European Food Safety Authority

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SCIENTIFIC OPINION

Scientific Opinion on the pest categorisation of Beet leaf curl virus[1]

EFSA Panel on Plant Health (PLH)[2,3]

European Food Safety Authority (EFSA), Parma, Italy

ABSTRACT

The Panel on Plant Health performed a pest categorisation of Beet leaf curl virus (BLCV) for the European Union (EU) territory. BLCV mainly infects *Beta* spp., as well as *Spinacia* spp., *Tetragonia tetragonioides* and the common weeds *Atriplex* spp. and *Chenopodium* spp. This putative Rhabdovirus is not a recognised virus species; it is only defined by particle morphology and by its circular propagative transmission by the lace bug *Piesma quadratum*. No efficient diagnostic assay is available for BLCV, which was reported in only Germany and Turkey. With a few exceptions, there is no record of BLCV after 1983. BLCV is listed in Annex IIAII of Directive 2000/29/EC. The virus itself is not expected to be affected by ecoclimatic conditions and its *P. quadratum* vector is widely distributed in the EU; thus, BLCV has the potential to establish and spread over large areas of the EU and cause significant damage in sugarbeet. However, it appears to have caused sporadic outbreaks in only some years, possibly associated with high vector populations. It does not appear to have had any significant impact in recent years, and it may now no longer be significantly present in agricultural production systems. This situation is possibly a consequence of current intensive sugarbeet crop management practices and of the ensuing reduction in vector populations. Owing to the very limited literature available on BLCV, a full pest risk assessment is highly unlikely to provide clearer insight into the risks associated with this virus than the present pest categorisation.

KEY WORDS

BLCV, beet, biology, distribution, impact, *Piesma quadratum*, quarantine pest

[1] On request from the European Commission, Question No EFSA-Q-2014-00287, adopted on 25 September 2014.

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BACKGROUND AS PROVIDED BY THE EUROPEAN COMMISSION

The current European Union plant health regime is established by Council Directive 2000/29/EC on protective measures against the introduction into the Community of organisms harmful to plants or plant products and against their spread within the Community (OJ L 169, 10.7.2000, p. 1).

The Directive lays down, amongst others, the technical phytosanitary provisions to be met by plants and plant products and the control checks to be carried out at the place of origin on plants and plant products destined for the Union or to be moved within the Union, the list of harmful organisms whose introduction into or spread within the Union is prohibited and the control measures to be carried out at the outer border of the Union on arrival of plants and plant products.

The Commission is currently carrying out a revision of the regulatory status of organisms listed in the Annexes of Directive 2000/29/EC. This revision targets mainly organisms which are already locally present in the EU territory and that in many cases are regulated in the EU since a long time. Therefore it is considered to be appropriate to evaluate whether these organisms still deserve to remain regulated under Council Directive 2000/29/EC, or whether, if appropriate, they should be regulated in the context of the marketing of plant propagation material, or be deregulated. The revision of the regulatory status of these organisms is also in line with the outcome of the recent evaluation of the EU Plant Health Regime, which called for a modernisation of the system through more focus on prevention and better risk targeting (prioritisation).

In order to carry out this evaluation, a recent pest risk analysis is needed which takes into account the latest scientific and technical knowledge on these organisms, including data on their agronomic and environmental impact, as well as their present distribution in the EU territory. In this context, EFSA has already been asked to prepare risk assessments for some organisms listed in Annex IIAII. The current request concerns 23 additional organisms listed in Annex II, Part A, Section II as well as five organisms listed in Annex I, Part A, Section I, one listed in Annex I, Part A, Section II and nine organisms listed in Annex II, Part A, Section I of Council Directive 2000/29/EC. The organisms in question are the following:

Organisms listed in Annex II, Part A, Section II:

- *Ditylenchus destructor* Thorne
- *Circulifer haematoceps*
- *Circulifer tenellus*
- *Helicoverpa armigera* (Hübner)
- *Radopholus similis* (Cobb) Thorne (could be addressed together with the HAI organism *Radopholus citrophilus* Huettel Dickson and Kaplan)
- *Paysandisia archon* (Burmeister)
- *Clavibacter michiganensis* spp. *insidiosus* (McCulloch) Davis *et al.*
- *Erwinia amylovora* (Burr.) Winsl. *et al.* (also listed in Annex IIB)
- *Pseudomonas syringae* pv. *persicae* (Prunier *et al.*) Young *et al.*
- *Xanthomonas campestris* pv. *phaseoli* (Smith) Dye
- *Xanthomonas campestris* pv. *pruni* (Smith) Dye
- *Xylophilus ampelinus* (Panagopoulos) Willems *et al.*
- *Ceratocystis fimbriata* f. sp. *platani* Walter (also listed in Annex IIB)
- *Cryphonectria parasitica* (Murrill) Barr (also listed in Annex IIB)
- *Phoma tracheiphila* (Petri) Kanchaveli and Gikashvili
- *Verticillium albo-atrum* Reinke and Berthold
- *Verticillium dahliae* Klebahn
- Beet leaf curl virus
- Citrus tristeza virus (European isolates) (also listed in Annex IIB)
- Grapevine flavescence dorée MLO (also listed in Annex IIB)

- Potato stolbur mycoplasma
- *Spiroplasma citri* Saglio *et al.*
- Tomato yellow leaf curl virus

Organisms listed in Annex I, Part A, Section I:

- *Rhagoletis cingulata* (Loew)
- *Rhagoletis ribicola* Doane
- Strawberry vein banding virus
- Strawberry latent C virus
- Elm phloem necrosis mycoplasm

Organisms listed in Annex I, Part A, Section II:

- *Spodoptera littoralis* (Boisd.)

Organisms listed in Annex II, Part A, Section I:

- *Aculops fuchsiae* Keifer
- *Aonidiella citrina* Coquillet
- Prunus necrotic ringspot virus
- Cherry leafroll virus
- *Radopholus citrophilus* Huettel Dickson and Kaplan (could be addressed together with IIAII organism *Radopholus similis* (Cobb) Thorne)
- *Scirtothrips dorsalis* Hendel
- *Atropellis* spp.
- *Eotetranychus lewisi* McGregor
- *Diaporthe vaccinii* Shaer.

TERMS OF REFERENCE AS PROVIDED BY THE EUROPEAN COMMISSION

EFSA is requested, pursuant to Article 29(1) and Article 22(5) of Regulation (EC) No 178/2002, to provide a pest risk assessment of *Ditylenchus destructor* Thorne, *Circulifer haematoceps, Circulifer tenellus, Helicoverpa armigera* (Hübner), *Radopholus similis* (Cobb) Thorne, *Paysandisia archon* (Burmeister), *Clavibacter michiganensis* spp. *insidiosus* (McCulloch) Davis *et al, Erwinia amylovora* (Burr.) Winsl. *et al, Pseudomonas syringae pv. persicae* (Prunier *et al)* Young *et al. Xanthomonas campestris* pv. *phaseoli* (Smith) Dye, *Xanthomonas campestris* pv. *pruni* (Smith) Dye, *Xyîophilus ampelinus* (Panagopoulos) Willems *et al, Ceratocystis fimbriata* f. sp. *platani* Walter, *Cryphonectria parasitica* (Murrill) Barr, *Phoma tracheiphila* (Petri) Kanchaveli and Gikashvili, *Verticillium albo-atrum* Reinke and Berthold, *Verticillium dahliae* Klebahn, Beet leaf curl virus, Citrus tristeza virus (European isolates), Grapevine flavescence dorée MLO, Potato stolbur mycoplasma, *Spiroplasma citri* Saglio *et al,* Tomato yellow leaf curl virus, *Rhagoletis cingulata* (Loew), *Rhagoletis ribicola* Doane, Strawberry vein banding virus, Strawberry latent C virus, Elm phloem necrosis mycoplasma, *Spodoptera littoralis* (Boisd.), *Aculops fuchsiae* Keifer, *Aonidiella citrina* Coquillet, Prunus necrotic ringspot virus, Cherry leafroll virus, *Radopholus citrophilus* Huettel Dickson and Kaplan (to address with the IIAII *Radopholus similis* (Cobb) Thorne), *Scirtothrips dorsalis* Hendel, *Atropellis* spp., *Eotetranychus lewisi* McGregor and *Diaporthe vaccinii* Shaer., for the EU territory.

In line with the experience gained with the previous two batches of pest risk assessments of organisms listed in Annex II, Part A, Section II, requested to EFSA, and in order to further streamline the preparation of risk assessments for regulated pests, the work should be split in two stages, each with a specific output. EFSA is requested to prepare and deliver first a pest categorisation for each of these 38 regulated pests (step 1). Upon receipt and analysis of this output, the Commission will inform EFSA for which organisms it is necessary to complete the pest risk assessment, to identify risk reduction options and to provide an assessment of the effectiveness of current EU phytosanitary requirements (step 2). *Clavibacter michiganensis* spp. *michiganensis* (Smith) Davis *et al.* and *Xanthomonas campestris* pv. *vesicatoria* (Doidge) Dye, from the second batch of risk assessment requests for Annex IIAII organisms requested to EFSA (ARES(2012)880155), could be used as pilot cases for this approach, given that the working group for the preparation of their pest risk assessments has been constituted and it is currently dealing with the step 1 "pest categorisation". This proposed modification of previous request would allow a rapid delivery by EFSA by May 2014 of the first two outputs for step 1 "pest categorisation", that could be used as pilot case for this request and obtain a prompt feedback on its fitness for purpose from the risk manager's point of view.

As indicated in previous requests of risk assessments for regulated pests, in order to target its level of detail to the needs of the risk manager, and thereby to rationalise the resources used for their preparation and to speed up their delivery, for the preparation of the pest categorisations EFSA is requested, in order to define the potential for establishment, spread and impact in the risk assessment area, to concentrate in particular on the analysis of the present distribution of the organism in comparison with the distribution of the main hosts and on the analysis of the observed impacts of the organism in the risk assessment area.

ASSESSMENT

1. Introduction

1.1. Purpose

This document presents a pest categorisation prepared by the EFSA Scientific Panel on Plant Health (hereinafter referred to as the Panel) for Beet leaf curl virus (BLCV) in response to a request from the European Commission.

1.2. Scope

The risk assessment area is the territory of the European Union (hereinafter referred to as the EU) with 28 Member States (hereinafter referred to as MSs), restricted to the area of application of Council Directive 2000/29/EC.

2. Methodology and data

2.1. Methodology

The Panel performed the pest categorisation for BLCV following guiding principles and steps presented in the EFSA Guidance on a harmonised framework for pest risk assessment (EFSA PLH Panel, 2010) and as defined in the International Standards for Phytosanitary Measures (ISPM) No 11 (FAO, 2013) and ISPM No 21 (FAO, 2004).

In accordance with the Guidance on a harmonised framework for pest risk assessment in the EU (EFSA PLH Panel, 2010), this work is initiated as result of the review or revision of phytosanitary policies and priorities. As explained in the background of the European Commission request, the objective of this mandate is to provide updated scientific advice to the European risk managers for their evaluation of whether these organisms listed in the Annexes of the Directive 2000/29/EC still deserve to remain regulated under Council Directive 2000/29/EC, or whether they should be regulated in the context of the marketing of plant propagation material, or be deregulated. Therefore, to facilitate the decision making process, in the conclusions of the pest categorisation, the Panel addresses explicitly each criterion for quarantine pest according to ISPM 11 (FAO, 2013) but also for regulated non-quarantine pest according to ISPM 21 (FAO, 2004) and includes additional information required as per the specific terms of reference received by the European Commission. In addition, for each conclusion the Panel provides a short description of its associated uncertainty.

Table 1 presents the ISPM 11 (FAO, 2013) and ISPM 21 (FAO, 2004) pest categorisation criteria against which the Panel provides its conclusions. It should be noted that the Panel's conclusions are formulated respecting its remit and particularly with regards to the principle of separation between risk assessment and risk management (EFSA founding regulation[4]), therefore, instead of determining whether the pest is likely to have an unacceptable impact, the Panel will present a summary of the observed pest impacts. Economic impacts are expressed in terms of yield and quality losses and not in monetary terms, in agreement with the Guidance on a harmonised framework for pest risk assessment (EFSA PLH Panel, 2010).

[4] Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety. OJ L 31/1, 1.2.2002, p. 1–24.

Table 1: International Standards for Phytosanitary Measures ISPM 11 (FAO, 2013) and ISPM 21 (FAO, 2004) pest categorisation criteria under evaluation

Pest categorisation criteria	ISPM 11 for being a potential quarantine pest	ISPM 21 for being a potential regulated non-quarantine pest
Identity of the pest	The identity of the pest should be clearly defined to ensure that the assessment is being performed on a distinct organism, and that biological and other information used in the assessment is relevant to the organism in question. If this is not possible because the causal agent of particular symptoms has not yet been fully identified, then it should have been shown to produce consistent symptoms and to be transmissible	The identity of the pest is clearly defined
Presence (ISPM 11) or absence (ISPM 21) in the PRA area	The pest should be **absent from all or a defined part of the PRA area**	The pest is **present** in the PRA area
Regulatory status	If the pest is present but not widely distributed in the PRA area, it should be under official control or expected to be under official control in the near future	The pest is under official control (or being considered for official control) in the PRA area with respect to the specified plants for planting
Potential for establishment and spread in the PRA area	The PRA area should have ecological/climatic conditions including those in protected conditions suitable for the establishment and spread of the pest and, where relevant, host species (or near relatives), alternate hosts and vectors should be present in the PRA area	–
Association of the pest with the plants for planting and the effect on their intended use	–	Plants for planting are a pathway for introduction and spread of this pest
Potential for consequences (including environmental consequences) in the PRA area	There should be clear indications that the pest is likely to have an unacceptable economic impact (including environmental impact) in the PRA area	–
Indication of impact(s) of the pest on the intended use of the plants for planting	–	The pest may cause severe economic impact on the intended use of the plants for planting
Conclusion	If it has been determined that the pest has the potential to be a quarantine pest, the PRA process should continue. If a pest does not fulfil all of the criteria for a quarantine pest, the PRA process for that pest may stop. In the absence of sufficient information, the uncertainties should be identified and the PRA process should continue	If a pest does not fulfil all the criteria for an regulated non-quarantine pest, the PRA process may stop

In addition, in order to reply to the specific questions listed in the terms of reference, three issues are specifically discussed only for pests already present in the EU: the analysis of the present EU distribution of the organism in comparison with the EU distribution of the main hosts, the analysis of the observed impacts of the organism in the EU and the pest control and cultural measures currently implemented in the EU.

The Panel will not indicate in its conclusions of the pest categorisation whether to continue the risk assessment process as it is clearly stated in the terms of reference that at the end the pest categorisation the European Commission will indicate if further risk assessment work is required following their analysis of the Panel's scientific opinion.

2.2. Data

2.2.1. Literature search

A literature search on BLCV was conducted at the beginning of the mandate. The search was conducted for the scientific name of the pest together with the most frequently used common names on the ISI Web of Knowledge database. Further references and information were obtained from experts, from citations within the references as well as from grey literature.

2.2.2. Data collection

To complement the information concerning the current situation of the pest provided by the literature and online databases on pest distribution, damage and management, the PLH Panel sent a short questionnaire on the current situation at country level, based on the information available in the European and Mediterranean Plant Protection Organization (EPPO) Plant Quarantine Retrieval (PQR) system, to the National Plant Protection Organisation (NPPO) contacts of the 28 EU MSs, and of Iceland and Norway. Iceland and Norway are part of the European Free Trade Association (EFTA) and are contributing to EFSA data collection activities, as part of the agreements EFSA has with these two countries. A summary of the pest status based on EPPO PQR and NPPO replies is presented in Table 2.

Information on distribution of the main host plants were obtained from the EUROSTAT database.

3. Pest categorisation

3.1. Identity and biology of Beet leaf curl virus

3.1.1. Taxonomy

Beet leaf curl virus is the name of a plant virus which has been found to be associated with a disease of sugarbeet. Synonymous names include beet leaf crinkle virus, Rübenkräuselvirus and beet Kräuselkrankheit virus. Besides the description of the symptoms caused in sugarbeet, the virus has not been clearly identified or characterised. There is only very limited information on the virus, but it is suspected to be a plant-infecting rhabdovirus. Only its particle morphology and the persistent propagative transmission by *Piesma quadratum* support its possible taxonomic affiliation as a member of the family *Rhabdoviridae.* In particular, the particles are typical rhabdovirus bacilliform, bullet-shaped particles of 80 nm diameter with an electron-dense core region and a membrane envelope with protrusions (Proeseler, 1983). No other characteristics of the virus are known. It is listed by the International Committee for the Taxonomy of Viruses as an agent that may be a member of the family *Rhabdoviridae*, but it has not been approved as a species (Dietzgen et al., 2012). It therefore has an unclear taxonomic status and cannot be regarded as a valid species.

With the exception of a report in the 1990s, there does not seem to have been any significant research efforts or publications on BLCV in the past 30 years, and viral isolates that could be used in further studies seem unavailable.

3.1.2. Biology of Beet leaf curl virus

Only very limited information is available on the biology of BLCV. Its known host range is restricted to *Beta* spp. (i.e. sugarbeet and fodder beet), *Chenopodium* spp., *Spinacia* spp., *Atriplex* spp. and *Tetragonia tetragonioides* (Wille, 1928; Petherbridge and Stirrup, 1935; Smith, 1972). Vector transmission by the lace bug *P. quadratum* is the sole known natural means of virus spread. The insect transmits BLCV in a propagative persistent manner. There is a minimal acquisition access period of 30 minutes and a long latency period (7–35 days) before the insects become viruliferous and are able to transmit the virus. Adults and nymphs can acquire and transmit the virus and the vectors remain infective throughout their life, but infectivity is not transferred to their progeny (Proeseler, 1983). There is no information on potential seed or pollen transmission of BLCV.

3.1.3. Intraspecific diversity

No information is available on intraspecific diversity of BLCV.

3.1.4. Detection and identification of Beet leaf curl virus

Besides the observation of symptoms or of virus particles, which cannot be considered diagnostic, no means of virus detection are reported. Because of the lack of virus isolates that could be used as positive controls and of the scarcity of recent research, no serological or molecular detection tests are available. Overall, no reliable diagnostics exist for BLCV.

3.2. Current distribution of Beet leaf curl virus

3.2.1. Global distribution of Beet leaf curl virus

EPPO, by evaluating country reports and CAB International disease maps, indicated that the virus was present outside Europe, but only in Turkey (Figure 1). However, in the absence of surveys and of efficient diagnostic means, distribution information should be considered as having a high level of uncertainty.

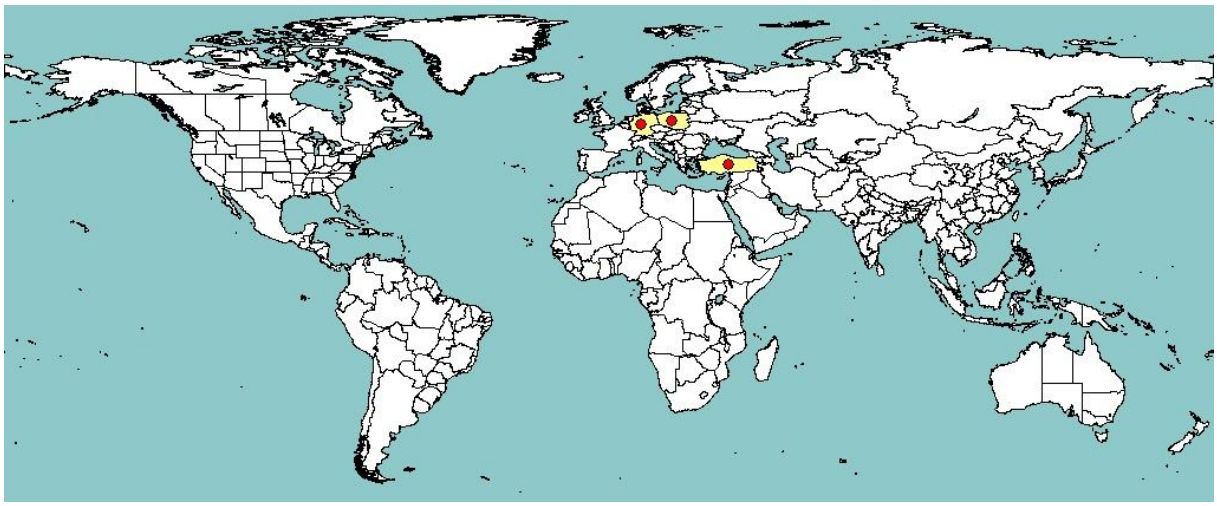

Figure 1: Global distribution map for Beet leaf curl virus (extracted from EPPO Plant Quarantine Retrieval system, version 5.3.1, accessed in June 2014). Red circles represent pest presence as national records (note that this figure combines information from different dates, some of which could be out of date)

3.2.2. Distribution in the EU of Beet leaf curl virus

Because of the near absence of systematic surveys and of suitable diagnostics, data for virus presence/absence in European countries have high levels of uncertainty. The data are also out of date,

given the absence of any recent work on BLCV. Definite virus findings are from Germany only, where the virus was first described, and those reports date back to 1983 or earlier (EPPO, 1997) (Table 2). The 1998 report from Poland (Korcz et al., 1998) includes significant uncertainties because of the absence of suitable diagnostic techniques.

The presence of BLCV was reported to be sporadic, with long periods between outbreaks which coincided with high numbers of *P. quadratum*. For unknown reasons, possibly linked to current intensive crop management practices, the virus may no longer be significantly present in agricultural production systems (Prof. Dr. Gerhard Proeseler, Federal Centre for Breeding Research on Cultivated Plants, personal communication, 2014). In particular, there are no new records of BLCV in Germany in the past 20 years (Table 2).

Table 2: Current distribution of Beet leaf curl virus in the 28 Member States, Iceland and Norway, based on the answers received via email from the NPPOs or, in absence of reply, on information from EPPO PQR.

Country	NPPO answer	NPPO comment
Austria	**Absent**, no pest record	
Belgium	**Absent**, confirmed by survey	No findings since 2007
Bulgaria	**Absent**	
Croatia	**Absent**, no pest record	
Cyprus	–	
Czech Republic	**Absent**, pest eradicated	
Denmark	**Absent**, not known to occur	
Estonia	–	
Finland	**Absent**, no pest record	
France	–	
Germany	**Present**, few occurrence	No new records in the last 20 years
Greece [(a)]	–	
Hungary	**Absent**, no pest record	
Ireland	**Absent**, no pest record	
Italy	**Absent**, never found	
Latvia [(a)]	–	
Lithuania [(a)]	–	
Luxembourg [(a)]	–	
Malta	**Absent**, no pest record	
Netherlands	**Absent**, no pest record	
Poland	**Absent**, no pest record	
Portugal	**Absent**	
Romania [(a)]	–	
Slovakia	**Absent**, pest eradicated	
Slovenia	**Absent**, no pest record on *Beta vulgaris*	
Spain	**Absent**	
Sweden	**Absent**, not known to occur	
United Kingdom	**Absent**	
Iceland [(a)]	–	
Norway [(a)]	–	

–, no information available.
(a): When no information was made available to EFSA, the pest status in the EPPO PQR (2012) was used.

3.2.3. Vectors and their distribution in the EU

P. quadratum is present throughout the EU (Figure 2). The insect prefers areas with light and sandy soil conditions, particularly in fields near forests or hedges where it prefers to overwinter. Accordingly, the reported cases of BLCV were in regions with light and sandy soil conditions.

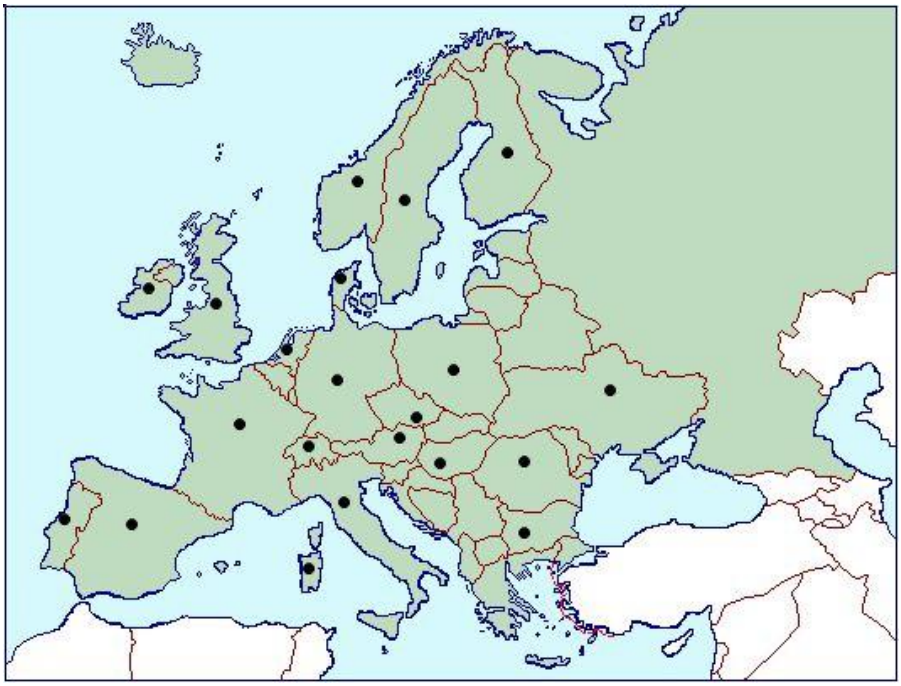

Figure 2: Distribution map of *Piesma quadratum* in open fields in the risk assessment area (CAB International, 2008). Countries where *Piesma quadratum* is reported are marked by a black dot

3.3. Regulatory status in the EU

3.3.1. Council Directive 2000/29/EC

3.3.1.1. Harmful organism

BLCV is a regulated harmful organism in the EU and is currently listed in Annex II, Part A, Section II of Council Directive 2000/29/EC (Table 3).

Table 3: Beet leaf curl virus in Council Directive 2000/29/EC

Annex II, Part A	Harmful organisms whose introduction into, and spread within, all Member States shall be banned if they are present on certain plants or plant products	
Section II	Harmful organisms known to occur in the community and relevant for the entire community	
(d)	Virus and virus-like organisms	
	Species	**Subject of contamination**
2	Beet leaf curl virus	Plants of *Beta vulgaris* L., intended for planting, other than seeds

3.3.1.2. Regulated hosts of Beet leaf curl virus

In Table 4, specific requirements of Annex IV and Annex V of Council Directive 2000/29/EC are presented for the host plants and commodities regulated for BLCV in Annex IIAII. In addition, it is important to mention that other specific commodities could also be pathways of introduction of the pest in the risk assessment area, such as plants of *Beta vulgaris* intended for industrial processing, soil from beet and unsterilised waste from beet, and seeds of *Beta vulgaris*.

Table 4: Beet leaf curl virus host plants in Council Directive 2000/29/EC

Annex IV, Part A	Special requirements which must be laid down by all Member States for the introduction and movement of plants, plant products and other objects into and within all Member States	
Section I	Plants, plant products and other objects originating outside the Community	
	Plants, plant products and other objects	**Special requirements**
35.2	Plants of *Beta vulgaris* L. intended for planting, other than seeds, originating in countries where Beet leaf curl virus is known to occur	Without prejudice to the requirements applicable the plants listed in Annex IV(A)(I) (35.1), official statement that: (a) Beet leaf curl virus has not been known to occur in the area of production; and (b) no symptoms of Beet leaf curl virus have been observed at the place or production or in its immediate vicinity since the beginning of the last complete cycle of vegetation
Section II	Plants, plant products and other objects originating in the Community	
	Plants, plant products and other objects	**Special requirements**
25	Plants of *Beta vulgaris* L., intended for planting, other than seeds	Official statement that: (a) the plants originate in areas known to be free from Beet leaf curl virus; or (b) Beet leaf curl virus has not been known to occur in the area of production and no symptoms of Beet leaf curl virus have been observed at the place of production or in its immediate vicinity since the beginning of the last complete cycle of vegetation
Annex V	Plants, plant products and other objects which must be subject to a plant health inspection (at the place of production if originating in the Community, before being moved within the Community—in the country of origin or the consignor country, if originating outside the Community) before being permitted to enter the Community	
Part A	Plants, plant products and other objects originating in the Community	
Section I	Plants, plant products and other objects which are potential carriers of harmful organisms of relevance for the entire Community and which must be accompanied by a plant passport	
1	Plants and plant products	
1.2	Plants of *Beta vulgaris* L. […], intended for planting, other than seeds	
Section II	Plants, plant products and other objects which are potential carriers of harmful organisms of relevance for certain protected zones, and which must be accompanied by a plant passport valid for the appropriate zone when introduced into or moved within that zone Without prejudice to the plants, plant products and other objects listed in Part I	
1	Plants, plant products and other objects	
1.2	Plants intended for planting, other than seeds, of […] *Beta vulgaris* L.	
Part B	Plants, plant products and other objects originating in territories, other than those territories referred to in Part A	
Section I	Plants, plant products and other objects which are potential carriers of harmful organisms of relevance for the entire Community	
1	Plants, intended for planting, other than seeds […]	

3.3.2. Marketing directives

Host plants of CLRV that are regulated in Annex IIAII of Council Directive 2000/29/EC are explicitly mentioned in the following marketing directives:

- Council Directive 2002/54/EC[5]
- Council Directive 2002/55/EC[6]

[5] Council Directive 2002/54/EC of 13 June 2002 on the marketing of beet seed. OJ L 193/12, 20.7.2002, p. 12–32.
[6] Council Directive 2002/55/EC of 13 June 2002 on the marketing of vegetable seed. OJ L 193/33, 20.7.2002, p. 33–59.

3.4. Elements to assess the potential for establishment and spread in the EU

3.4.1. Host range

BLCV infects *Beta* spp., the main hosts being *Beta vulgaris* ssp. (sugarbeet, fodder beet, garden (red) beet, etc.). The host range also includes *Chenopodium* spp., *Atriplex* spp., *Spinacia* spp. and *Tetragonia tetragonioides*. Although not experimentally proven, those weeds could serve as natural reservoirs of the virus. There is no information on the susceptibility of wild beet (*B. vulgaris* subsp. *maritima*) or the potential presence of the virus in wild beet populations.

3.4.2. EU distribution of main host plants

Sugarbeet is of high economic value and is widely grown in the EU, with Germany and France being the most significant countries of production. The other forms of beet (e.g. fodder beet and garden beets) are also widely cultivated. The other host plants of BLCV are commonly found in nature and are either weeds of crops (including sugarbeet) or found in ruderal plant communities.

Table 5: Area of production (in 1 000 ha) of sugarbeet in 2013, as extracted from the EUROSTAT database (crops products—annual data (apro_cpp_crop)) on 30 June 2014

Country	Sugarbeet
Austria	50.8
Belgium	59.8
Bulgaria	0
Croatia	20.2
Cyprus	–
Czech Republic	62.4
Denmark	38
Estonia	0
Finland	12
France	393.6
Germany	357.4
Greece	5.8
Hungary	19
Ireland	0
Italy	45.3
Latvia	–
Lithuania	17.6
Luxembourg	–
Malta	–
Netherlands	73.2
Poland	193.7
Portugal	0.4
Romania	28.1
Slovakia	20.3
Slovenia	0
Spain	31.4
Sweden	36.2
UK	117
EU-28	1 582.3

–, data not available.

3.4.3. Analysis of the potential distribution of Beet leaf curl virus in the EU

In nature, BLCV can occur wherever suitable host plants are able to develop. Because virus spread is linked to *P. quadratum*, a species found in many European countries (Figure 2), the potential distribution of BLCV is considered wide and includes a large number of EU MSs.

3.4.4. Spread capacity

Natural spread of BLCV occurs via *P. quadratum* and dissemination of virus-infected plants for planting. Owing to its long persistence in the vector, long-distance dissemination of the virus can also occur via trade of consignments of host or non-host plants harbouring viruliferous insects. Under field conditions, virus spread by *P. quadratum* is not considered to occur over long distances, as the insect does not move more than ca. 20 m (Korcz et al., 1998). *P. quadratum* adults overwinter in bedding, at the edge of forests, in ditches, etc. They migrate to beet plantations when the air temperature reaches about 18 °C, and virus symptoms become visible six weeks after invasion and feeding (Korcz et al., 1998). Therefore, within the climatic requirements for cultivation of sugarbeet, vector-mediated spread is unlikely to be affected by climatic conditions over vast parts of the EU territory.

3.5. Elements to assess the potential for consequences in the EU

3.5.1. Potential effects of Beet leaf curl virus

There are no recent reports on the potential effects of BLCV, which causes a leaf curling and crinkling disease of sugarbeet. The disease starts with vein clearing of the youngest leaves followed by inward bending and leaf deformation. Infected plants have a bushy appearance resembling a head of lettuce. The plants are stunted and the growth of roots prematurely ceases (Schmutterer, 1968; Eisbein, 1976; EPPO, 1997). Early reports of the disease attributed yield losses of up to 75 % to infections with BLCV. Those yield losses occur because the plants have smaller roots, a reduction in sugar content and difficulties in sugar processing (Hoffmann and Schmutterer, 1983). However, the reports also state that the virus is of no economic importance (Proeseler, 1983), probably because of the limited numbers of infected plants and the infrequent nature of BLCV outbreaks, which probably correspond to high populations of the *P. quadratum* vector, which only occur every 10–12 years (Korcz et al., 1998).

3.5.2. Observed impact of Beet leaf curl virus in the EU

Given the near absence of recent reports of BLCV from the EU, the observed impact is considered negligible.

This is most probably because intensive sugarbeet management, comprising chemical control of insects, is also effective on *P. quadratum*. The virus may no longer have any significant presence in agricultural production systems and its introduction into European countries where *P. quadratum* is present would probably have only negligible consequences.

3.6. Currently applied control methods in the EU

Although not specifically targeting BLCV vectors, the current practices of intensive sugarbeet production comprise an extensive use of pesticides and have significantly reduced *P. quadratum* vector populations and, consequently, the incidence and impact of BLCV. No other methods are currently used, directly or indirectly, to control BLCV.

3.7. Uncertainty

BLCV is considered since long as being only a minor problem in sugarbeet production. There are no recent reports of the presence of the virus, with the exception of a 1998 report from Poland. Although there is only limited information (and therefore high uncertainty) on the exact identity of the virus, there is no doubt about its ability to cause the disease. However, high uncertainties exist about the current distribution of the virus.

It should be noted that, because of the very limited literature available on BLCV, a full pest risk assessment is highly unlikely to provide clearer insight into the risks associated with BLCV than the present pest categorisation.

CONCLUSIONS

The Panel summarised in Table 6 below its conclusions on the key elements addressed in this scientific opinion in consideration of the pest categorisation criteria defined in ISPM 11 and ISPM 21 and of the additional questions formulated in the terms of reference.

Table 6: The Panel's conclusions on the pest categorisation criteria defined in the International Standards for Phytosanitary Measures (ISPM) No 11 and No 21 and on the additional questions formulated in the terms of reference (ToR)

Criterion of pest categorisation	**Panel's conclusions on ISPM 11 criterion** *Provide answers to the questions in the column below*	**Panel's conclusions on ISPM 21 criterion** *Provide answers to the questions in the column below*	**Uncertainties** *List key uncertainties*
Identity of the pest	*Is the identity of the pest clearly defined? Do clearly discriminative detection methods exist for the pest?* There is only very limited information on the virus identity, and its taxonomy is unclear and not supported by genome data No serological or molecular detection tests are available and its symptoms in sugarbeet are not sufficient for detection and identification of the virus		Uncertainties exist about the identity of BLCV
Absence/presence of the pest in the risk assessment area	*Is the pest absent from all or a defined part of the risk assessment area?* BLCV was reported in Germany and Poland only. However, given the recent verification of the absence of the virus in Poland and the absence of recent reports, surveys or efficient detection techniques, BLCV presence/absence data in the EU-28 have high levels of uncertainty	*Is the pest present in the risk assessment area?* BLCV was reported in Germany and Poland only. However, given the absence of recent reports, surveys or efficient detection techniques, BLCV presence/absence data in the EU-28 have high levels of uncertainty	Uncertainties exist on the distribution of the virus
Regulatory status	*Mention in which annexes of 2000/29/EC and the marketing directives the associated hosts are listed without further analysis Indicate also whether the hosts and/or commodities for which the pest is regulated in AIIAI or II are comprehensive of the host range* BLCV is listed in Annex IIAII of Directive 2000/29/EC, and is regulated on its most important host, *Beta vulgaris* Beet is also listed in the following marketing directives: Council Directives 2002/54/EC and 2002/55/EC		
Potential establishment and spread	*Does the risk assessment area have ecological conditions (including climate and those in protected conditions) suitable for the establishment and spread of the pest?* *Indicate whether the host plants are also grown in areas of the EU where the pest is absent.* *And, where relevant, are host species (or near relatives), alternate hosts and vectors present in the risk assessment area?* Beets are widely cultivated in the EU, including several MSs where BLCV has not been reported.	*Are plants for planting a pathway for introduction and spread of the pest?* Plants for planting would represent a pathway but trade of young plants for planting is not a common practice in beet cultivation, with the possible exception of home gardening	Uncertainties exist, mostly associated with the trade volume of beet plants for planting

Criterion of pest categorisation	Panel's conclusions on ISPM 11 criterion *Provide answers to the questions in the column below*	Panel's conclusions on ISPM 21 criterion *Provide answers to the questions in the column below*	Uncertainties *List key uncertainties*
	Virus establishment and spread is linked to *P. quadratum* which also is reported in many EU MSs		
Potential for consequences in the risk assessment area	*What are the potential for consequences in the risk assessment area?* *Provide a summary of impact in terms of yield and quality losses and environmental consequences* The potential impact of BLCV is significant, with high yield losses reported in infected plants. However, BLCV is considered a negligible problem in sugarbeet cultivation, with no recent reports of outbreaks, possibly as a consequence of current intensive sugarbeet crop management practices	*If applicable is there indication of impact(s) of the pest as a result of the intended use of the plants for planting?* The potential impact of BLCV is significant, with high yield losses reported in infected plants. However, BLCV is considered a negligible problem in sugarbeet cultivation, with no recent reports of outbreaks, possibly as a consequence of current intensive sugarbeet crop management practices	Uncertainties associated with the estimation of the actual impact exist
Conclusion on pest categorisation	*Provide an overall summary of the above points* BLCV was reported in Germany and Poland only. The wide distribution of host plants and of the *P. quadratum* insect vector indicate that the virus has the potential to establish and spread over much wider areas of the EU than the two countries where it was previously reported. However, in the absence of recent reports of the disease and of virus findings, it is questionable whether BLCV still exists in crops. As a consequence, the current impact of the disease is considered negligible	*Provide an overall summary of the above points* BLCV was reported in Germany and Poland only. The wide distribution of host plants and of the *P. quadratum* insect vector indicate that the virus has the potential to establish and spread over much wider areas of the EU than the two countries where it was previously reported. However, in the absence of recent reports of the disease and of virus findings, it is questionable whether BLCV still exists in crops. As a consequence, the current impact of the disease is considered negligible	There are uncertainties about the identity and distribution of BLCV, the trade volume of beet plants for planting and the estimation of the actual impact
Conclusion on specific ToR questions	*If the pest is already present in the EU, provide a brief summary of* – *the analysis of the present distribution of the organism in comparison with the distribution of the main hosts, and the distribution of hardiness/climate zones, indicating in particular if in the risk assessment area, the pest is absent from areas where host plants are present and where the ecological conditions (including climate and those in protected conditions) are suitable for its establishment, and* – *the analysis of the observed impacts of the organism in the risk assessment area* The wide distribution of host plants and of the *P. quadratum* insect vector indicate that the virus has the potential to establish and spread over much wider areas of the EU than the two countries (Germany and Poland) where it was previously reported In the near absence of recent reports of the disease caused by BLCV,		There are uncertainties regarding the current distribution and impact of BLCV

Criterion of pest categorisation	Panel's conclusions on ISPM 11 criterion *Provide answers to the questions in the column below*	Panel's conclusions on ISPM 21 criterion *Provide answers to the questions in the column below*	Uncertainties *List key uncertainties*
	the current impact is considered negligible It should be noted that, because of the very limited literature available on BLCV, a full pest risk assessment is highly unlikely to provide clearer insight on the risks associated with BLCV than the present pest categorisation		

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ABBREVIATIONS

BLCV	Beet leaf curl virus
EFSA	European Food Safety Authority
EPPO	European and Mediterranean Plant Protection Organization
EPPO-PQR	European and Mediterranean Plant Protection Organization Plant Quarantine Retrieval system
EU	European Union
FAO	Food and Agriculture Organization
ISPM	International Standards for Phytosanitary Measures
MS(s)	Member State(s)
NPPO	National Plant Protection Organisation
PLH Panel	Plant Health Panel
PRA	Pest Risk Analysis