

GUIDELINES FOR SLAN* INTERPRETATION



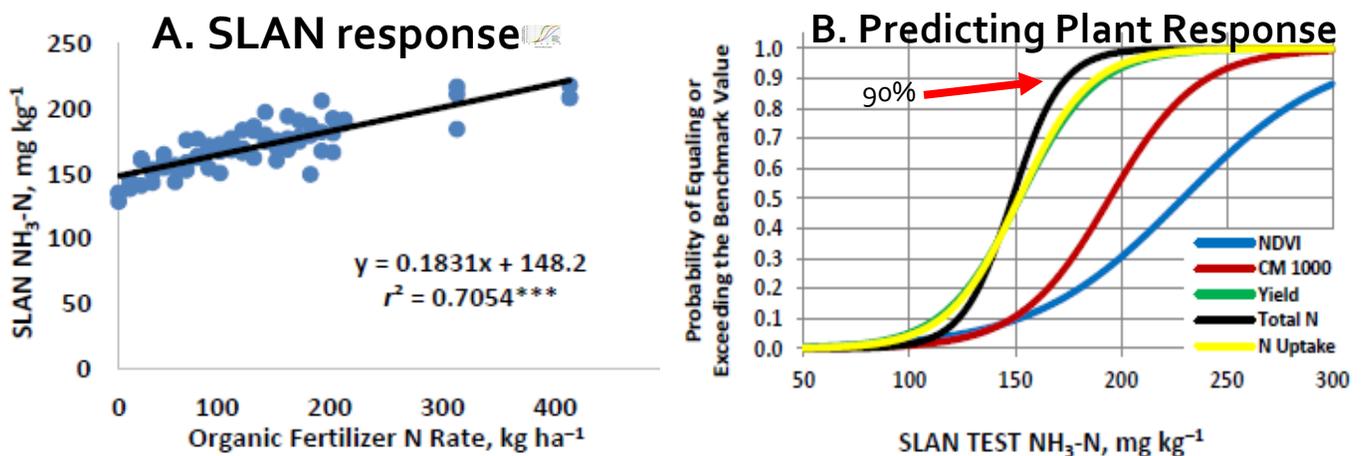
TECH MEMO 0317-1 Rev 2

* SOIL LABILE AMINO-N (SLAN) AND CO₂-BURST

CO₂-Burst and SLAN provide different insights into soil qualities that can help growers understand soil improvement and better manage nitrogen applications. CO₂-burst measures the raw biological activity of microbes as they consume organic components in the soil after a disturbance event. SLAN measures reserves of organic amino nitrogen loosely associated with humus. Both are associated with soil health but not necessarily mutually causative. Research shows that SLAN results particularly meaningful where fertilization systems include organic nitrogen as found in manures and manure-composts.

Studies conducted at UConn since 2007 are indicating that CO₂-Burst and SLAN tests are co indicators of soil quality and plant response to organic-N. **Graph A** below shows SLAN soil results to added organic-N amendments and in **(B)** shows plant response to observed SLAN levels using logistic regression. These data confirm “capture” by soil of the org-N fraction supplied (as composted turkey manure) and a direct yield-response that fits a probability curve which may useful in the practice.

An overarching goal in such research is to help spare nitrogen if it can be shown to be unnecessary for additional yield. Given a high likelihood of N-release (e.g. 90% as shown in **Figure B**) then withholding fertilizer N should not cause yield loss and would spare N-losses to the environment. SLAN data is corroborated by CO₂-Burst indicating biological activity is involved, and this bolsters a conclusion of soil improvement linked to improved N-response.^{1 2}



These multi-year field results found a specific relationship of SLAN to yield based on an equivalent amount of N (150 to 175 kg/ha or 130 – 150 lb/a). Plus the soils were relatively rich in SLAN (≥ 150 ppm). For soils much lower in SLAN, the potential equivalent response would also be much lower and at some point perhaps not meaningful enough to measure (i.e. < 50 ppm). This N level threshold will differ across landscape so local calibration is needed.

¹ Guillard K, D Moore, and W Brinton. (2016) Solvita® Soil Test Kits to Categorize Turfgrass Site Responsiveness to Nitrogen Fertilization – 2016 RESULTS UConn Turf Plot Research Report, UConn Annual Reports 2015-2016

² Guillard K, D Moore, and W Brinton. (2019) Correlations of Two Alkali Extractable Amino-Nitrogen Tests and Response to Organic Fertilizer. Soil Sci Soc Am. Journal *in press*.