NAME OF THE ORGANISM: Meloidogyne (1MELGG)

GENERAL INFORMATION ON THE PEST

Name as submitted in the project specification (if different to the preferred name):
 
Meloidogyne spp.  
Pest category:
 
Nematoda **1- Identity of the pest/Level of taxonomic listing:**  
Is the organism clearly a single taxonomic entity and can it be adequately distinguished from other entities of the same rank?
 
Yes  
Is the pest defined at the species level or lower?:
 
No  
Can listing of the pest at a taxonomic level higher than species be supported by scientific reasons or can species be identified within the taxonomic rank which are the (main) pests of concern?

* Yes: Ornamental sector

Is it justified that the pest is listed at a taxonomic rank below species level?
 
Not relevant  
Conclusion:

* Candidate: Ornamental sector

Justification (if necessary):
 
Root-knot nematode (M. exigua, M. naasi, M. hapla, M. incognita, M. arenaria, and M. javanica, M. ethiopica) (EPPO Global Database, Kotcon et al., 1985; Davis et al., 2003; CABI, 2017) are polyphagous pests. They all cause characteristic knots (galls), swellings and other malformations on the roots of onion. M. ethiopica is included in EPPO alert list (<https://www.eppo.int/QUARANTINE/Alert_List/alert_list.htm>) (EPPO website). These species cause similar symptoms on the host and they are all present in the EU. Distinction among them can be difficult. Including all the species in the genus would make for practical application and avoid the need for full identification to species of any root-knot nematodes found in the material to be eventually marketed.  
Remark: In the RNQP Questionnaire, for the 'Vegetable propagating and planting material (other than seeds)' Sector, GB supported a listing at the Genus level for Allium cepa but did not support such a listing for Cucumis melo, Solanum lycopersicum, Solanum melongena (no justification was given, and no information for the other host plants). No other EU Member States selected this entry as an important entry in the RNQP Questionnaire.  
For the 'Ornamental' Sector, no country supported a listing of the entire genus. However SE suggested to define specific Risk management measures for this entry on Citrus, Prunus and Rosa. Experts commented that for ornamentals, the principal risk is linked to M. hapla. **2 – Status in the EU:**
   
Is this pest already a quarantine pest for the whole EU?
 
No  
Presence in the EU:
 
Yes  
Conclusion:
 
candidate  
Justification (if necessary):
 
The pest is present worldwide.

HOST PLANT N°1: Rosa (1ROSG) for the Ornamental sector.

Origin of the listing:
 
Commission Directive 93/49/EEC  
Plants for planting:
 
Plants intended for planting, other than seeds **3 - Is the pest already listed in a PM4 standard on the concerned host plant?**
 
No 
Conclusion:
 
Evaluation continues  
 
Justification (if necessary):
 
Precautions to prevent infection by soil, particularly against Meloidogyne hapla, are advised in the Rosa EPPO PM 4 Standard. **4 - Are the listed plants for planting the main\* pathway for the "pest/host/intended use" combination? (\*: significant compared to others):**
 
Yes 
Conclusion:
 
Candidate  
 
Justification:
 
Meloidogyne spp. is a soil borne pest. It survives in weeds and in the crop debris. It spreads with infested materials, by human assisted means, root debris and soil. Meloidogyne enterolobii is given as a major pest on Rosa by the EPPO Global Database and Meloidogyne luci is also recorded. For certified material, precautions to prevent infection by soil pests particularly against Meloidogyne hapla are advised in the Rosa EPPO PM 4 Standard. M. hapla reproduced more quickly than M. incognita on Rosa corymbifera and nematode infected plants were less vigorous than their uninfected controls (Meressa et al 2014). In conclusion, plants for planting are a pathway. The use of non-infested fields or soil media for planting, weed control and prevention of infested soil from entering the field or facility, would mean that infested plants for planting would then be the main source of infestation. **5 - Economic impact:**  
Are there documented reports of any economic impact on the host?
 
Yes  
Justification:
 
White galls gradually browning, more or less large and regular, characterize the presence of Meloidogyne spp. The nature and extent of the galls depend on the species and the level of soil inoculum. These root alterations disrupt the absorption of water and mineral elements, and hence the development of plants which show a more or less reduced growth. The foliage may be chlorotic, and wilting sometimes occurs during the warmest hours of the day. The lower leaves of the highly affected plants reveal an early senescence. In many situations, root-knot nematodes are not the only pests to attack the root system: they frequently contribute to the predisposition of roots to the attacks of soil-borne fungi. Roses are widely used in landscaping. Phytonematodes are considered to belong to the most impacting pests of this ornamental plant in gardens, especially Meloidogyne hapla, which is the most important one in colder climate regions (Pizetta et al, 2010). Precautions to prevent infection by soil pests particularly against Meloidogyne hapla are advised in the Rosa EPPO PM 4 Standard. Some resistant rootstocks are available, but the nematode can evolve to overcome resistance. Plants will be either in containers (limited risk) or bare rooted (symptoms more or less visible).  
What is the likely economic impact of the pest irrespective of its infestation source in the absence of phytosanitary measures? (= official measures)
 
Major  
Is the economic impact due to the presence of the pest on the named host plant for planting, acceptable to the propagation and end user sectors concerned?
 
No  
Conclusion:
 
Candidate  
Justification:
 
 **6 - Are there feasible and effective measures available to prevent the presence of the pest on the plants for planting at an incidence above a certain threshold (including zero) to avoid an unacceptable economic impact as regards the relevant host plants?**
 
Yes
 
Conclusion:
 
candidate  
Justification:
 
 **7- Is the quality of the data sufficient to recommend the pest to be listed as a RNQP?**
 
Yes
 
Conclusion:
 
Candidate  
Justification:
 
 **CONCLUSION ON THE STATUS:**
 
Not recommended for listing as an RNQP: M. hapla on Rosa meets all the criteria for RNQP status. However the requirement for absence of visual symptoms on the traded material (current general 'Substantially free from' requirement in the EU) is considered to be sufficient. Remark: Some resistant rootstocks are available, but the nematode can evolve to overcome resistance. Plants will be either in containers (limited risk) or bare rooted (symptoms more or less visible). **8 - Tolerance level:**  
Is there a need to change the Tolerance level:
 
No  
Proposed Tolerance levels:
 
Delisting. **9 - Risk management measures:**  
Is there a need to change the Risk management measure:
 
No  
Proposed Risk management measure:
 
Delisting. **REFERENCES:**

* Meressa BH, Dehne HW & Hallmann J (2014) Host suitability of cut-flowers to Meloidogyne spp. and population dynamics of M. hapla on the rootstock Rosa corymbifera 'Laxa. American Journal of Experimental Agriculture 11, 1397-1409;
* Pizetta PUC, Pivetta KFL, Santos JM, Batista GS, Gimenes R & Martins TA (2010) Resistance of rose rootstocks to Meloidogyne hapla nematode. Acta Horticulturae 881, 603-606;