 - Protect from direct sunlight  
 - Do not store above 30°C. Do not freeze.  
 - Ideally, store at room temperature (around 23°C).  
 - Once open, use entire contents  
 - WASH OUT CONTAINER THOROUGHLY and dispose of container safely.  
 - CLEAN ALL EQUIPMENT after use.

**TAEGRO®**  
 A wettable powder containing *Bacillus amyloqueliciens* strain FZB24 (13% w/w, minimum of  $1 \times 10^{12}$  cfu/kg).  
 Keep out of reach of children. Do not breathe dust.  
 Wear protective gloves/protective clothing. Wear respiratory protection.  
 To avoid risks to human health and the environment, comply with the instructions for use.  
 Contains *Bacillus amyloqueliciens* strain FZB24. Micro-organisms may have the potential to provoke sensitising reactions.  
 MAPP No. 19204

Extension of Authorisation Number: 2404 of 2022  
**EXTENSION OF AUTHORISATION FOR A MINOR USE OF A PLANT PROTECTION PRODUCT**  
 PLANT PROTECTION PRODUCTS REGULATION (EC) No 1107/2009  
 Extent of authorisation: Great Britain and Northern Ireland  
 Product name: Taegro  
 Use:

Field of use: **ONLY AS A FUNGICIDE**  
 User: Professional

Crops/situations:	Maximum individual dose: (g product / ha)	Maximum total dose:	Maximum number of treatments: (per year)	Latest time of application:
Grown in organic media, grown in soil, grown in synthetic rooting media, permanent protection with full enclosure and outdoor and protected crops of nursery fruit trees, ornamental plant production	370	-	10	BBCH 89 (fully ripe: fruit shows fully-ripe colour, beginning of fruit abscission)  1 day before harvest

Also EAMU for nursery fruit trees and **Ornamentals**

**Active ingredient:** *Bacillus amyloliquefaciens* strain FZB24

Soil bacteria originally isolated in Germany



**Targets:** Foliar disease suppression = foliar spray

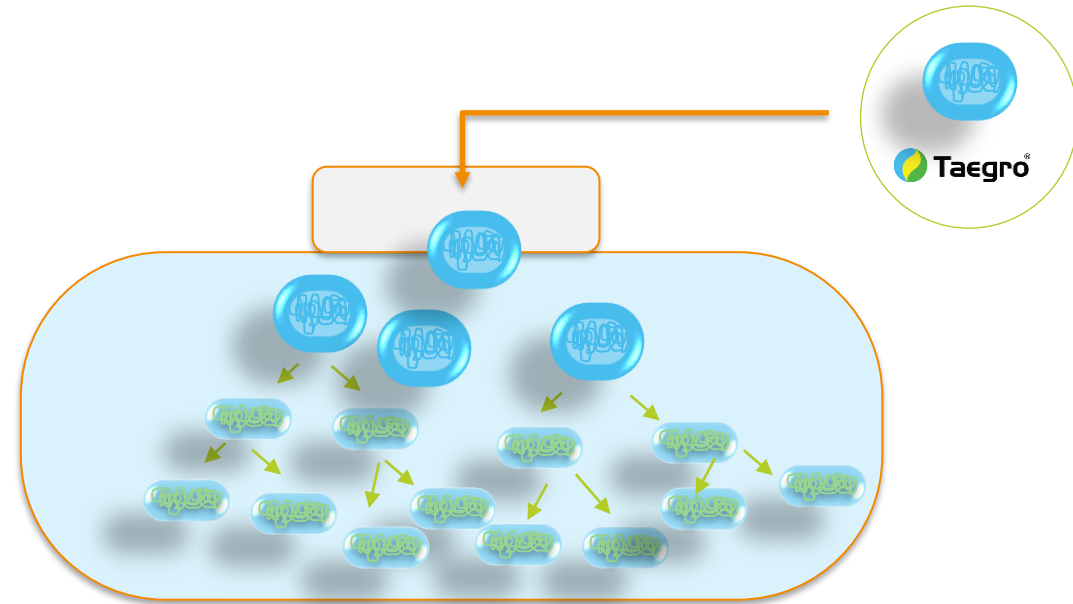
**Users:** Professional

Harmless to beneficial insects and pollinators



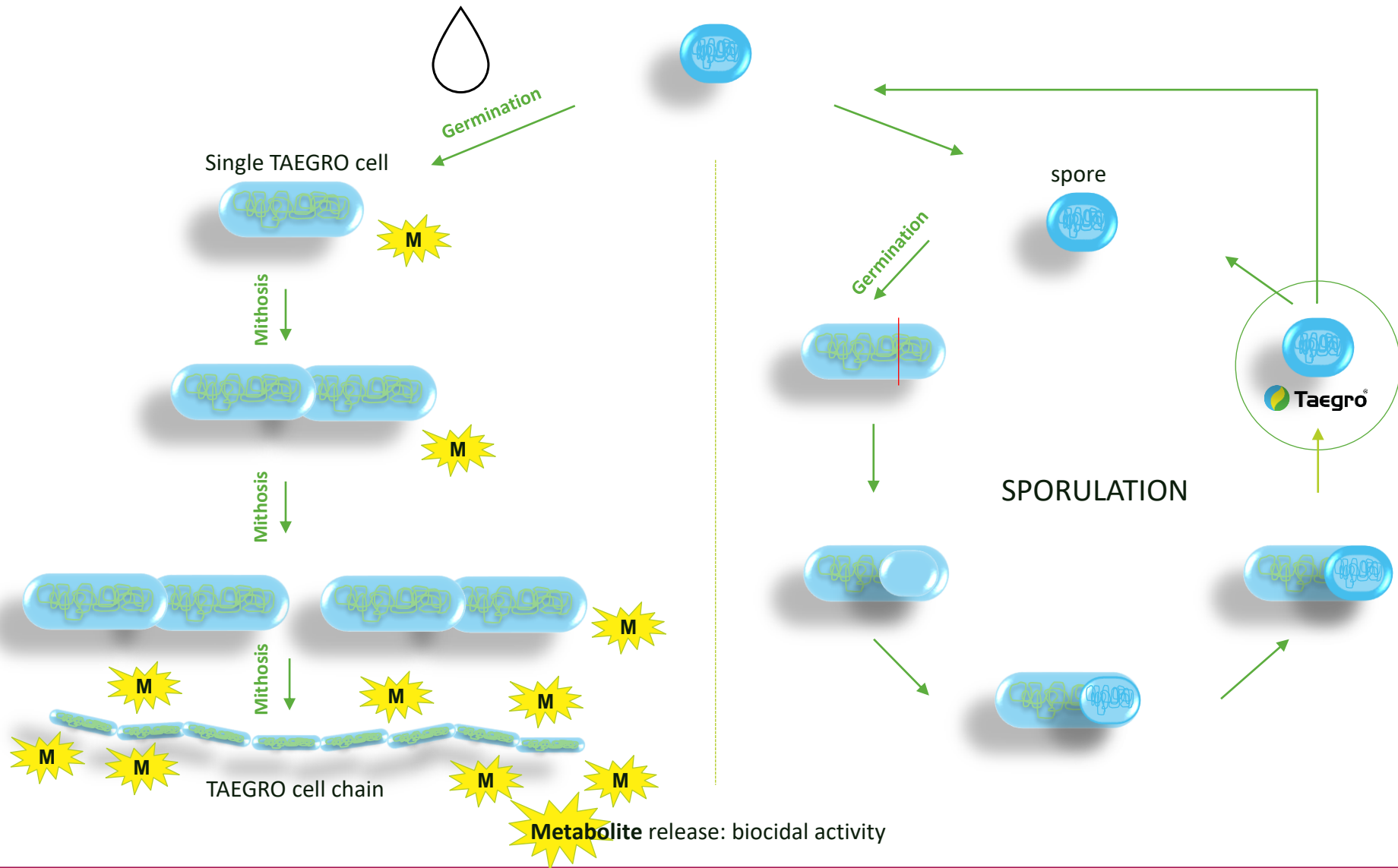
# TAEGRO in the tank

Once TAEGRO is added to the tank and mixed with water the «endospores» (the active ingredient) are in a favourable environment for germination.



**GERMINATION** = formation of living cells + secreting biocidal metabolites

# TAEGRO life cycle





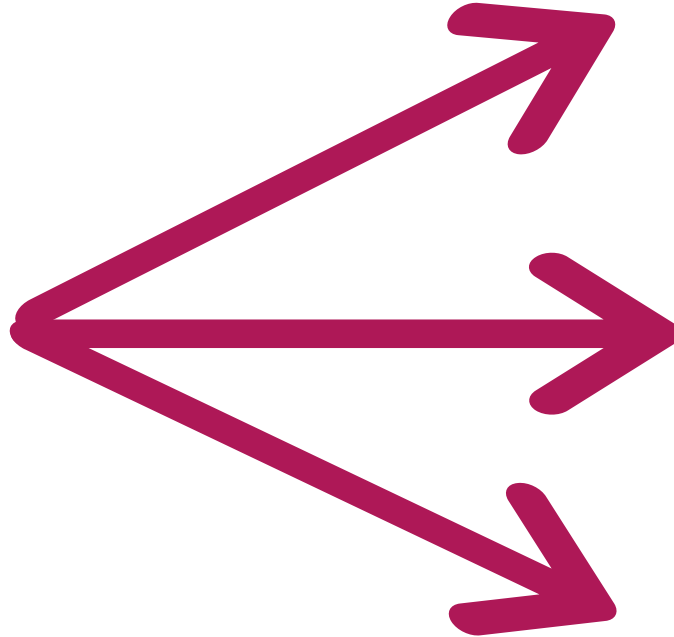
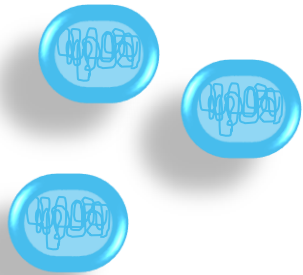
## Benefits

**Easy and compact storage**

**Great tank mix partner**

**More cost effective**

**Formulation: WP**  
(Wettable Powder)



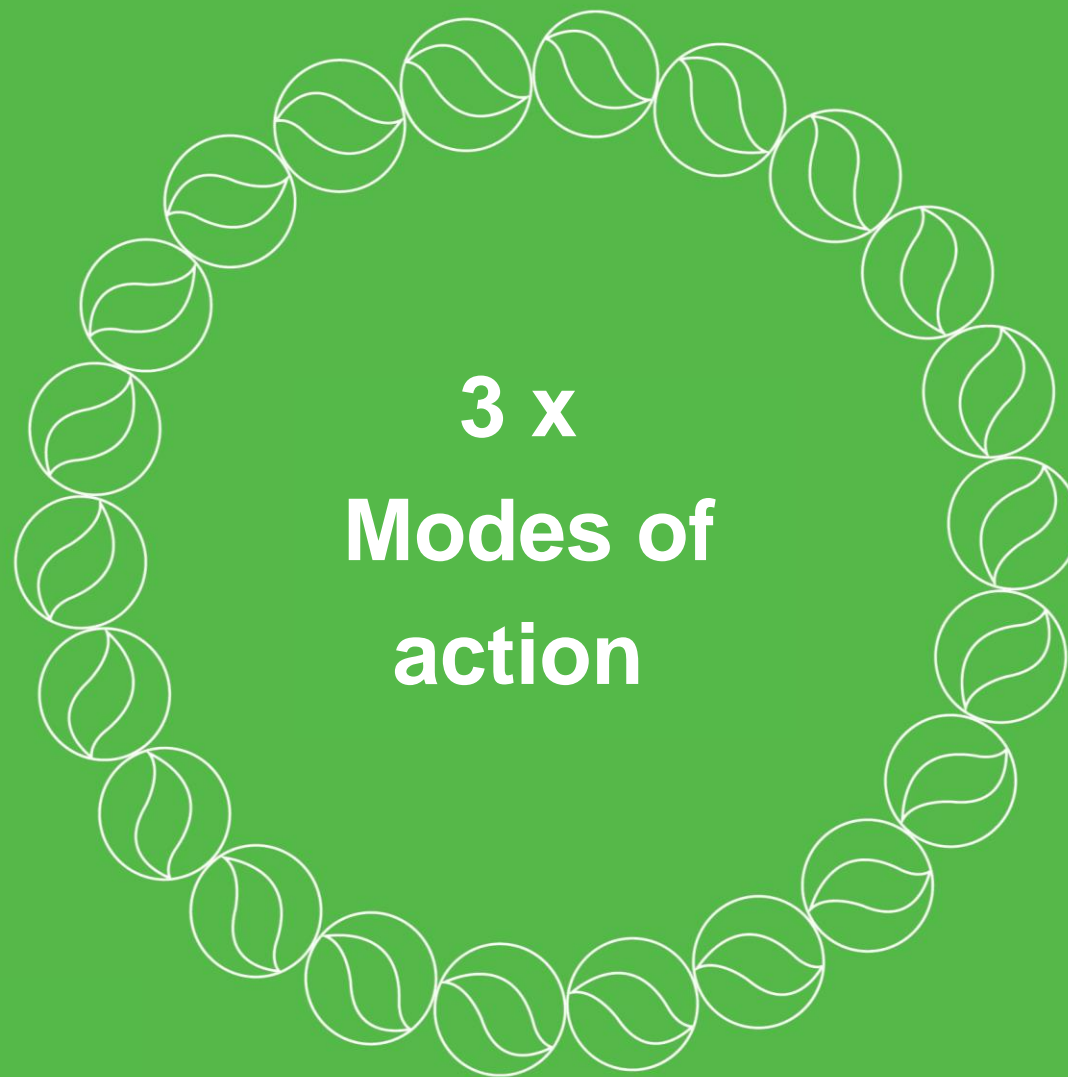
# Organic status

Taegro is approved for use in Organic Systems in the UK

Complying with the OF&G Standards



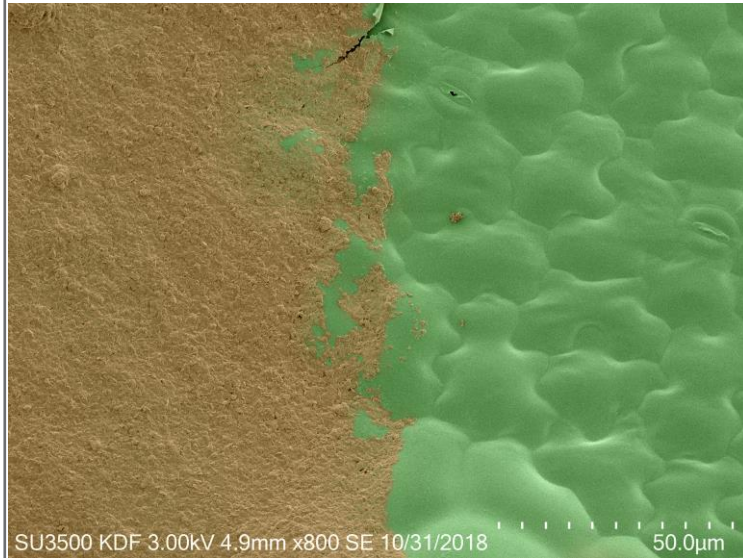
# What does Taegro do?



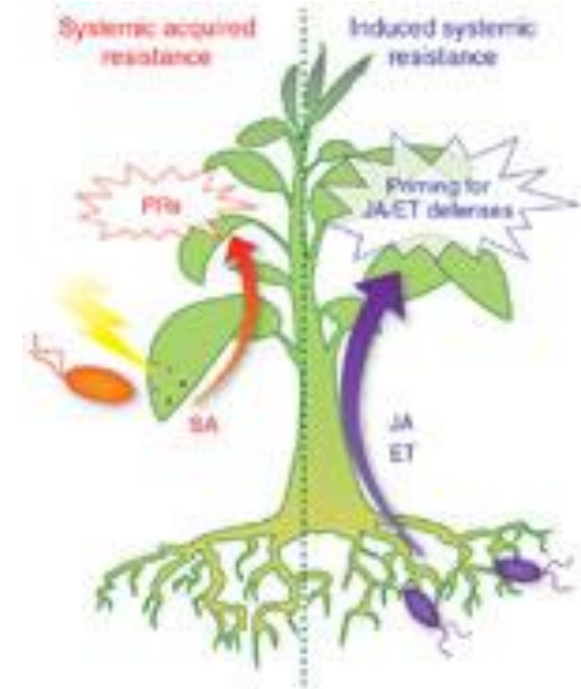
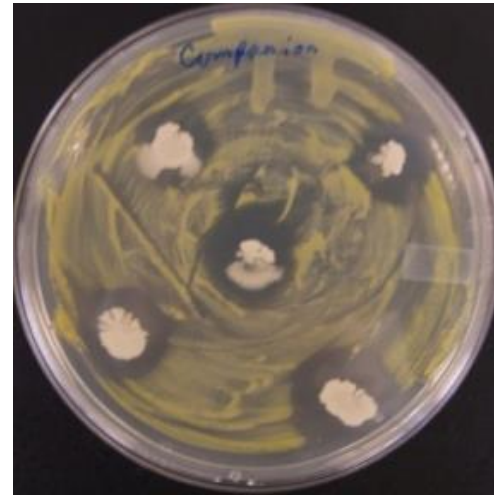
### 1) Competition on the plant surface

### 2) Release of metabolites with biocidal activity

### 3) Induction of natural plant resistances



Pic. By: Kevin Fite USGR

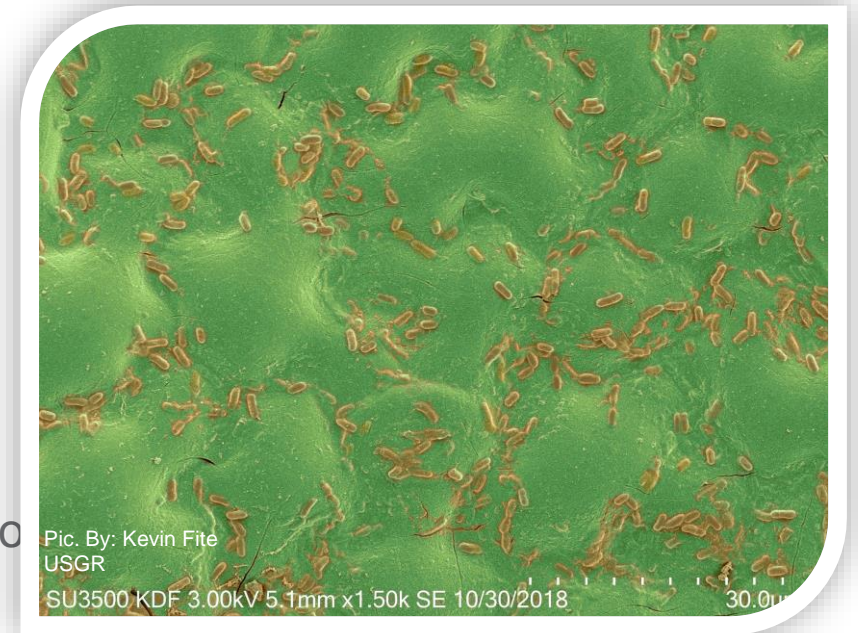
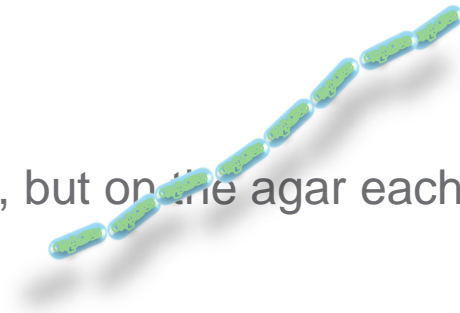


# Petri dish demo

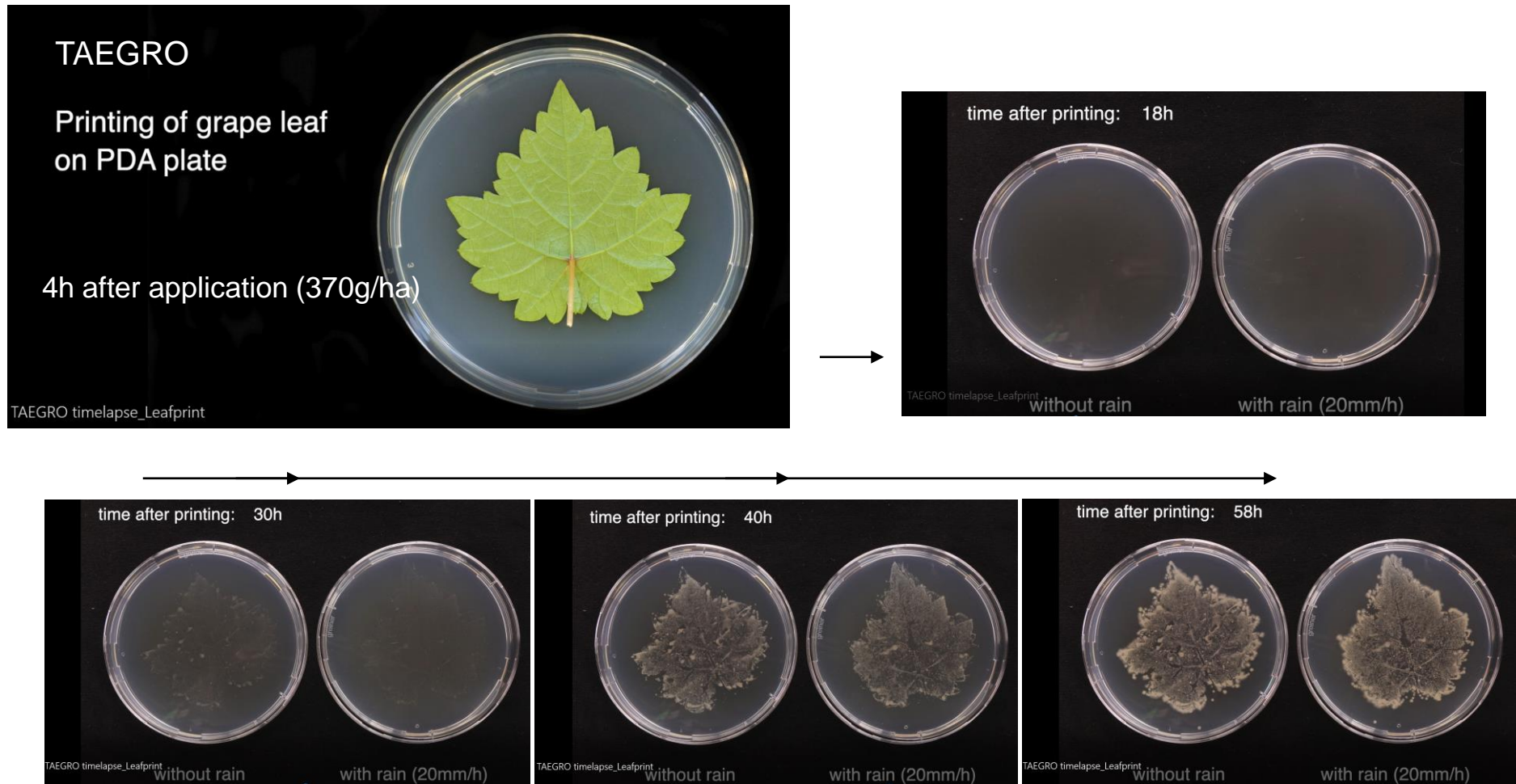
Great way to visualise the effects of something we can't see on the leaf

- 1) Leaf sprayed with Taegro
- 2) Leaf pressed against the agar then removed
- 3) Allowed time to develop

You can't see individual Taegro cells, but on the agar each cell can flourish

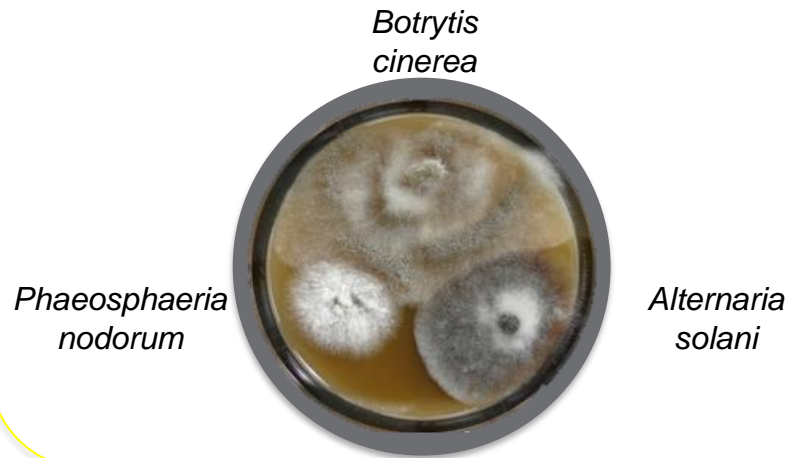


# Results – Visuals of leaf prints

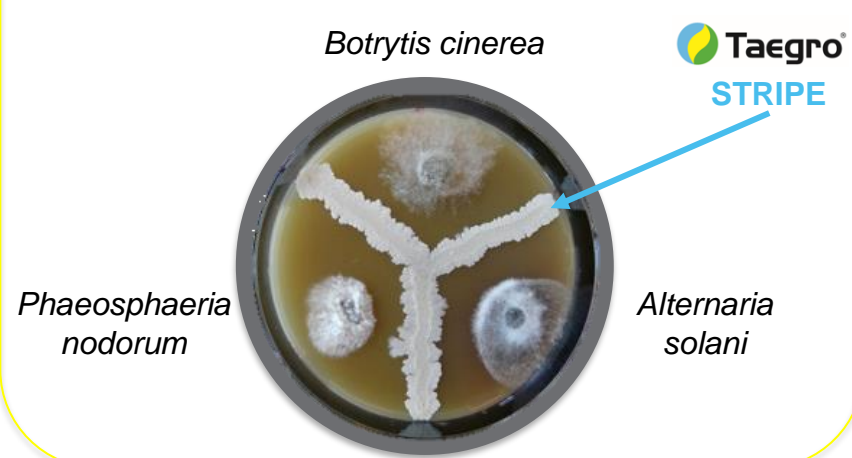


## 2) METABOLITE release

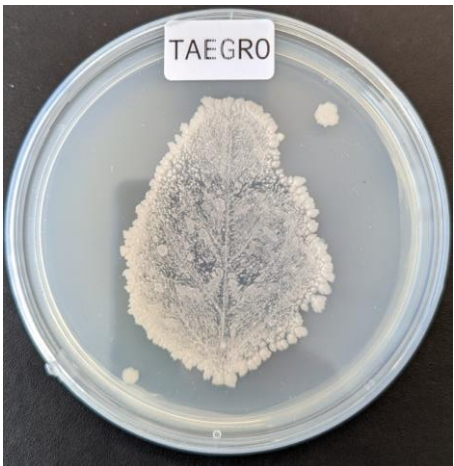
Pathogens free growth in Petri dish



Pathogens growth inhibited by TAEGR0 metabolites in Petri dish



TAEGR0 releases biocidal compounds as a result of the microbial metabolism





How to get the best  
from it?

# Preventative

As with most biofungicides you'll get the best performance as a **preventative application**

Curative applications do not fit with Taegro MoA's;

- Competition on surface – *needs to be home guard not invading force*
- More cell division = *more anti-microbial metabolites produced*
- Natural plant resistances are not instant

# Tips for use

**Dose rate:** 370g/ha

**Water volume:** 180 – 1000L/ha

**Intervals:** 5 – 10 days

**Crop safe:** No issues with phytotoxicity

**Edible crops:**

**Harvest interval:** 1 day

Exempt from MRL classification

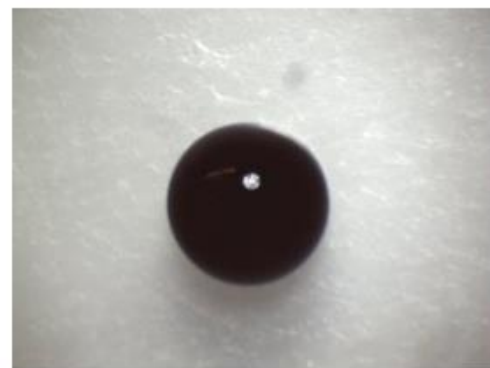
# Taegro in combination with Elasto G5

= Sticker spreader Adjuvant

Studies show Taegro performs better in combination with Elasto:

*Note Elasto is not currently approved for use with edibles UK*

Better coverage



Water

5 minutes after treatment

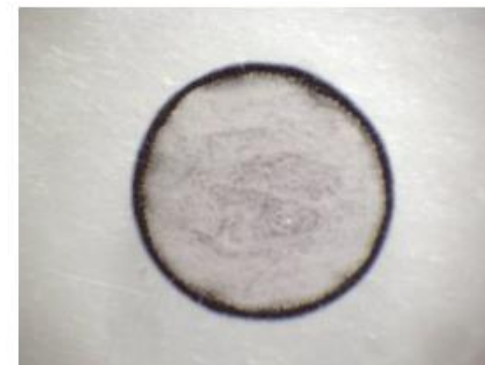


Elasto G5

Improved retention



3 hrs after treatment



# pH and T°C compatibility: good adaptability

pH	4	5	6	7	8	9	10	11	12
	-	+	+	+	+	+	-	-	-

Adaptable to most spray solutions, soils and plant surfaces

+ Growth

- Inhibition

T°C	15	20	25	30	35	40	45	50	55
	+	++	++	+++	+++	++	+	-	-

$15^{\circ} \leq \text{Optimal } T^{\circ}\text{C} \leq 45^{\circ}$

The organism survives most conditions. As a bacteria it finds mild to warm Temperatures optimal

# Compatibility in the tank?

Taegro is a **good tank mix partner**

It's a living thing so both physical and biological compatibility need to be considered...

Testing has shown that Taegro is widely compatible with a range of products

- *Copper based products shouldn't be tank mixed with Taegro*

# We covered...

What is Taegro? – *Biofungicide*

What does it do? – *3 modes of action*

How to get the best out of it? – *Preventative, Elasto*