

Increasing potato production: Using soil structure and chemistry to define yield influences

June 21 2010

Despite sophisticated nutrient management of potato crops, quality and yield still see wide variability. Although nutrients are already well understood, the influence of other environmental factors remains understudied.

A research team from Michigan State University conducted a study to determine how the chemical and physical properties of [soil](#), along with the light waves the plant absorbs and reflects, affect potato yield and variability. These findings were integrated with known factors to provide a more complete understand of the influences on potato growth.

Sieglinde Snapp and Alexandra Kravchenko from Michigan State University, and Edgar Po from the University of Missouri reported their findings in the May-June 2010 [Agronomy Journal](#), published by the American Society of Agronomy. Measured across many different soil chemical and physical properties, they found that soil structure was a significant variable that contributed to positive potato yield across coarse-textured commercial field sites.

The study demonstrated the need to supplement monitoring of soil chemical properties, which is a common practice, with data on soil structure and spectral profiles. [Soil structure](#) improvement requires dedicated management, but stable soil particle size and their stability in water was a sensitive predictor of field-level variability in potato tuber

yield.

This research indicates the potential for considerable long-term benefits from understanding and improving soil biophysical characteristics. Supplementing traditional soil sampling with spectral measurement provided a detailed image of how the potato crop interacted with its environment. This method allowed researchers to notice differences in growth and development of the potato crop due to changes in planting dates, as well as precipitation patterns.

The study was conducted on [potato](#), but the authors noted that the methodology appears to be widely applicable. By expanding being meeting the immediate nutritional requirements of the crop, farmers and other agricultural producers should be able to achieve higher yields.

More information: The full article is available at agron.scijournals.org/cgi/content/view/full/102/3/885

Provided by American Society of Agronomy

Citation: Increasing potato production: Using soil structure and chemistry to define yield influences (2010, June 21) retrieved 30 April 2024 from <https://phys.org/news/2010-06-potato-production-soil-chemistry-yield.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--