



Mint NPGS Germplasm - Oil Yield

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Peppermint and spearmint, the two major species grown by the U.S. mint industry, had seen little improvement in oil yield recently due to threats from disease as well as a lack of genetic innovations. A 2018-2021 survey of the U.S. National Plant Germplasm System mint collection identified 'Velvet', a novel source of peppermint-type oil that offers U.S. growers a tool to combat *Verticillium wilt* while producing high-quality oil. The project also validated a new breeding strategy to enhance yields of spearmint-type oil. These advancements leverage wild mints and cutting-edge genetic tools, marking a significant step forward in mint breeding.



Photo by Nestor Kippes

Mentha hybrid 'Velvet' (PI 617491).

PROJECT GOALS

- ✓ Characterize wild mint for oil yield and composition
- ✓ Identify new sources of mint oils for breeding commercial mint varieties

Problems Addressed

Over the past few decades, mint oil yields have stagnated due to a lack of genetics for mint breeding. Additionally, U.S. growers face challenges with *Verticillium wilt* susceptibility in the primary peppermint cultivar, 'Black Mitcham', for which no alternative resistant variety is available. At present, disease avoidance requires growers to identify and relocate production to non-infected fields; this approach is fraught with logistical complications. The length of production of peppermint fields has been reduced to 3-5 years to avoid the establishment of *Verticillium wilt*, which reduces profits significantly.

Solutions Developed

Germplasm from wild progenitors of peppermint and spearmint from the USDA National Clonal Germplasm Repository (NCGR) in Corvallis, Oregon was evaluated for field performance, including oil yield and quality. Promising sources included a novel peppermint accession called 'Velvet' (PI 617491) that demonstrated high yield potential, vigor, and resistance to *Verticillium wilt*. Advanced genetic methods were also employed to assess genetic diversity of wild mint, and an optimal breeding strategy was introduced to integrate genetic traits for improved yields and flavor profiles in new spearmint varieties.



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