

IMPROVING CROP NITROGEN RESPONSE AND PRODUCTION

Nitrogen is the most limiting nutrient for crop growth and production. Also, increasing amounts of nitrogen fertilizers are being applied in the field, a practice that causes major environmental damage and increases costs for crop production.

Researchers at the University of Missouri-St. Louis and the Donald Danforth Plant Science Center have discovered a biotechnological manipulation to improve crop growth and yield under different levels of nitrogen. At low nitrogen levels, this manipulation has the potential to enhance nitrogen acquisition and crop growth, thus improving plant tolerance to poor nitrogen conditions. As adequate nitrogen levels, this methodology is expected to increase overall growth and seed production.

This invention includes methods for producing transgenic plants and seeds with altered expression of phospholipase D ϵ (PLD ϵ), i.e., plants and seeds either overexpressing or underexpressing PLD ϵ ; increasing a plant's ability to capture and utilize nitrogen; increasing a plant's biomass production; and increasing the yield of a plant or increasing a plant's ability to grow under hyperosmotic stress.

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