



Double Nickel 55[®] (L10053)

Reg. No. L10053, Act No. 36 of 1947

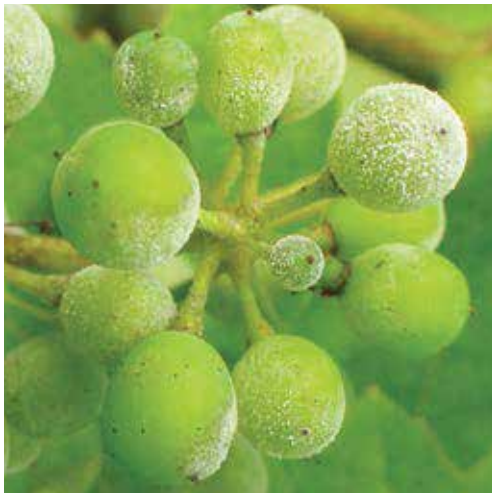


Backed by Science. Loved by Nature.

BioManagement



Andermatt
Madumbi



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A biological fungicide for the suppression of powdery and downy mildew on table grapes and powdery mildew on cucurbits. Ideal in IPM, zero residue and resistance management programs.

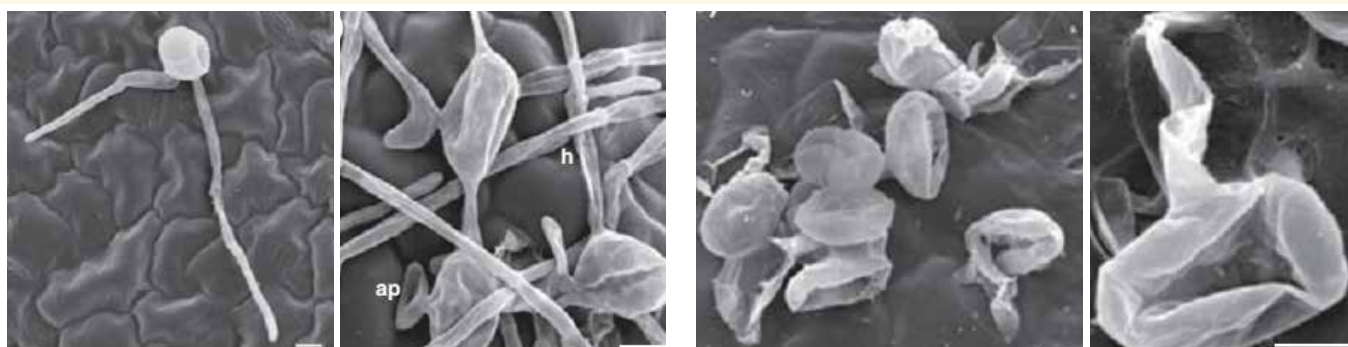
Why use Double Nickel 55®?

Features	Benejts
Broad spectrum biofungicide containing the active ingredient <i>Bacillus amyloliquifaciens</i> isolate D747 supplied by Certis USA	Well researched product of high quality delivering consistent results
Bacteria based active ingredient	Ideal resistance management option for IPM programs
Multiple modes of action	Good e°cac y and low risk of resistance build-up Ideal resistance management option in IPM program with conventional chemicals
OMRI listed	Suitable for use in organic production
No Maximum residue limit (MRL)	Helps growers meet demands of export markets in terms of minimal/zero residue pest management programs
Stable formulation with 2 year shelf life at room temperature	Limited risk of expiring stock and more consistent results

Mode of Action:

1. Production of antimicrobial metabolites

Double Nickel 55® is capable of producing a number of antimicrobial metabolites such as Iturin and Surfactin which inhibit growth of fungi and bacteria.



Healthy, untreated conidia and hyphae of powdery mildew of cucurbits.

Shrinkage and loss of turgor of powdery mildew conidia after being treated with lipopeptide extracts from di erent *B. subtilis* isolates. (Images repro. from Romero et al, 2007. J app. Micro.)

Trial data:

Double Nickel 55[®] management of powdery mildew on table grapes

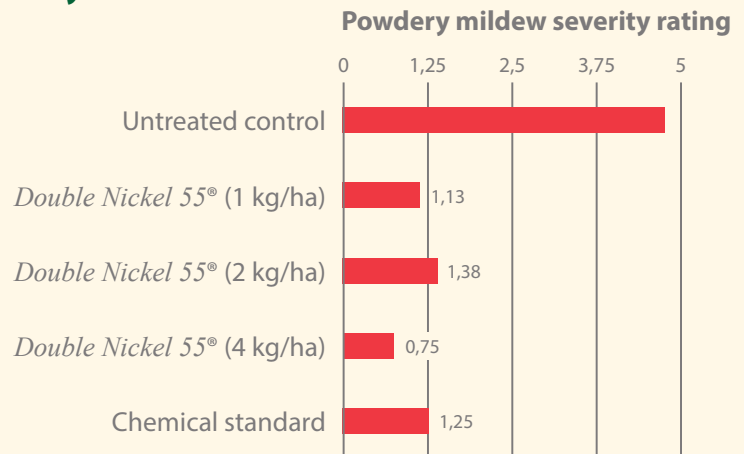
Cultivar = Sugraone
Location = Paarl

Figures right:

3 applications at 7 day intervals as a full cover spray (1000 L/ha).

Evaluation at 14 days after application 3.

Evaluations based on leaf disease severity ratings.



Double Nickel 55[®] management of powdery mildew on cucurbits

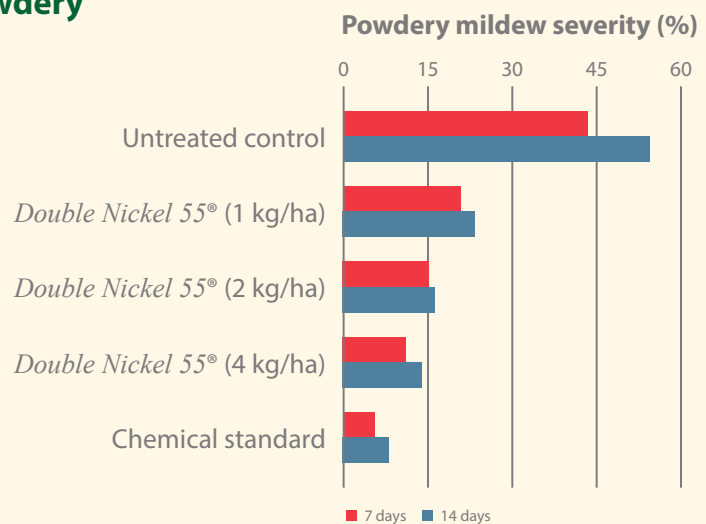
Cultivar = Patty Pan – Sunny Delight
Location = Phillipi

Figures right:

6 applications at 7 day intervals (500 L/ha).

Evaluation at 7 and 14 days after last application.

Evaluations based on leaf disease severity (%).



2. Competition for space and nutrients

Double Nickel 55[®] colonizes plant surfaces, occupying space and using up nutrient sources at potential infection sites thus making it difficult for pathogens to get established.

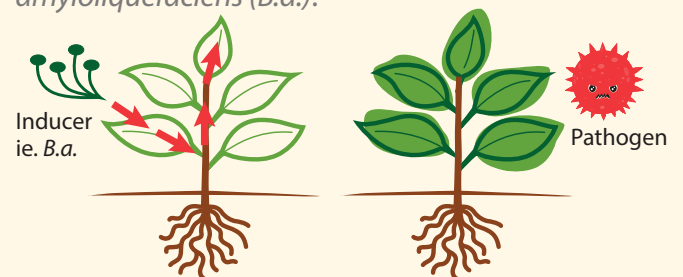


Colonization of kiwifruit by Ba D-747 (spray application).

Source: G. Balestra et al. *L'Informatore Agrario* 22: 50-53.

3. Induced Systemic Resistance (ISR)

Double Nickel 55[®] can help activate a plant's natural defence mechanisms through ISR. ISR is a state of enhanced immunity to infection demonstrated by plants following an injury or presence of inducer organisms like *B. amyloliquefaciens* (B.a.).



In response, plants produce substances (represented by red arrows) which, over time, evoke resistance and make it less susceptible to pathogens.

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Application instructions:

Crop	Method	Dose rate
Table grapes	Full cover foliar spray	1–2 kg/ha. Apply every 7 days with min. 3 applications. Apply as soon as disease is noticed or, preferably as a preventative measure. Please refer to the registered label for further details.
Cucurbits	Full cover foliar spray	

- *Double Nickel 55[®]* is compatible with most fertilizers, adjuvants and pesticides but if uncertain check with your Madumbi Technical Advisor before making tank mixes
- Do NOT tank mix with copper based pesticides
- Avoid the use of silicone spreaders (spreader-stickers and oil based products are preferred)
- Avoid extreme pH (between 6–8 is optimal)

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Registered, Marketed and Distributed by:



Manufactured by:

