NAME OF THE ORGANISM: Bruchus rufimanus (BRCHRU)

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
Conclusion:

candidate
Justification (if necessary):

The pest is present in all EU Member States (Fauna Europaea, 2017; Seidenglanz & Huňady, 2016).

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):**

No
Conclusion:

Not candidate

Justification:

No references to evidence of infestation of seeds of Phaseolus coccineus by Bruchus rufimanus could be found. **CONCLUSION ON THE STATUS:**

Disqualified: no references to evidence of infestation of seeds of Phaseolus coccineus, Phaseolus vulgaris or Pisum sativum by Bruchus rufimanus could be found. **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:**

* Seidenglanz M & Huňady I (2016) Effects of faba bean (Vicia faba) varieties on the development of Bruchus rufimanus. Czech Journal of Genetics and Plant Breeding 52, 22–29;

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):**

No
Conclusion:

Not candidate

Justification:

No references to evidence of infestation of seeds of Phaseolus vulgaris by Bruchus rufimanus could be found. **CONCLUSION ON THE STATUS:**

Disqualified: no references to evidence of infestation of seeds of Phaseolus coccineus, Phaseolus vulgaris or Pisum sativum by Bruchus rufimanus could be found. **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:**

* Fauna Europaea (2017) Bruchus rufimanus. All European animal species online. Museum für naturkunde, Berlin. Available online at <http://www.fauna-eu.org/cdm_dataportal/taxon/25a3bd95-2b8d-4e04-b3ef-170a459cbd72>;
* Seidenglanz M & Huňady I (2016) Effects of faba bean (Vicia faba) varieties on the development of Bruchus rufimanus. Czech Journal of Genetics and Plant Breeding 52, 22–29;

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):**

No
Conclusion:

Not candidate

Justification:

No references to evidence of infestation and damage of seeds of Pisum sativum by Bruchus rufimanus could be found. There was one record of Bruchus rufimanus loose, on stored threshed dried peas but not as a result of emergence from the harvested pea seeds (Mateus et al., 2003). **CONCLUSION ON THE STATUS:**

Disqualified: no references to evidence of infestation of seeds of Phaseolus coccineus, Phaseolus vulgaris or Pisum sativum by Bruchus rufimanus could be found. **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:**

* Fauna Europaea (2017) Bruchus rufimanus. All European animal species online. Museum für naturkunde, Berlin. Available online at <http://www.fauna-eu.org/cdm_dataportal/taxon/25a3bd95-2b8d-4e04-b3ef-170a459cbd72>;
* Mateus C, Duarte I, Sousa MT de & Mexia A (2004) Bruchids (Coleoptera: Bruchidae) on peas (Pisum sativum L.): species, geographical distribution and effect on host varieties. Bulletin OILB/SROP 27, 47-50;
* Seidenglanz M & Huňady I (2016) Effects of faba bean (Vicia faba) varieties on the development of Bruchus rufimanus. Czech Journal of Genetics and Plant Breeding 52, 22–29;

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:

The bean seed beetle, Bruchus rufimanus, is an economically important pest of Vicia faba bean crops throughout Europe (Seidenglanz & Huňady, 2016). It is an univoltine species developing in the seeds of Vicia faba L. The adults occurring in the most numerous during the flowering time of broad bean. They become
sexually mature when the first green pods appeared on the host plant and oviposit on the surface of these pods (Middlekauf 1951, Medjdoub-Bensaad
et al. 2007). The adults overwinter under the bark of trees, in leaf litter, soil crevices and also in seeds and return to the growing crop in the spring. Eggs are on the outside of the developing pods and larvae develop inside, before the adult chews an exit hole through the seed coat (Yao et Yang, 1985 ; Huignard and al., 1990; Seidenglanz & Huňady, 2016). A second generation is possible in warehouses. Seed is therefore a pathway and other sources can be managed, therefore seed can be considered a significant pathway compared to others for the pest/host/intended use combination. **5 - Economic impact:**
Are there documented reports of any economic impact on the host?

Yes
Justification:

B. rufimanus alters the aesthetic quality of the seeds as well as its germinative properties which is an issue for human consumption and seed markets. Damaged seeds (seeds from which adults have emerged) might have lower germination rates with 13% reduced germination observed in the lab, but no difference observed in the field (Epperlein, 1992). Levels of seed infestation have ranged between 1% and 50% during the last decade (2000–2010) in Central and Western Europe, and as this can vary between seasons (Seidenglanz & Huňady, 2016). In Turkey, all samples of faba bean [Vicia faba] contained B. rufimanus, with an infestation rate of 15.4% and a damage rate of 0.163% (Özar & Genç, 1987). In addition, damaged seeds have increased susceptibility to rust and root diseases (Epperlein, 1992). The presence of living insects on seeds are also an issue for the export market: the presence of weevils in the seeds after harvest thereby decreases faba bean commercial value (Roubinet, 2016).
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:

 **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 larval stages of B. rufimanus occur inside the seeds and are therefore protected from any control measures, including chemical control. Most control measures have therefore targeted adults either at colonization stage in the field or at emergence in storage facilities. Control measures have been focused on direct control with insecticides, but restrictions and removal from market due to environmental concerns have increased the need for alternative measures. Only one insecticide (Biscaya) is currently authorized for use in the field against B. rufimanus in Sweden. Research projects to develop pest management are ongoing in the UK and in France in collaboration with growers (Roubinet, 2016). **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:**

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 Bruchus rufimanus.
Justification (if necessary):

For these beetles infesting seed, inspections on seed are likely to detect symptoms without necessarily confirming species. Risk from focusing the listing on the main species in each case is therefore very limited. **REFERENCES:**

* Chodulska L (1985) Straty gospodarcze spowodowane przez strąkowca (Coleoptera: Bruchidae) Biul. Hod. Rośl. 3; 10-11. [in Polish]
* Dupont P & Huignard J (1990) Relationships between Bruchus rufimanus (Boh.) (Coleoptera: Bruchidae) and the phenology of its host plant V. faba L. Their importance in the spatial distribution of the insects. Symposia. Biology Hungaricae 39, 255-263;
* Epperlein K (1992) (Martin-L.-U.H.-W., 1992. Investigation of the damage of broad bean weevil Bruchus rufimanus Bohem. (Col., Bruchidae) on broad bean seed (Vicia faba L.). Anz. Fuer Schaedlingskunde Pflanzenschutz Umweltschutz Ger. In German.;
* Fauna Europaea (2017) Bruchus rufimanus. All European animal species online. Museum für naturkunde, Berlin. Available online at <http://www.fauna-eu.org/cdm_dataportal/taxon/25a3bd95-2b8d-4e04-b3ef-170a459cbd72>;
* Özar Aİ & Genç H (1987) Study on the rates of infestation and damage by species of Bruchidae (Coleoptera) damaging stored food legumes in the Aegean Region. Conference paper : Türikye I. Entomoloji Kongresi Bildirileri, Ekim 13-16 1987, Ege Üniversitesi, Bornova, Izmir. 341-350;
* Roubinet E (2016) Management of the broad bean weevil (Bruchus rufimanus Boh.) in faba bean (Vicia faba L.), Swedish University of Agricultural Sciences;
* Seidenglanz M & Huňady I (2016) Effects of faba bean (Vicia faba) varieties on the development of Bruchus rufimanus. Czech Journal of Genetics and Plant Breeding 52, 22–29;
* Szafirowska A (2012) The role of cultivars and sowing date in control of broad bean weevil in organic cultivation. Vegetable crops research bulletin 77, 29-36;
* Yao K & Yang CT (1985) Bionomics of the broad bean weevil, Bruchus rufimanus Boheman. Acta Entomologica 28, 45-50.;