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## Press Release IBEB EU: Three new races of *Bremia lactucae*, BI: 38EU, BI: 39EU and BI: 40EU identified and denominated in Europe.

The International Bremia Evaluation Board Europe (IBEB-EU) has collected more than 350 *Bremia* isolates in European lettuce in 2022 and compared them with the 377 isolates found in 2021. *Bremia lactucae*, the causal agent of downy mildew in lettuce, is genetically very variable. Even within one lettuce production field, several races may be present.

The IBEB-EU met in December 2022 in Paris to evaluate *Bremia lactucae* isolates found in Europe in 2021 and 2022. In 2022, only the official races BI:35EU, BI:36EU and BI:37EU were found at a very low frequency. However, three virulence patterns, identical with isolates PT2036, FR9872 and ES10775, were found in 8%, 6% and 16% of the isolates, respectively. The first two were already found in 2021, while the last one appeared in 2022.

A formal evaluation process started in April 2022. In April 2023, the IBEB-EU concluded that the three candidate isolates provided consistent test results.

**PT2036:** This isolate from Portugal is denominated as the type of new race BI: 38EU with IBEB-D sextet code 46-15-38. **BI:38EU** was found repeatedly, not only in Portugal but also in France, North Spain, South UK, Hungary, Switzerland and South Germany. BI: 38 breaks the resistance of S18 (R58 gene), and was found more frequently in Southern Europe.

**FR9872:** This isolate from France is denominated as the type of new race BI: 39EU with IBEB-D sextet code 55-15-33. **BI:39EU** was found repeatedly, not only in West and Central France, but also in North and West Germany, Switzerland, the Netherlands, South UK, and Portugal. BI: 39 breaks the resistance of S18 (R58 gene), and was found more frequently in Northern Europe.

**ES10775:** This isolate from Spain is denominated as the type of new race BI: 40EU with IBEB-D sextet code 62-31-01. **BI:40EU** was found repeatedly, not only in Spain, but also in France, Germany, the Netherlands, the United Kingdom, Italy and Norway. BI: 40 breaks the resistance of S11 (R53 gene). The resistance of S11 has been in the market since 2002, and hardly being attacked by *Bremia* until the beginning of the outbreak in 2022.

The board emphasizes the importance of chemical control and hygiene measures in addition to plant resistance. Fungicide application, especially in a young plant stage, gives additional protection to resistant lettuce crops, which will help prevent the development of new *Bremia* races. Proper hygiene practices, such as removal of

debris and diseased plants, cleaning of farm equipment and prevention of prolonged periods of leaf wetness, will reduce the spread of *Bremia* in lettuce crops.

**Resistance to *Bremia lactucae* races BI:16-28EU will not be claimed any more in commercial communications from July 1st 2023**

The European International *Bremia* Evaluation Board (IBEB-EU) is collecting and evaluating more than 300 European isolates per year, mainly originating from lettuce varieties and lines in breeders' and growers' fields, and draws conclusions not only about the rise of new races, but also about the disappearance of some of the known races. Commercial resistance claims of resistance for races that were important in the past but not in the present time are not relevant for growers. In recent years, BI: 16-28EU were no longer found. Therefore, IBEB-EU proposes the following disclaimer in seed catalogues and other commercial communications:

***The races BI:16-28EU of *Bremia lactucae* (downy mildew in lettuce) are hardly observed in practice in Europe anymore and thus have no value for describing resistance levels to the disease. Therefore from July 1st 2023 onwards, commercial resistance claims for lettuce varieties will refer only to BI:29EU and races with a higher number, and no longer to races BI:16-28EU.***

The use of races BI: 16-28EU will remain possible for registration and plant breeders' rights, and it is still compulsory, as before, to claim resistance or susceptibility for race BI: 16EU in the variety testing process, presumably until the next revision of the official variety testing protocol.

The IBEB-EU consists of representatives of the Dutch and French seed business associations Plantum and UFS, and the independent organisations GEVES/SNES and Naktuinbouw. IBEB is supported by several *Bremia* researchers across Europe. Lettuce breeders of Bejo, Enza Zaden, GAUTIER Semences, BASF, Rijk Zwaan, Bayer, Syngenta and Vilmorin represent the industry.

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All denominated isolates and seeds of the differential set are available at GEVES/SNES (France) and at Naktuinbouw (The Netherlands).

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