NAME OF THE ORGANISM: Ustilago maydis (USTIMA)

GENERAL INFORMATION ON THE PEST

Name as submitted in the project specification (if different to the preferred name):

Pest category:

Fungi **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: Cereals (including rice) sector

Is it justified that the pest is listed at a taxonomic rank below species level?

Not relevant
Conclusion:

* Candidate: Cereals (including rice) 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):

This pest is present worldwide, wherever maize is grown with the major exception of Australia and New Zealand (CABI, 1986).

HOST PLANT N°1: Zea mays (ZEAMX) for the Cereals (including rice) sector.

Origin of the listing:

RNQP Questionnaire
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):**

?
Conclusion:

Candidate

Justification:

Ustilago maydis mainly attacks parts of the plants with intensive cell division e.g. on leaves or cobs, producing grey sori which burst open liberating spores. These can survive in the soil for at least 4 years. Plants are infected by soil-borne or air-borne spores. Crop rotation (e.g. 4-year) has some effect in reducing soil-borne inoculum. Resistant cultivars should be used when possible and attacks may be prevented by ensuring a good soil structure and sprinkling the crop in periods of drought (EPPO, 1999). Experts confirmed that most of the Zea mays cultivars are resistant or tolerant to U. maydis. Spores carried on seed are easily controlled by treatment with a fungicide but this is of no benefit if the soil is infected (Ainsworth, 1965). The pest is listed as a seed transmitted disease in Croatia (Čizmić, 2007) and detected in seed samples in Iran (Bujari & Ershad, 1993).
Although a few references, above, were found to infestation on seeds, it did not appear this was a major infection source of disease compared to soil borne and wind-borne infection by spores. The SEWG concluded that the significance of the seed pathway compared to the natural dispersal is questionable. Experts did not propose this pest/host combination for RNQP status based on an acceptable economic impact. **5 - Economic impact:**
Are there documented reports of any economic impact on the host?

Yes
Justification:

The disease affects the quantity and the nutritional value of the yield. It appears mainly in dry, warm years, on maize plants suffering from drought. It is generally sporadic and of minor importance (EPPO, 1999). In Poland there were differences in the susceptibility of varieties but only in the case of one variety did low infestation translate into a significant increase in grain yield. The presence of U. maydis was more dependent on meteorological conditions (Waligóra et al., 2016). Cultural conditions (high nitrogen) also have an effect.
What is the likely economic impact of the pest irrespective of its infestation source in the absence of phytosanitary measures? (= official measures)

Minor
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?

Yes
Is there unacceptable economic impact caused to other hosts (or the same host with a different intended use) produced at the same place of production due to the transfer of the pest from the named host plant for planting?

No
Conclusion:

Not candidate
Justification:

The SEWG considered that the economic impact was acceptable because of availability of resistant cultivars, and because this resistance is stable. The only case where breeders would observe economic impact is when they use seed populations instead of hybrids. **CONCLUSION ON THE STATUS:**

Disqualified: Seed is probably not a major source of infection compared to wind and soil-borne inoculum. Resistant cultivars are available and stable. Economic impact is minor and acceptable. **8 - Tolerance level:**
Is there a need to change the Tolerance level:

Yes
Proposed Tolerance levels:

Not recommended for the RNQP status. **9 - Risk management measures:**
Is there a need to change the Risk management measure:

Yes
Proposed Risk management measure:

Not recommended for the RNQP status. **REFERENCES:**

* Ainsworth GC (1965) Ustilago maydis. IMI Descriptions of Fungi and Bacteria 8, Sheet 79;
* CABI (1986) Distribution map for Ustilago zeae. Distribution Maps of Plant Diseases, Map 93;
* Bujari J & Ershad D (1993) An investigation on corn - seed mycoflora. Iranian Journal of Plant Pathology 29, 13-17;
* Čizmić I (2007) Disease causal agents which are seed transmitted in maize, and maize seed treatment. Glasilo Biljne Zaštite 7, 282-290;
* EPPO (1999) Good plant protection practice PP 2/17 (1) Maize. Bulletin OEPP/EPPO Bulletin 29, 349-351;
* Waligóra H, Sawinska Z, Skrzypczak W, Idziak R, Weber A & Głowicka-Wołoszyn RA (2016) Susceptibility of sweet corn varieties to Ustilago maydis (DC). Fragmenta Agronomica 33, 76-86;