

**Recommendation of the Working Group on the Annexes of the Council
Directive 2000/29/EC – Section II – Listing of Harmful Organisms as
regards the future listing of *Plasmopara halstedii* (Farlow) Berlese & de
Toni¹**

Current regulatory status

Plasmopara halstedii is currently regulated in Annex II, Part A, Section II of Council Directive 2000/29/EC on seeds of *Helianthus*.

Special import and common market requirements are in place for seeds of *Helianthus annuus* (Annex IVAI(47) and Annex IVAII(26)): either (a) originate in areas known to be free from *P. halstedii* or (b) seeds (other than those produced on varieties resistant to all races of *P. halstedii* present in the area of production), have been subjected to an appropriate treatment against *P. halstedii*.

EPPO does no longer recommend regulation as quarantine status (removal *P. halstedii* from A2 list). The organism is also regulated under different Marketing Directives: Council Directive 2002/57/EC Oil and fibre plant seed (incl. sunflower). In Council Directive 98/56/EC on ornamental propagating material, *P. halstedii* is not mentioned specifically.

Identity of the pest

P. halstedii is an obligate biotroph oomycete. Molecular methods to detect *P. halstedii* at species level are available. Furthermore, a bioassay is used to detect infested soils. Isolates can be further characterised by their pathotype (virulence profile to which they belong) which are defined on the basis of interaction with a differential host range (a three-digit classification based on nine/fifteen differential hosts used to characterise a pathotype is accepted internationally; however behaviour of sunflower genotypes can be affected by the conditions in which the tests are performed).

Main commercial host is sunflower, although many more host plants exist among ornamental *Asteraceae* species, many of economic importance (e.g. *Ageratum* sp., *Centaurea* sp., *Chrysanthemum* sp., *Cineraria* sp., *Coreopsis* sp., *Erigeron* sp., *Eupatorium* sp., *Rudbeckia* sp., *Senecio* sp., *Zinnia* sp.).

Distribution of the pest

The organism is widely distributed. It is currently present in AT, BU, CZ, DE, EE, ES, FR, GR, HU, HR, IT, NL, RO, SK. Transient, under eradication, in UK; absent, confirmed by survey in PT; absent, no pest record, in BE; while absent, pest no longer present, in PL.

In the main sunflower-growing regions of the EU it may be assumed that, if tests were performed, *P. halstedii* would be detected in the soil of a large number of fields having grown a sunflower crop several times. Downy mildew of sunflower is naturally present in some regions of the PRA area, despite the management measures implemented. However, it is noted that *P. halstedii* was widely distributed before these measures were introduced.

¹ Scientific basis for the recommendation: Pest Risk Assessment prepared by France NPPO

As regards other pathotypes, with the exception of FR, little information is available on the distribution of *P. halstedii* pathotypes in the different countries.

Potential for establishment and spread in the PRA area

The probability of establishment is very high for all regions of the PRA area where sunflowers are grown. The temperate climate and the distribution of host plants (cultivated and wild *Asteraceae*) are the main factors that favour the establishment.

As regards possible spread, seed treatments and the use of resistant varieties limit but do not prevent the spread of *P. halstedii* (due to the selection of isolates resistant to *phenylamides* and of *pathotypes* liable to overcome varietal resistances). Furthermore there is uncertainty concerning *significance* of spread of *P. halstedii* on non-regulated ornamental pathways.

Although no official records of interception (1999-2011) in the EPPO region, it is considered very likely that *P. halstedii* is associated with sunflower seed lots if they are produced in a contaminated field. Several management methods (varietal resistance and treatments) are applied and reduce the likelihood of association. However, they did not prevent the entry and spread of new isolates presenting a high risk profile in the past.

Potential for consequences in the PRA area

All parts of the PRA area where sunflowers are grown are economically at risk. When climate conditions are conducive the potential impact in the absence of management measures is high: *P. halstedii* is capable of causing yield losses of up to 100% (total loss of contaminated plants).

P. halstedii is currently controlled by the treatment of sunflower seed (phenylamide) and by the use of varieties resistant to the pathotypes in the PRA area. The two methods are effective to limit the impact of *P. halstedii* on sunflower. However, the development of resistant isolates may reduce the effectiveness of seed treatments, while the emergence of new pathotypes can lead to the break of resistances present in the sunflower varieties currently grown.

Symptoms depend on the age of the tissue (systemic or local infections), the level of inoculum, the cultivar susceptibility and environmental conditions (moisture and temperature). Symptoms being caused by systemic infections are more typical. Infected seedlings are smaller with delayed growth. The hypocotyl is thin, the seedlings quickly wither. Roots are not well developed with few rootlets. Young leaves are discoloured: mottled with pale green marks, giving the impression of chlorosis. Cotyledons and leaves are covered by down to varying degrees.

Recommendation

P. halstedii does not meet the definition of a Union Quarantine Pest under the new plant health proposal (COM(2013)267final), as it is not present in a “limited part” of the EU, or that its presence is only “scarce, irregular, isolated and infrequent”. Eradication is unfeasible.

The Working Group recommends listing the organism as Regulated Non-Quarantine Pest.

Several management methods are available to reduce the likelihood of association. The possibility of combining these measures helps reducing the probability of introducing new pathotypes, even though, without eliminating it:

- Production of seed in fields free from *P. halstedii*;
- Destruction of diseased plants in production fields;
- Varietal resistance (use of seed resistant to the pathotypes established locally);
- Treatment of parental line seed with effective fungicides;
- Treatment of seed produced with effective fungicides;
- Laboratory testing of seed lots;

High uncertainty still remains concerning the risk of entry and spread with ornamental hosts and the significance of the pest on these hosts.