

A new race of *Bremia lactucae*, BI: 9US, has been identified and nominated in the Western US

Bremia lactucae, the pathogen that causes downy mildew of lettuce, is genetically very variable. Multiple isolates that differ in their ability to overcome resistance genes may be present even within one lettuce production field. Many isolates are of minor importance because they do not persist. Isolates with the same virulence that occur at several geographic locations, persist over multiple years, and have stable virulence are considered for nomination as a race. Eight races (previously known as pathotypes) have been denominated so far in the Western US describing much but not all of the variation observed to date. The first four races have not been observed for many years and are no longer considered as relevant for describing resistance of cultivars to downy mildew. Full descriptions of isolates historically observed in the Western US can be found at <http://bremia.ucdavis.edu/>.

The International Bremia Evaluation Board-US, IBEB-US, is comprised of representatives of seed companies and public institutions; its primary function is to collect and characterize field isolates of *Bremia lactucae* and nominate new races. IBEB-US and IBEB-EU are regional associations that are coordinated by the IBEB Global Coordinating Body (IBEB-G). IBEB-US and IBEB-EU use a standard set of differential resistant varieties for characterization of isolates and the same procedure for race denomination. The nomenclature of races has also been standardized. The pathogen populations in the Western US and Europe are different. Therefore the races in the Western US are postfixed with –US and those from Europe with –EU; races with the same number from the US and EU are not the same. The regional committees are responsible for communication with the growers and for race nomination within their areas.

A group of isolates with a new ability to overcome resistance genes was identified in 2015 and was detected again in 2016 and 2017. It was therefore nominated as BI: 9US. Formal evaluation was done by IBEB-US and the group of isolates is now denominated as BI: 9US, sextet code: 61-25-02 (EU-C).

IBEB-US emphasizes that although breeding companies supply growers with lettuce varieties possessing resistance to the denominated BI: 5 to 9US races, this resistance is not a full insurance against downy mildew. The declared resistance gives the grower protection against these races. However, downy mildew disease may be caused by rarer isolates with novel virulence characteristics that have yet to be denominated as races. It is also important to consider the industry standard of resistance: The ability of a plant variety to restrict the growth and development of a specified pest or pathogen and/or the damage they cause when compared to susceptible plant varieties under similar environmental conditions and pest or pathogen pressure. Resistant varieties may exhibit some disease symptoms or damage under heavy pest or pathogen pressure.

IBEB-US also emphasizes the importance of chemical control and hygiene measures in addition to plant resistance. Fungicide application, especially at a young plant stage, gives additional protection to resistant lettuce crops, which will help prevent the development of new races of *Bremia lactucae*.