

MEASUREMENT OF BIO-AVAILABLE SOIL NITROGEN

Patent Status:

PCT Application filed

License Status:

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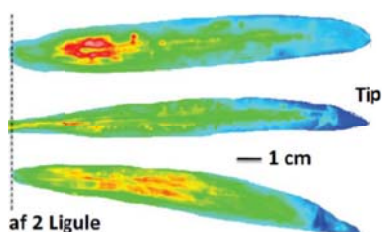


Figure – visualization of
nitrogen in corn leaves

Description:

Nitrogen is the most important limiting nutrient in plants, and an adequate supply of bioavailable nitrogen is essential to maintain high yields. For many crops, in particular corn, there is often a ‘top-up’ application of fertilizer a few weeks after planting. This invention provides a reliable method of measuring the amount of bioavailable soil nitrogen including during the early growing season.

The test works by taking leaf punches of plants, including seedlings, and exposing them to a glutamine biosensor, which is the most direct measure of nitrogen uptake and assimilation. In field tests, the sensor was able to differentiate between low, medium and high levels of soil nitrogen directly from the leaf punch at the seedling stage. Existing commercial tests such as GreenSeeker and SPAD meters were unable to differentiate between different early-season levels of soil nitrogen.

In addition to helping determine whether additional fertilizer should be applied, the test can also be used to evaluate fertilizer compositions for bioavailable nitrogen.

Advantages/Applications:

- More effective test of bioavailable soil nitrogen than competitive technologies
- Early season test to determine whether or not to “top up” nitrogen
- May be used to evaluate fertilizer compositions for bioavailable nitrogen content