

# Resistant breeding lines for leafminer, corky root and downy mildew in lettuce

June 14 2024, by Jane Cerza

A



B



C



D



Lettuce breeding lines in the field: (A, upper left): USDA-07838 (red leaf); (B, upper right): USDA-09456 (green leaf); (C, middle left): USDA-09512 (green leaf); (D, middle right): USDA-14489 (romaine); and (E, lower left): USDA-17536 (romaine). Credit: *HortScience* (2023). DOI: 10.21273/HORTSCI17069-22

A study, [published](#) in the journal *HortScience* and released by the USDA-Agricultural Research Service, announced the development of new breeding lines of green leaf, red leaf, and romaine lettuce with remarkable resistance to leafminer, corky root, and downy mildew. This advancement marks a significant step forward in sustainable agriculture, offering farmers robust options to combat common pests and diseases without relying heavily on chemical interventions.

The study details the rigorous selection and breeding processes used to develop these resistant varieties. The [research](#) aimed to address the pressing need for lettuce cultivars that can withstand common agricultural challenges while maintaining high yield and quality. The new breeding lines exhibited strong resistance to three major threats to lettuce crops: Leafminer infestation, Corky Root (a soil-borne disease that affects the plant roots, severely impacting plant health and productivity), and Downy Mildew, a pervasive fungal disease that thrives in moist conditions and can devastate lettuce crops.

Limited seed samples are available from the corresponding author for distribution to all interested parties for research purposes, including the development and commercialization of new cultivars. Samples will also be deposited in the National Plant Germplasm System. It is requested that appropriate recognition be made if the breeding lines contribute to research or the development of new germplasm, breeding lines, or cultivars.

The lettuce breeding lines were developed by Dr. Beiquan Mou, a Research Geneticist with the USDA-ARS, Salinas, California. The enormous damages and [economic losses](#) caused by the insect and diseases prompted the author to seek genetic solutions for the problems. Leafminers are major insect pests of many important crops in the world including lettuce. Lettuce roots infected with the corky root disease develop yellow to brown lesions that later become longitudinal corky

ridges and restrict the absorption of water and nutrients. Downy mildew is one of the most economically important diseases of cultivated lettuce worldwide.

**More information:** Beiquan Mou, Green Leaf, Red Leaf, and Romaine Lettuce Breeding Lines with Resistance to Leafminer, Corky Root, and Downy Mildew, *HortScience* (2023). [DOI: 10.21273/HORTSCI17069-22](https://doi.org/10.21273/HORTSCI17069-22)

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