Science Societies

Diagnosing nitrogen levels in sunflower

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First author Sergio Tovar Hernández in an experimental field measuring normalized difference vegetation index (NDVI).

For high yields, sunflowers (*Helianthus annuus* L.) require adequate nitrogen (N) availability. Excessive N levels could decrease grain oil concentration. Accurately diagnosing N levels is necessary to maximize grain yield without affecting grain quality.

New research published in *Agronomy Journal* evaluated different N diagnosis methods based on the pre-plant soil NO_3^-–N test (PPSNT) and soil N mineralized in short-term anaerobic incubation (Nan). Testing was also done for the greenness index (GI), the normalized difference vegetation index (NDVI) measured at V6 and V12 stages, and grain N concentration (Nc) on different experimental fields in the Pampas of southeastern Argentina.

Including Nan significantly improved the PPSNT diagnosis method by grouping low and high Nan conditions. The NDVI at V12 highly correlated with the crop N status. Grain Nc adequately diagnosed N deficiencies and also was predicted from the ratio between N availability and grain yield. These findings can help better estimate N availability to recommend adequate fertilizer rates for sunflower, optimizing grain yield and quality while minimizing the economic and environmental costs of fertilization.

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Tovar Hernandez, S., Diovisalvi, N., Carciochi, W.D., Izquierdo, N., Sainz Rozas, H., Garcia, F., & Reussi Calvo, N.I. (2021). Assessment of nitrogen diagnosis methods in sunflower. *Agronomy Journal*, *113*, 2846–2857.
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