Max-Planck-Innovation

Technology Offer

Brassica plants with increased photosynthetic rate and seed yield

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Enhancing crop yield is a key objective in plant breeding, and it underpins efforts to achieve global food security amid projected population growth. Recently, improving photosynthesis has emerged as a promising strategy for yield improvement. One way to improve photosynthesis is to engineer plants that can assimilate more carbon dioxide (CO_2). This in turn can increase biomass which can help obtain greater harvests and improved resource-use efficiency. This increase in photosynthetic capacity also has the potential added benefit of reducing atmospheric CO_2—a major greenhouse gas—by enhancing carbon storage in plant biomass, thus contributing to the mitigation of CO_2-driven global warming.

Technology

Scientists from the Max Planck Institute for Plant Breeding Research have found that by increasing the expression of the *SQUAMOSA PROMOTER BINDING PROTEIN-LIKE GENE 9* (*SPL9* gene) in Brassica napus plants the photosynthetic rate can be significantly increased. The scientists stably transformed the plants with a microRNA resistant version of a *SPL9* gene and observed an increase in both photosynthesis and seed mass.

Opportunity

We are now looking for a commercial partner to further develop this technology.

Patent Information

An international PCT patent application was filed on November, 28th 2024: WO2025114408.

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