# Express PRA for *Moniliophthora roreri* – Research and Breeding –

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**Initiation:** Application for an Express-PRA by the Federal State Bremen resulting from an approval for a special authorisation for the movement and use of the organism for research and breeding purposes.

| **Express Pest Risk analysis** | ***Moniliophthora roreri* (Cif.) H.C. Evans, Stalpers, Samson & Benny** | | |
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| **Phytosanitary risk for Germany** | **high** ☐ | **medium** ☐ | **low** ☒ |
| **Phytosanitary risk for EU-Member States** | **high** ☐ | **medium** ☐ | **low** ☒ |
| **Certainty of assessment** | **high** ☒ | **medium** ☐ | **low** ☐ |
| **Conclusion** | The fungus *Moniliophthora roreri* is endemic in Central and South America and so far, it does not occur in Germany and the EU. So far, it is neither listed in the Annexes of Directive 2000/29/EC nor by EPPO.<br>*M. roreri* is considered as one of the most devastating pests on cacao (*Theobroma* sp., *Theobroma cacao*). The genus *Herrania* is closely related to cacao and is known as the only further host plant.<br>Due to inappropriate climatic conditions, it is assumed that the fungus is not able to establish outdoors in Germany. The establishment in South European Member States seems unlikely, too. The host plant is not commercially cultivated in Germany and Europe. Single cacao trees are maintained in protected cultivation in botanical gardens and by private persons.<br>Due to the absence of the host plant and the inappropriate climatic conditions for the fungus, *M. roreri* poses no phytosanitary risk for Germany and other EU-Member States.<br>Thus, *M. roreri* is not classified as a quarantine pest and § 4a of the Plant Inspection Order does not apply. | | |
| **Conditions for an Express-PRA fulfilled?** | Could be a pest, is not listed. So far, it is not established in the area covered by the notifying plant protection service. | | |
| **Taxonomy, common name, synonyms** | Kingdom: fungi; Phylum: Basidiomycota; Order: Agaricales; Family: Marasmiaceae, Species: *Moniliophthora roreri* **(Cif.) H.C. Evans, Stalpers, Samson & Benny**;<br>Synonyms: *Crinipellis roreri* **(Ciferri) H. C. Evans**, *Monilia* | | |

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| | *roreri* **Ciferri**<br>Common name: cacao frosty pod rot |
| **Does a relevant earlier PRS exist?** | No |
| **Distribution and biology** | The fungus distributes in Central and South America in cacao cultivation and exclusively infects the husks of the host plants. Until today, no fruiting body formation has ever been observed in *M. roreri*. The distributions happens via conidiospores (asexual spores for vegetative propagation and distribution of higher fungi) (AIME & PHILIPS-MORA, 2005). The fungus is hemibiotrophic (first, it lives parasitic in living tissue and later in the dead tissue). The phase of life within the living tissue may last 45-90 days. After the dieback of the host plant tissue, spore masses are built on the husks that are distributed through wind, rain or humans (BAILEY *et al.*, 2018). |
| **Presence of host plants in the PRA-area? If so, which?** | The only known host plants of *M. roreri* are the cacao tree *Theobroma cacao* and *Herrania* sp.<br>In Germany and the EU, there is no commercial cultivation of *Theobroma cacao* (FAOSTAT, 2019). Individually, there are plants for ornamental purposes in botanical gardens (tropical greenhouses) and private households. The plant is very sensitive to cold and thus, it is not cultivated outdoors in Germany. |
| **Is a vector/further plant needed for host alternation? If so, which? Distribution?** | No, the spores are transmitted through wind, rain or humans (BAILEY *et al.*, 2018) |
| **Climate in the distribution area comparable to PRA-area?** | No, the current distribution area of *M. roreri* is limited to cultivation areas of cacao in South and Central America (EPPO GD, 2017), but it distributes further in these areas. Cacao trees need tropic conditions to thrive (temperature between 18-32°C and 1500-2000mm rainfall per year). There are no regions with corresponding climate in Europe. |
| **If no, are host plants present in protected cultivation?** | Ornamental plants in small quantities in greenhouses and private households. |
| **Damage to be expected in the PRA-area?** | No. In Germany and Europe *Theobroma cacao* is not used commercially (FAOSTAT, 2019) and the plant is not naturally present.<br>The fungus damages only the husks of the host plants (AIME & PHILIPS-MORA, 2005). Typical symptoms are early ripening |

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| | of the husks, deformations, brown lesions (partly covered by mycelium) and mummification on the husks. Necrotic lesions develop within the husks. |
| **Remarks** | ---- |
| **Literature** | AIME, M. C. & W. PHILLIPS-MORA (2005): The causal agents of witches' broom and frosty pod rot of cacao (chocolate, *Theobroma cacao*) form a new lineage of Marasmiaceae. Mycologia 97(5), 1012-1022.<br>BAILEY, B. A., H. C. EVANS, W. PHILLIPS-MORA, S. S. ALI, L. W. MEINHARDT (2018): *Moniliophthora roreri*, causal agent of cacao frosty pod rot. Mol. Plant Pathol. 19(7), 1580-1594. doi: 10.1111/mpp.12648<br>EPPO (2017): Moniliophthora roreri. EPPO Global Database https://gd.eppo.int/taxon/MONPRO (accessed on: 07-03-2019; last update: 15-12-2017).<br>FAOSTAT, 2019: Crops. Food and Agriculture Organization of the United Nations.http://www.fao.org/faostat/en/#data/QC (accessed on: 07-03-2019) |