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SLU Risk Assessment of Plant Pests

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Feedback on a list of plant pests with candidates for risk assessments – Batch 2

Background

From May to September 2021 a total of 80 unregulated plant pests were found in EFSAs media and literature horizon scanning (EFSA 2021). EFSA has developed a ranking methodology called PeMoScoring to rank such pests to provide guidance with regard to which pests that should be prioritized for further risk assessments. Most of the pests were excluded (e.g. due to limited information) and only 14 were scored and of these 11 were scored as "positive", i.e. suggested for further assessment. Table 1 below provides a list of the "positive" pests including their synonymous names[1].

SLU Risk Assessment of Plant Pests was requested by the Swedish Board of Agriculture to provide feedback in terms of whether any of these pests are present in Sweden and whether there are some special reasons to exclude or prioritize any of the pests for further pest categorizations.

Methods

The scientific names in the species list, including synonyms, were matched against the Swedish Taxonomic Database, which also provides information about which species that are established in Sweden (Artfakta 2021), and against the databases iNaturalist (2021) and GBIF (2021). Synonyms were obtained mainly from EPPO Global Database (EPPO 2021a), but also from USDA fungal databases (Farr & Rossman 2021), International Committee on Taxonomy of Viruses (ICTV 2021) and from the literature. Location records for the fungal and oomycete species were also searched in USDA Fungal databases (Farr & Rossman 2021).

A search was conducted for all the scientific names and filtering for "Sweden" in Web of Science (2021). Further, such searches were also conducted using the search engine Google but

[1] *Garella musculana* was omitted since a recent assessment already have shown that there is no information supporting that it should be present in Sweden (Boberg & Björklund 2021).

restricting the searches to Swedish webpages. Finally, searches were conducted with Google Scholar combining the scientific names with the word "Sweden".

Information about the pests was also requested from Swedish experts on the different groups of pests (see Acknowledgement).

Results and discussion

The results from the review of the pests is presented below.

Xanthomonas translucens pv. undulosa.

In an article by Fröier (1938), *X. translucens* pv. *undulosa* was reported to cause disease in breeding experiments of wheat in Sweden. The bacterial disease was observed recurrently during the time period 1916-1937 but it appear to have been limited to the wheat cultivation done at the fields of Svalöf where the disease severity in different crosses of wheat was studied. In a later publication the bacterium is also mentioned to be present at Svalöf in 1942 (Åkerman 1943). No information about the method used for the identification was provided in Fröier (1938) leading to uncertainty regarding the identity of the bacterium found. No further reports from original sources of *X. translucens* pv. *undulosa* in Sweden for the last 80 years were found.

There does not appear to be consensus in the literature with regard to whether the pathovars *undulosa* and *translucens* should be regarded as two separate pathovars or not, which complicates matters. The pathovar *undulosa* is listed as present in Sweden in CABI Crop Protection Compendium (2021) which cites Bradbury (1986) as the source. Bradbury (1986) in turn cites CMI map 264 from 1969. In the CMI map, however, *X. campestris* pv. *undulosa* and *X. campestris* pv. *translucens* are regarded to be synonyms (CMI 1993; references therein could not be obtained). EPPO (2021), however, separates the two pathovars in their global database. No distribution information is available for pathovar *undulosa* but pathovar *translucens* is listed as “Absent, pest no longer present” for Sweden referring to the CMI map 264 and to Åkerman (1943). However, the latter source only includes information about pv. *undulosa* and no further reference is provided in EPPO (2021) for the current pest status for Sweden.

In conclusion, there is a high uncertainty regarding whether *X. translucens* pv. *undulosa* is currently established in Sweden.

Fusarium commune

No information of any observations in Sweden of *Fusarium commune* was found. However, it may just be unreported from Sweden, especially considering that the pathogen is recently described and reported from Denmark, Finland, etc., (EFSA 2021). It is therefore a high uncertainty regarding whether *F. commune* is established in Sweden.

Soybean dwarf virus

No information of any observations in Sweden of Soybean dwarf virus was found. However, since the pest is present in Germany and Finland and since it is persistently transferred by *Acyrthosiphon pisum*, which has a cosmopolitan distribution (El Fakhouri 2021), it is assessed as likely that it is established in Sweden.

***Colletotrichum siamense,* Cucurbit yellow stunting disorder virus*, Neofusicoccum kwambonambiense, Phaeoacremonium amygdalinum, Phytopythium chamaehyphon, Pseudomonas cerasi* and Tomato mottle mosaic virus**

No information of any observations in Sweden were found for any of the follwing species; *Colletotrichum siamense,* Cucurbit yellow stunting disorder virus*, Neofusicoccum kwambonambiense, Phaeoacremonium amygdalinum, Phytopythium chamaehyphon, Pseudomonas cerasi*and and Tomato mottle mosaic virus.

It should be noted that Cucurbit yellow stunting disorder virus is dependent on its only vector, *Bemisia tabaci*, for transmission (CABI 2021). In Sweden, *B. tabaci* has a protected zone status and thus it was assessed as very unlikely that Cucurbit yellow stunting disorder virus is established. Further, for Sweden the Cucurbit yellow stunting disorder virus could be regarded a low priority pest as long as Sweden remain its protected zone status for *B. tabaci*.

Regarding Tomato mottle mosaic virus; EPPO will conduct a PRA for this virus during 2022 (EPPO 2021b). It may also be worth noting that during 2020 both an Express-PRA for Germany and a Quick scan for the Netherlands was published (Julius Kuehn-Institut 2020, Netherlands Food and Consumer Product Safety Authority 2020).

Conclusion

Xanthomonas translucens pv. *undulosa* has been reported to be present in Sweden but there is a high uncertainty regarding whether it is currently established in Sweden. In fact no conclusive empirical evidence was found that any of the pests listed in Table 1 currently is established in Sweden. However, circumstantial evidence indicate that Cucurbit yellow stunting disorder virus is very unlikely to be established whereas it is likely that Soybean dwarf virus is established.

Regarding the request if there are some reasons to exclude or prioritize any of the pests for further pest categorizations; One reason to exclude Tomato mottle mosaic virus from further assessments by EFSA is that an EPPO PRA already is planned for that pest during 2022 (EPPO 2021b). From a Swedish perspective, lower priority for further assessments could be given to Cucurbit yellow stunting disorder virus since it is highly unlikely to establish as long as Sweden remains a protected zone for *B. tabaci*, and to Soybean dwarf virus since it is likely that it is already established.

Table 1. List of the plant pests, and their synonyms, which were included in the search for their potential presence in Sweden.

Current name (Authority)	EPPO code[1]	Organism	Synonyms	References
Pseudomonas cerasi (Kaluzna, Willems, Pothier, Ruinelli, Sobiczwski & Pulawska)	PSDMCS	Bacteria	*P. cerasi* sp. *nov*. (non Griffin, 1911)	EPPO 2021
Xanthomonas translucens pv. *undulosa* ((Smith, Jones & Reddy) Vauterin, Hoste, Kersters & Swings)	XANTTU	Bacteria	Bacterium *translucens* var. *undulosum* Smith, Jones & Reddy 1919; *Phytomonas translucens* f. sp. *undulosa* (Smith, Jones & Reddy) Hagborg 1936; *Phytomonas translucens* var. *undulosa* STAPP; *Pseudomonas translucens* var. *undulosa* (Smith, Jones & Reddy) Stevens 1925; *Xanthomonas campestris* pv. *undulosa* (Smith et al. 1919) Dye 1978; *Xanthomonas translucens* f. sp. *undulosa* (Smith, Jones & Reddy) Hagborg 1942; *Xanthomonas translucens* var. *undulosa* (Smith, Jones & Reddy) Sàvulescu 1947; *Xanthomonas translucens* var. *undulosa* (Smith, Jones & Reddy) Sàvulescu 1947; *Xanthomonas undulosa* (Smith, Jones & Reddy) Katznelson & Sutt	EPPO 2021; PlantDiseases.org 2021
Colletotrichum siamense (Prihastuti, L. Cai & K.D. Hyde)	COLLSM	Fungi	*Colletotrichum communis* G. Sharma, A.K. Pinnaka & B.D. Shenoy 2014; *Colletotrichum dianesei* N.B. Lima, M.P.S. Câmara & S.J. Michereff 2013; *Colletotrichum endomangiferae* W.A.S. Vieira, M.P.S. Camara & S.J. Michereff 2014; *Colletotrichum hymenocallidis* Y.L. Yang, Zuo Y. Liu, K.D. Hyde & L. Cai 2009; *Colletotrichum jasmini-sambac* Wikee, K.D. Hyde, L. Cai & McKenzie 2011; *Colletotrichum melanocaulon* V. Doyle, P.V. Oudem & S.A. Rehner 2013	EPPO 2021; Farr & Rossman 2021
Fusarium commune (K. Skovg., O'Donnell & Nirenberg 2003)	None	Fungi		Farr & Rossman 2021
Neofusicoccum kwambonambiense (M.J. Wingf. 2009)	None	Fungi		Farr & Rossman 2021

Current name (Authority)	EPPO code[1]	Organism	Synonyms	References
Phaeoacremonium amygdalinum (D. Gramaje, J. Armengol & L. Mostert 2012)	None	Fungi		Farr & Rossman 2021
Phytopythium chamaehyphon ((Sideris) Abad, de Cock, Bala, Robideau, Lodhi & Lévesque 2014)	None	Chromista	Homotypic synonym: *Pythium chamaehyphon*; Heterotypic synonym: *Phytopythium chamaihyphon*; Homotypic synonym: *Pythium chamaihyphon* Sideris; *Phytopythium* sp. MAB-2011f; *Ovatisporangium chamaehyphon* (Sideris) Uzuhashi, Tojo & Kakish. 2010	Farr & Rossman 2021; NCBI 2021
Cucurbit yellow stunting disorder virus	CYSDV0	Virus	Cucurbit yellow stunting disorder closterovirus, Cucurbit yellow stunting disorder crinivirus, CYSDV.	ICTV 2021; EPPO 2021
Soybean dwarf virus	SBDV00	Virus	SbDV, Soybean dwarf luteovirus, Strawberry mild yellow edge-associated virus, Subterranean clover red leaf luteovirus, Subterranean clover red leaf virus. Soybean dwarf virus - leaf yellowing strain (SDV-Y).	ICTV 2021; EPPO 2021; CABI 2021
Tomato mottle mosaic virus	TOMMV	Virus	ToMMV.	ICTV 2021; EPPO 2021

[1] EPPO codes connects 1 biological entity with 1 unique code (EPPO 2021c).

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