NAME OF THE ORGANISM: Acanthoscelides obtectus (ACANOB)

GENERAL INFORMATION ON THE PEST

Name as submitted in the project specification (if different to the preferred name):

Pest category:

Insecta **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?:

Yes
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?

* Not relevant: Vegetable seed sector

Is it justified that the pest is listed at a taxonomic rank below species level?

Not relevant
Conclusion:

* Candidate: Vegetable seed sector

**2 – Status in the EU:**

Is this pest already a quarantine pest for the whole EU?

No
Presence in the EU:

Yes
List of countries (EPPO Global Database):

Austria (2001); Belgium (2001); Bulgaria (2001); Czech Republic (2011); Finland (2011); France (2001); Germany (2001); Greece (2001); Hungary (2001); Italy (2001); Netherlands (2001); Poland (2001); Portugal (2008); Portugal/Madeira (2008); Romania (2001); Slovakia (2001); Spain (2001); Spain/Islas Canárias (2001); Spain/Islas Baleares (2001)
Conclusion:

candidate
Justification (if necessary):

Data of the presence of this pest on the EU territory are available in EPPO Global Database (<https://gd.eppo.int/>).

HOST PLANT N°1: Phaseolus coccineus (PHSCO) for the Vegetable seed sector.

Origin of the listing:

1 - Vegetable seed sector: Council Directive 2002/55/EC
Plants for planting:

Seeds **3 - Is the pest already listed in a PM4 standard on the concerned host plant?**

No
Conclusion:

Evaluation continues **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:

This bean weevil naturally lives in the field environment where the adults lay eggs on the developing host plant seed pod. The larvae hatch and feed and pupate inside the developing seed, and after harvest can complete further generations in store if conditions are suitable. Germination of infested seeds is reduced due to internal damage or destruction of the seed, but can be prevented by storage in certain types of bags or containers (Mutungi et al., 2015). Fewer references to findings on P. coccineus are available compared to P. vulgaris, but the pest still affects this host, causing damage and reduced germination (e.g. Glauninger & Satonek, 1986). In conclusion P. coccineus seeds should be considered as a significant pathway. **5 - Economic impact:**
Are there documented reports of any economic impact on the host?

Yes
Justification:

The main effects of infestation are lack of germination capacity and lower numbers of plants growing normally. Losses can be nearly total. Seed infestation caused reductions in the weight of the green parts of the plants. Infested seedlings are more subject to attack by fungal diseases than uninfested ones (Glauninger & Satonek, 1986).
What is the likely economic impact of the pest irrespective of its infestation source in the absence of phytosanitary measures? (= official measures)

Medium
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:

The bean weevil, Acanthoscelides obtectus Say, causes severe losses in P. coccineus. More records of economic impact are available for P. vulgaris than for P. coccineus probably only because it is more produced in the EU. **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:

The control of this insect relies heavily on the use of conventional insecticides, which increase the associated risk of pest resistance, hazards to human health and environmental infestation. Protecting grains with alternative chemical control options that alleviate the concerns outlined above are urgently needed. Essential oils of plants have been presented as a suitable alternative (Jumbo et al., 2014) . **7- Is the quality of the data sufficient to recommend the pest to be listed as a RNQP?**

Yes

Conclusion:

Candidate
Justification:

Sufficient amount of data, based on scientific literature. **CONCLUSION ON THE STATUS:**

Recommended for listing as an RNQP, based on data. **8 - Tolerance level:**
Is there a need to change the Tolerance level:

Yes
Proposed Tolerance levels:

Zero tolerance approach, based on visual examination. **9 - Risk management measures:**
Is there a need to change the Risk management measure:

Yes
Proposed Risk management measure:

A representative sample of the seed has been subject to inspection (which may follow an appropriate treatment) and has been found free from Acanthoscelides obtectus. **REFERENCES:**

* Mutungi C, Affognon HD, Njoroge AW, Manono J, Baributsa D & Murdock LL (2015) Triple-layer plastic bags protect dry common beans (Phaseolus vulgaris) against damage by Acanthoscelides obtectus (Coleoptera: Chrysomelidae) during storage. Journal of Economic Entomology 108, 2479-2488;
* Glauninger J & Swatonek F (1986) The reaction to infestation of bean seeds (Phaseolus vulgaris L. and P. coccineus L.) by the common bean beetle (Acanthoscelides obtectus Say). Bodenkultur 37, 63-73;

HOST PLANT N°2: Phaseolus vulgaris (PHSVX) for the Vegetable seed sector.

Origin of the listing:

1 - Vegetable seed sector: Council Directive 2002/55/EC
Plants for planting:

Seeds **3 - Is the pest already listed in a PM4 standard on the concerned host plant?**

No
Conclusion:

Evaluation continues **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:

This bean weevil naturally lives in the field environment where the adults lay eggs on the developing host plant seed pod. The larvae hatch and feed and pupate inside the seed, and after harvest can complete further generations in store if conditions are suitable. Germination of infested seeds is reduced due to internal damage or destruction of the seed, but can be prevented by storage in certain types of bags or containers. The pest can develop in Phaseolus vulgaris (Mutungi et al., 2015). In conclusion P. vulgaris seeds should be considered as a significant pathway. **5 - Economic impact:**
Are there documented reports of any economic impact on the host?

Yes
Justification:

Planting bruchid-damaged seeds significantly inhibits seed germination and plant development, and shows negative effects on yield components (number of days to flowering, pod length, plant height, and number of days to physiological maturity), increases powdery mildew severity, and reduces seed quality (Misangu et al., 2007). Infested seedlings are more subject to attack by fungal diseases than uninfested ones (Glauninger & Satonek, 1986).
What is the likely economic impact of the pest irrespective of its infestation source in the absence of phytosanitary measures? (= official measures)

Medium
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:

The bean weevil, Acanthoscelides obtectus Say, causes severe post-harvest losses in the common bean, Phaseolus vulgaris L. **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:

The control of this insect relies heavily on the use of conventional insecticides, which increase the associated risk of pest resistance, hazards to human health and environmental infestation. Protecting grains with alternative chemical control options that alleviate the concerns outlined above are urgently needed. Essential oils of plants have been presented as a suitable alternative (Jumbo et al., 2014) . **7- Is the quality of the data sufficient to recommend the pest to be listed as a RNQP?**

Yes

Conclusion:

Candidate
Justification:

Sufficient amount of data, based on scientific literature. **CONCLUSION ON THE STATUS:**

Recommended for listing as an RNQP, based on data. **8 - Tolerance level:**
Is there a need to change the Tolerance level:

Yes
Proposed Tolerance levels:

Zero tolerance approach, based on visual examination. **9 - Risk management measures:**
Is there a need to change the Risk management measure:

Yes
Proposed Risk management measure:

A representative sample of the seed has been subject to inspection (which may follow an appropriate treatment) and has been found free from Acanthoscelides obtectus. **REFERENCES:**

* Mutungi C, Affognon HD, Njoroge AW, Manono J, Baributsa D & Murdock LL (2015) Triple-layer plastic bags protect dry common beans (Phaseolus vulgaris) against damage by Acanthoscelides obtectus (Coleoptera: Chrysomelidae) during storage. Journal of Economic Entomology 108, 2479-2488;
* Misangu RN, Chipungahelo MS, Reuben SOWM & Mulungu LS (2007) The Effect of sowing bruchid damage bean (Phaseolus vulgaris L.) seeds on germination, plant development and yield. Journal of Entomology 4, 337-341;
* Glauninger J & Swatonek F (1986) The reaction to infestation of bean seeds (Phaseolus vulgaris L. and P. coccineus L.) by the common bean beetle (Acanthoscelides obtectus Say). Bodenkultur 37, 63-73;
* Jumbo LOV, Faroni LRA, Oliveira EE, Pimentel MA, Silva GN (2014) Potential use of clove and cinnamon essential oils to control the bean weevil, Say, in small storage units, Industrial Crops and Products 56, 27-34;
* Thakur DR (2010) Invasion and threats of Acanthoscelides obtectus (Say) (Coleloptera: Bruchidae) to kidney beans in India - a first record. Julius Kühn-Institut, Bundesforschungsinstitut für Kulturpflanzen, Quedlinburg;

HOST PLANT N°3: Pisum sativum (PIBSX) for the Vegetable seed sector.

Origin of the listing:

1 - Vegetable seed sector: Council Directive 2002/55/EC
Plants for planting:

Seeds **3 - Is the pest already listed in a PM4 standard on the concerned host plant?**

No
Conclusion:

Evaluation continues **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:

This bean weevil naturally lives in the field environment where the adults lay eggs on the developing host plant seed pod. The larvae hatch and feed and pupate inside the developing seed, and after harvest can complete further generations in store if conditions are suitable. Germination of infested seeds is reduced due to internal damage or destruction of the seed, but can be prevented by storage in certain types of bags or containers (Mutungi et al., 2015).
One record of damage is available on peas (Pisum sativum (Gelosi & Arcozzi, 1983). The pest was also recorded on peas in Bulgaria (Krusteva, 1973).
In conclusion P. sativum seeds should be considered as a significant pathway. **5 - Economic impact:**
Are there documented reports of any economic impact on the host?

Yes
Justification:

One record of damage on peas (Pisum vulgaris) is available (Gelosi & Arcozzi, 1983).
What is the likely economic impact of the pest irrespective of its infestation source in the absence of phytosanitary measures? (= official measures)

Minor
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?

Yes
Is there unacceptable economic impact caused to other hosts (or the same host with a different intended use) produced at the same place of production due to the transfer of the pest from the named host plant for planting?

No
Conclusion:

Not candidate
Justification:

Insufficient evidence of economic impact is available to propose the RNQP listing (only one record of damage on peas (Pisum vulgaris)). **CONCLUSION ON THE STATUS:**

Disqualified: Insufficient evidence of economic impact is available to propose the RNQP listing (only one record of damage on peas (Pisum vulgaris)). **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:**

* Gelosi A & Arcozzi L (1983) Bean bruchid (Acanthoscelides obsoletus Say). Informatore Fitopatologico 33, 35-38;
* Krusteva L (1973) Acanthoscelides obtectus and its control. Rastitelna Zashchita 21, 10-12;
* Mutungi C, Affognon HD, Njoroge AW, Manono J, Baributsa D & Murdock LL (2015) Triple-layer plastic bags protect dry common beans (Phaseolus vulgaris) against damage by Acanthoscelides obtectus (Coleoptera: Chrysomelidae) during storage. Journal of Economic Entomology 108, 2479-2488;

HOST PLANT N°4: Vicia faba (VICFX) for the Vegetable seed sector.

Origin of the listing:

1 - Vegetable seed sector: Council Directive 2002/55/EC
Plants for planting:

Seeds **3 - Is the pest already listed in a PM4 standard on the concerned host plant?**

No
Conclusion:

Evaluation continues **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:

This bean weevil naturally lives in the field environment where the adults lay eggs on the developing host plant seed pod. The larvae hatch and feed and pupate inside the developing seed, and after harvest can complete further generations in store if conditions are suitable. Germination of infested seeds is reduced due to internal damage or destruction of the seed, but can be prevented by storage in certain types of bags or containers (Mutungi et al., 2015).
The pest can develop in Vicia faba, though to less extent than P. vulgaris (Hamraoui & Regnault-Roger, 1995) (Krusteva 1980).
In conclusion V. faba seeds should be considered as a significant pathway. **5 - Economic impact:**
Are there documented reports of any economic impact on the host?

Yes
Justification:

The pest can develop in Vicia faba, though to less extent than P. vulgaris (Hamraoui & Regnault-Roger, 1995) (Krusteva, 1980).
What is the likely economic impact of the pest irrespective of its infestation source in the absence of phytosanitary measures? (= official measures)

Minimal
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?

Yes
Is there unacceptable economic impact caused to other hosts (or the same host with a different intended use) produced at the same place of production due to the transfer of the pest from the named host plant for planting?

No
Conclusion:

Not candidate
Justification:

Insufficient evidence of economic impact is available to propose the RNQP listing. **CONCLUSION ON THE STATUS:**

Disqualified: Insufficient evidence of economic impact is available to propose the RNQP listing. **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:**

* Hamraoui A & Regnault-Roger C (1995) Oviposition and larval growth of Acanthoscelides obtectus Say (Col., Bruchidae) in regard to host and non-host plants from leguminosae family. Journal of Applied Entomology 119,195-199;
* Krusteva L (1980) The bean weevil and its control. Rastitelna Zashchita 28, 39-41;
* Mutungi C, Affognon HD, Njoroge AW, Manono J, Baributsa D & Murdock LL (2015) Triple-layer plastic bags protect dry common beans (Phaseolus vulgaris) against damage by Acanthoscelides obtectus (Coleoptera: Chrysomelidae) during storage. Journal of Economic Entomology 108, 2479-2488;