

***Phasmarhabditis californica***  
**(Nemaslug 2.0) as New**  
**Beneficial Nematode Species**  
**for Slug Control**

 **BASF**  
We create chemistry

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# Biological Slug Control with

**Nemaslug<sup>®</sup>**  
Beneficial Nematodes  
(*Phasmarhabditis* species)



# Nemaslug® ready for innovation

## Nemaslug®

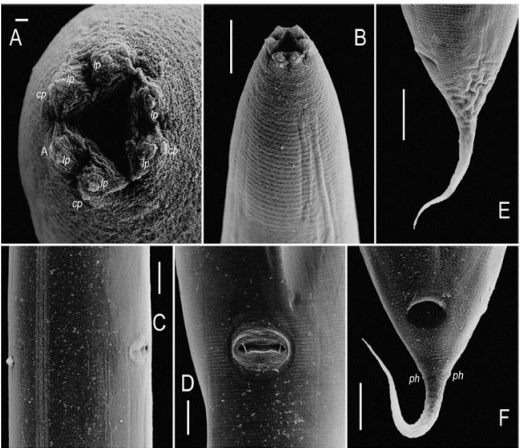
## 2.0 Opportunity



### NemaSlug 2.0

- Commercialized since 1994
- Met demand in Northern Europe
- Approved for use in home and garden market
- Kills slugs in the soil, exactly where the pest spends the most time
- Proper use minimizes risk to crop, users and environment

- Identify efficacious nematode that reduces damage between 6 days and with up to 100% slug mortality
- First BASF driven Mollusc Pathogenic Nematode (MPN) development
- Sustainability driving with updated production process for smaller packaging
- Met new demand
- First launch: Fall 2022



Scanning electron micrographs of *Phasmarhabditis californica* n. sp. female. A, B: Lip region; C: Lateral field, mid-body or vulval region; D: Vulva, ventral view; E, F: Ventral posterior region showing tail, anus and very posterior phasmids (Scale bars: A = 1  $\mu$ m, B-F = 10  $\mu$ m.)

Tandingan De Ley, I., Holovachov, O., Mc Donnell, R., Bert, W., Paine, T., and De Ley, P. (2016). Description of *Phasmarhabditis californica* sp. and first report of *P. papillosa* (Nematoda: Rhabditidae) from invasive slugs in the USA. *Nematology* 18, 175-193.

# Nemaslug® 2.0 production benefits

## ■ Improved reliability

- Simplified process compared to Nemaslug® production
- Production runs are completed in 3 instead of 5 weeks
- Significantly less variability between production vessels

## ■ Improved formulation loading

- Higher infective juvenile concentration allows for smaller packaging

Avoidance of  
1000 kg  
plastic waste &  
Reduced CO<sub>2</sub>  
emissions\*

30 million pack size  
198g NS1.0 → 90g NS2.0



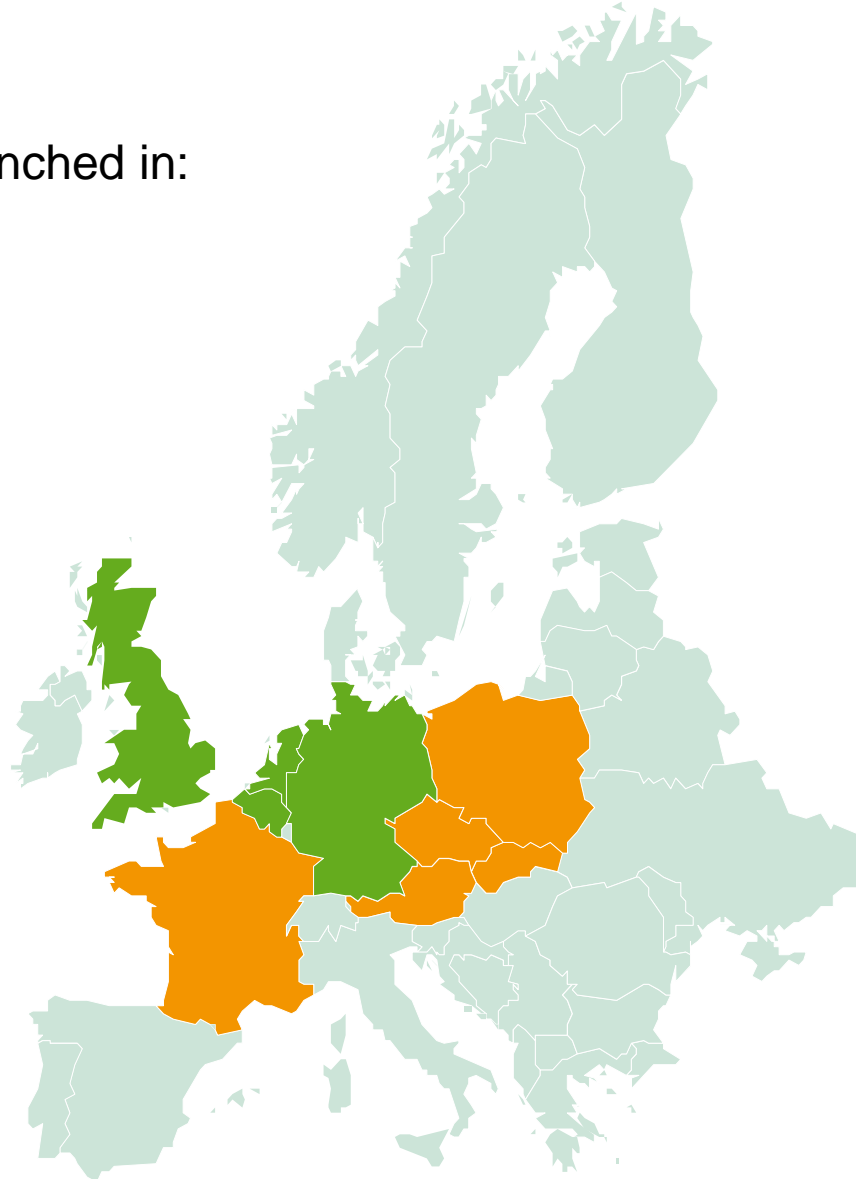
250 million pack size  
1202g NS1.0 → 637g NS2.0



# Nemaslug® 2.0 launch

## ■ It has already been launched in:

- England
- Scotland
- Wales
- Belgium
- Netherlands
- Germany

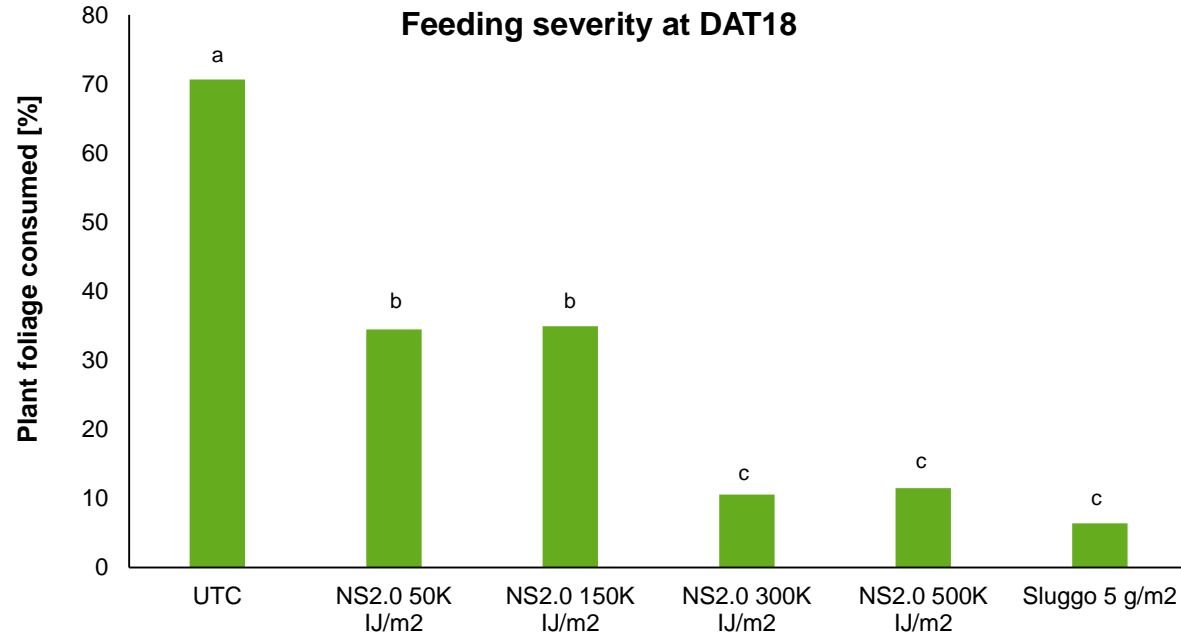


## ■ In preparation for launch in 2024:

- France
- Austria
- Poland
- Slovakia
- Czech Republic

# Slug control – Nemaslug® 2.0

Dose response study; semi field (Chinese cabbage var Pak Choi)



**Mean feeding severity reduction:**

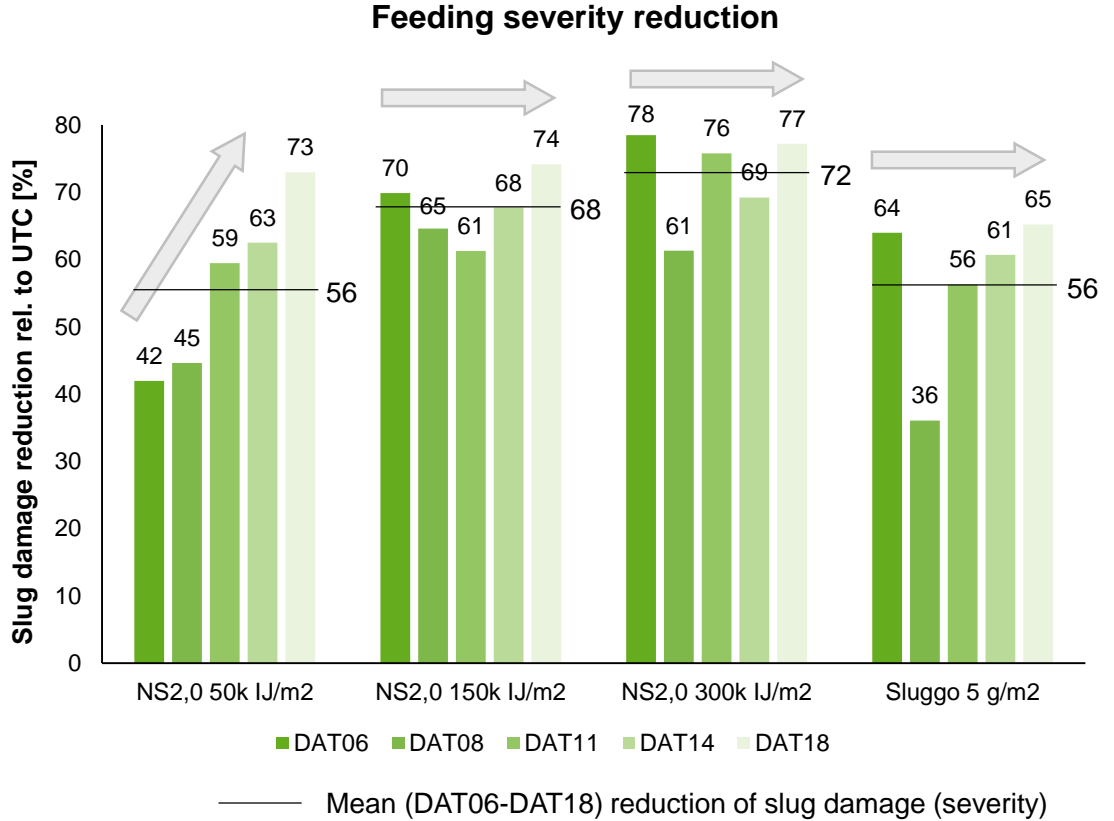
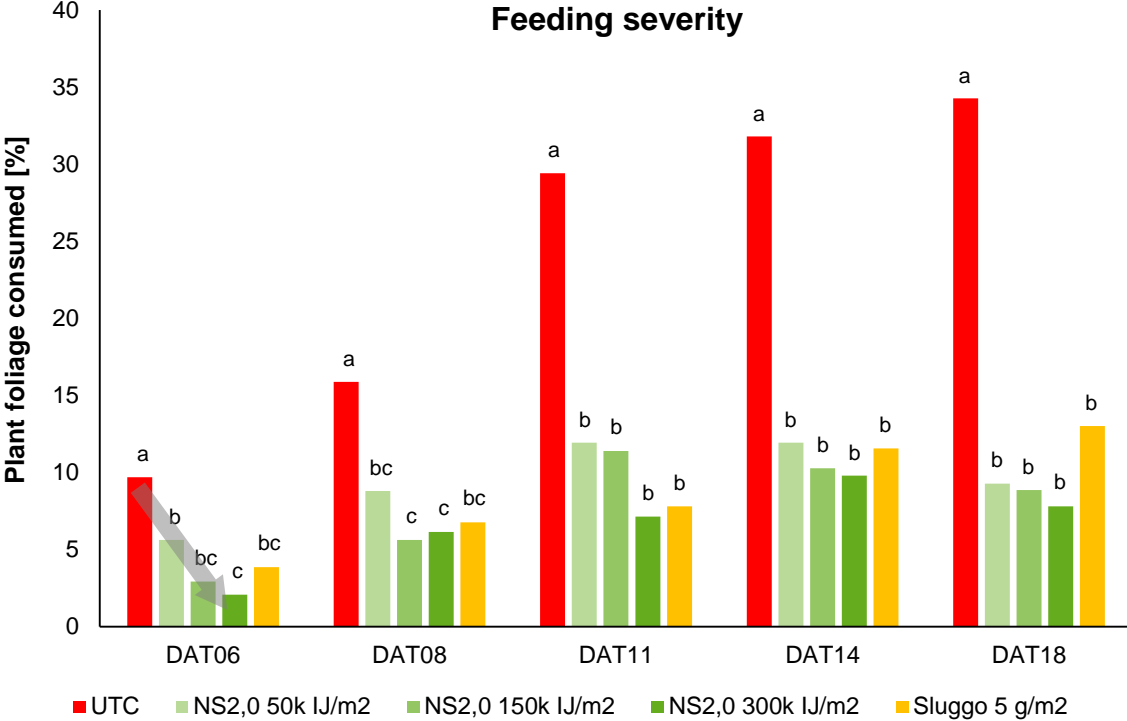
NS2.0 50k IJ/m<sup>2</sup>: 49%  
NS2.0 150k IJ/m<sup>2</sup>: 46%  
NS2.0 300k IJ/m<sup>2</sup>: 80%  
NS2.0 500k IJ/m<sup>2</sup>: 79%  
Sluggo 50g/m<sup>2</sup>: 86%

- Nemaslug® 2.0 at dose rates in the range of 50-500k IJ/m<sup>2</sup> decreased the severity of feeding damage
  - ▶ 50k & 150k IJ/m<sup>2</sup> achieved ≈ 50% reduction of feeding damage severity
  - ▶ 300k & 500k IJ/m<sup>2</sup> achieved ≈ 80% reduction of feeding damage severity
- **Higher dose → faster control → reduced severity damage**

**Nemaslug® 2.0**  
applied once at 50-150k  
& 300-500k IJ/m<sup>2</sup>  
in semi-field conditions  
achieved  
**50 & 80% feeding  
severity reduction**  
respectively at DAT18

# Slug control – Nemaslug® 2.0

Dose response study; semi-field trial (Chinese cabbage var Pak Choi)

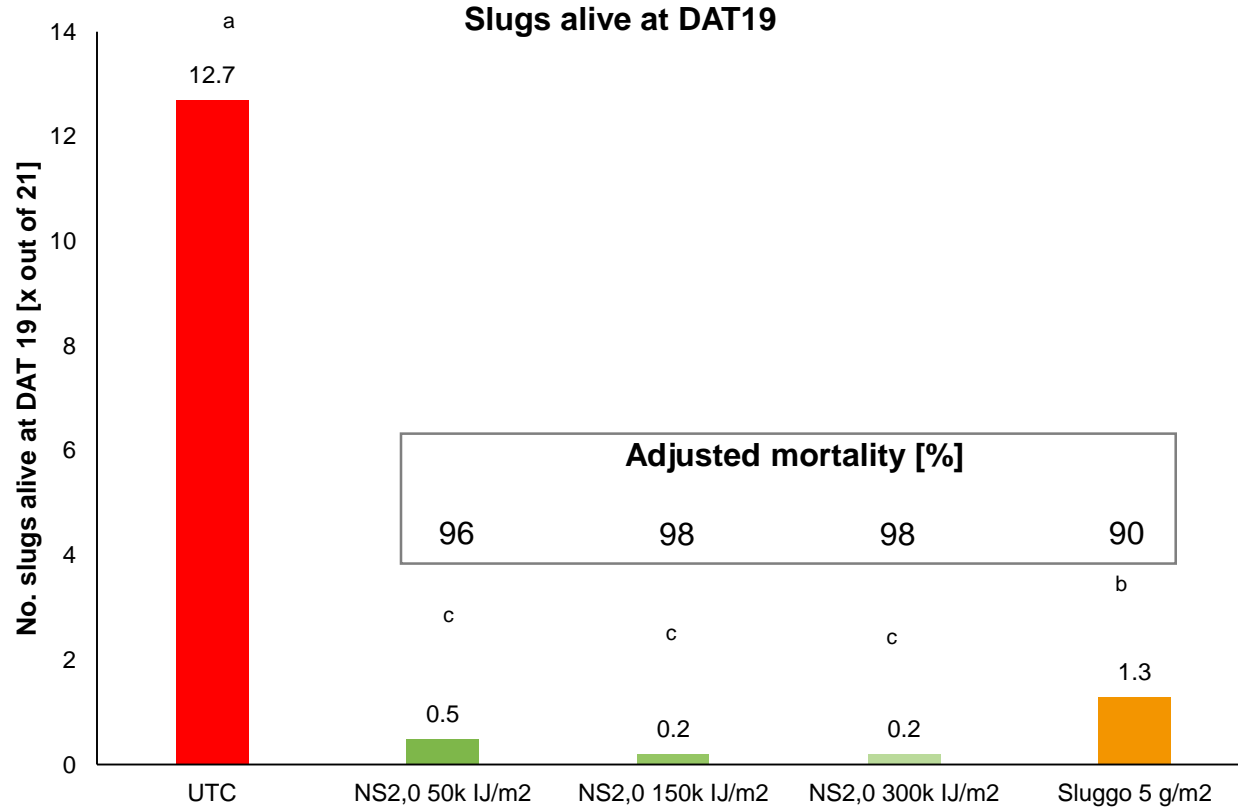


- Overall, 56-72% mean severity of feeding reduction with Nemaslug® 2.0 and 56% with Sluggo® (not sign. diff.)
- 150k & 300k IJ/m<sup>2</sup> provided a steady reduction on severity of feeding damage during all assessments
- 50k IJ/m<sup>2</sup> was slower to perform ("speed disadvantage") at early assessments



# Slug control – Nemaslug® 2.0

Dose response study; semi-field trial (Chinese cabbage var Pak Choi)



**Nemaslug® 2.0**  
 applied once at 50k, 150k  
 & 300k IJ/m<sup>2</sup>  
 in semi-field conditions  
 achieved  
**56-72% feeding severity  
 reduction**  
 from DAT06 to DAT18  
**>96% slug mortality**  
 at DAT19

- All Nemaslug® 2.0 dose rates tested, were sufficient to achieve very high slug mortalities (>96% adjusted mortality at DAT19)
- Significantly lower number of slugs alive compared to Sluggo®





# Slug control - Nemaslug® 2.0

- Nemaslug® 2.0 is an effective biological slug control solution\* with an improved production carbon footprint compared to Nemaslug®
- Nemaslug® 2.0 has shown medium-term protection for up to 6 weeks after one application at full dose rate (300,000 IJ/m<sup>2</sup>)
- Nemaslug® 2.0 can be used on its own or as part of an IPM programme with other measures (i.e. ferric phosphate pellets)
- Consider preventative applications of Nemaslug® 2.0 in areas with high slug pressure, especially during a period of wet weather when slugs are most active

Home > Products > Product Search



## Nemaslug 2.0

Nemaslug® 2.0\* is a biological slug killer for the control of most common species of small to medium sized slugs in outdoor and protected soft fruit and other horticultural crops.

\*Only for use in England, Scotland, and Wales.

### Benefits

- Effective natural control
- Fast-acting - feeding damage from slugs stops shortly after slugs come into contact with the product; the slugs die underground a while later
- Continues to work well during wet weather, unlike chemical pellets
- Effective at low temperature
- The nematodes persist for approximately 4-6 weeks in moist soil to provide continued protection of the crop
- Eliminates the potential for chemical residues in produce
- Organic farming and IPM-compatible
- No pest resistance issues

[Product Overview](#) →

[PRODUCT DOWNLOADS AND LINKS](#) +

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