Department for Environment Food & Rural Affairs

Regulation proposal for tomato ringspot virus (*Nepovirus lycopersici*) on *Vaccinium* - fruit propagating material and fruit plants intended for fruit production

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Objective

To review the status of tomato ringspot virus in GB legislation

Assessment

The following is a summary of an assessment undertaken by Defra following the method outlined by EPPO (European and Mediterranean Plant Protection Organisation) (Picard *et al*., 2017).

Regulated non-quarantine pest (RNQP) assessment for Great Britain: tomato ringspot virus (*Nepovirus lycopersici*) on *Vaccinium* - fruit propagating material and fruit plants intended for fruit production

Background

Tomato ringspot virus (also known as *Nepovirus lycopersici* or ToRSV) is currently an RNQP (Regulated Non-Quarantine Pest) for GB (Great Britain), but the listed hosts concerning this pest needed a review. The pest has a scattered worldwide distribution, with most impacts occurring in North America where the nematode vectors are widespread.

Current listing of pest in GB legislation

RNQP for GB

Current regulated plants for planting – host plants

Malus; Pelargonium; Prunus; Rubus

Taxonomy

Pest name

Nepovirus lycopersici; tomato ringspot virus; ToRSV; TomRSV

Will the pest be listed at species level?

Yes

Status in GB

Is this pest present in GB?

Yes: There is a long history of ToRSV causing symptomless findings of infection on *Pelargonium* (geranium) stocks in the UK, with unpublished records beginning in 1979 and the most recent survey being from 2003 (Defra, unpublished data). The results of the most recent survey did indicate that levels of viral contamination had dropped, but there is no evidence that ToRSV has ever been fully eradicated from *Pelargonium* (especially since the virus can be transmitted via seed and pollen in *Pelargonium*, Scarborough & Smith, 1977).

Pathways

Are the listed plants for planting the main pathway for the "pest/host/intended use" combination?

Yes: ToRSV is primarily spread by nematodes in the *Xiphinema americanum senso lato* complex. These vectors of ToRSV are not known to occur in the UK, though the rapid PRA for these nematodes (Fera, 2014 unpublished) acknowledged that some populations may have been inadvertently imported in large, containerised plants. If nematode vectors were to enter, they are very likely to be able to establish both outdoors and in protected conditions.

While seed and pollen transmission is possible in other host species, it is not recorded for *Vaccinium* species.

The distribution of ToRSV in the major blueberry producing areas in the United States is likely explained by the use of non-certified planting material (Fuchs, 2010).

Therefore, plants for planting are considered the main pathway for the transmission of ToRSV in *Vaccinium*.

Economic Impact

Are there documented reports of any economic impact on the host?

Yes

ToRSV has been reported in blueberry in New York, Oregon, Pennsylvania and Washington in the US and in New Brunswick, Canada. This virus in blueberry is not known to occur in other areas. It is generally a minor disease, but one that should be considered before establishing new plantings (Martin, 2015).

In a study on hybrid (*V. corymbosum* x *V. angustifolium*, halfhigh blueberry) clones, six of the eleven clones tested were found to be infected with ToRSV. One plant exhibited the following symptoms: stems, twigs and branches exhibited circular brownish necrotic spots, chlorotic spots on leaves and some deformed new apical buds. The other clones showed similar symptoms but to a lesser extent (Jaswal, 1990).

ToRSV was the second most frequently found virus in a study in Chile, with almost 15% incidence in Santiago, Chillán and Los Angeles. This virus was present in different cultivars of highbush blueberries (*V. corymbosum*) and in rabbiteye blueberries (*V. ashei* cv. Britchwell). No symptoms were described in the paper, and the authors state that no viral diseases had been reported in *Vaccinium* in Chile at the time (Medina *et al*., 2006).

Other descriptions of symptoms:

Infected leaves are often malformed with numerous circular, chlorotic or necrotic spots that range from 2 to 5 mm in diameter. These spots can also occur on canes. Other symptoms are shoot dieback, stunting and a slow decline leading to plant death. Flower clusters may develop abnormally. This disease spreads slowly, about one meter per year (Schilder & Miles, 2008).

ToRSV causes distortion, circular chlorotic lesions on leaves, and necrotic stem lesions. Shoot dieback, stunting, and plant death may eventually occur, while fruit yield and quality are severely depressed. ‘Atlantic’, ‘Dixie’, ‘Earliblue’, ‘Olympia’, and ‘Pemberton’ cultivars are the most susceptible to ToRSV infection (WSU Extension programs, 2022). Based on observations in the 1980s, cvs ‘Berkeley’ and ‘Stanley’ can be added to this list (Saad *et al*., 2021)

What is the likely economic impact of the pest irrespective of its infestation source in the absence of phytosanitary measures?

Minor economic impacts to *Vaccinium* sector in absence of measures.

The UK Pest Risk Analysis (Defra, 2018) rates economic impact in this pest's current range as Medium for all fruit crops (inc. *Prunus*, *Vaccinium*, *Capsicum*, *Rubus*). The potential economic impact to all sectors in the UK are rated as Small (with the suggestion that most impacts will be in the ornamental sector). When assessing which area of the UK is endangered from ToRSV, the PRA states "*Fruit crops could incur greater impacts, but unless the vectors are introduced any effects are likely to be limited by controlling planting material*."

There are no estimations of economic damage recorded in the literature and ToRSV is considered an important but minor issue in blueberry production in North America, possibly because of the widespread use of certified material.

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

Risk Management Measures

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

Methods described in EPPO PM 4/18(1) *Pathogen-tested material of* Vaccinium *spp*. (EPPO, 1997).

Data Quality

Is the quality of the data sufficient to recommend the pest to be listed as an RNQP?

Yes, there is sufficient evidence of host association and symptoms that show ToRSV is harmful to *Vaccinium* and could cause an unacceptable level of impact to individual growers.

Proposal for regulation

We propose to regulate ToRSV as an RNQP on the fruit propagating material and fruit plants intended for fruit production of *Vaccinium* species, by adding it to Annex 4, Part I, of the Phytosanitary Conditions Regulation[1]. As a result, these plants for planting would need to be free from ToRSV to be imported into, or moved within, Great Britain.

[1] Commission Implementing Regulation (EU) 2019/2072 of 28 November 2019 establishing uniform conditions for the implementation of Regulation (EU) 2016/2031 of the European Parliament and the Council, as regards protective measures against pests of plants, and repealing Commission Regulation (EC) No 690/2008 and amending Commission Implementing Regulation (EU) 2018/2019

References

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This regulation proposal has been undertaken taking into account the environmental principles laid out in the Environment Act 2021. Of particular relevance are:

- The prevention principle, which means that any policy on action taken, or not taken should aim to prevent environmental harm.
- The precautionary principle, which assists the decision-making process where there is a lack of scientific certainty.