

***Phasmarhabditis californica* (Rhabditida: Rhabditidae)**

Including in: *PM 6/3 Biological control agents safely used in the EPPO region (2023): Appendix 1 – commercially used biological control agents.*

Further details are given for each BCA, including its preferred scientific name, common synonyms, taxonomic classification, the pests against which it is mostly targeted, its origin and the date of first use as a commercial agent. In cases where information is not known a (?) is detailed. Countries where it is or has been used in the EPPO region are also listed on the basis of information provided by the companies and by some EPPO countries. This information may not have been available from all EPPO countries and may therefore be incomplete. Each agent has been used commercially at some time in the countries listed, but in some cases may no longer be commercially available or used there. Information is also given, when available, on the natural distribution of the agent in the EPPO region, whether it is used in the field and/or under protected conditions. Additional remarks are included when necessary

Detailed information (from *PM 6/3 Biological control agents safely used in the EPPO region*)

Phasmarhabditis californica

Family	Rhabditidae
Main target pests	Slugs : <i>Arion distinctus</i> , <i>Arion hortensis</i> , <i>Deroceras invadens</i> , <i>Deroceras reticulatum</i> , <i>Arion lusitanicus</i> , <i>Arion rufus</i> , <i>Arion vulgaris</i> , <i>Deroceras laeve</i> , <i>Lehmannia valentiana</i> and <i>Milax gagates</i>
Original distribution	Widespread : Europe, North America, New Zealand
Distribution in EPPO	Widespread
Date of first use	2020
EPPO countries where used	Belgium, Germany, Netherlands, UK
Use	Outdoors

Criteria used for adding *Phasmarhabditis californica* to PM 6/3 PM 6/3 Biological control agents safely used in the EPPO region

1. Criteria used for addition to the List*

A biological control agent which is (or has been) commercially available or officially used	<input checked="" type="checkbox"/>
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AND either

Has been used for at least 5 years in at least 5 EPPO countries (exceptionally fewer, if relevant crops, target pests or plants are present in <5 countries), or	<input type="checkbox"/>
Is indigenous and widespread in part of, or the whole of EPPO region, or	<input checked="" type="checkbox"/>
Is established and widespread in part of, or the whole of the EPPO region	<input type="checkbox"/>

AND

There are no previous reports of adverse effects	<input checked="" type="checkbox"/>
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Criteria	Summary information (for EPPO region*)	References
BCA has been used for at least 5 years in at least 5 EPPO countries (exceptionally fewer, if relevant crops, target pests or plants are present in less than 5 countries)		
Is indigenous and widespread in part of, or the whole of EPPO region	<i>P. californica</i> was identified in the following countries: Ireland, Wales, England, Belgium, France, Germany	Ireland (Carnaghi <i>et al.</i> , 2017), Wales (Rae and Angus, 2018), England (Rae 2017), Belgium (Amoto, 2022; BASF, 2022), Germany (Keyte <i>et al.</i> 2022; BASF, 2022), France (BASF, 2022)
Is established and widespread in part of, or the whole of the EPPO region		

References

Amoto MG (2022) Morphological and molecular characterization of slug and snail parasitic nematodes. PhD Thesis, Gent University

BASF (2022) Preliminary report on *Phasmarhabditis californica* presence in Europe. BASF

Carnaghi M, Rae R, Tandingan De Ley I, Johnston E, Kindermann G, Mc Donnell R, O’Hanlon A, Reich I, Sheahan J, Christopher D, Williams C and Gormally M (2017). Nematode associates and susceptibility

of a protected slug (*Geomalacus maculosus*) to four biocontrol nematodes. *Biocontrol Science and Technology*, 294-299. <http://dx.doi.org/10.1080/09583157.2016.1277418>

Keyte M, Grannell A, Sheehy L, Shepherd J, Rae R (2022) *Phasmarhabditis californica* in Germany. *Nematology* **24**, 475-480

Rae R (2017) The gastropod shell has been co-opted to kill parasitic nematodes. *Scientific Reports*, 7: 4745. DOI:10.1038/s41598-017-04695-5