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How FERTILAB® Rebuilt Its Wet Chemistry Workflow with SmartChem® Discrete Analysis

A laboratory built on precision agriculture consolidated its manual, time-consuming methods into a productivity-boosting platform, significantly expanding the company's services to its customers in under two years of use.

FERTILAB® is a commercial analytical laboratory in Mexico serving the precision agriculture and agri-food sectors. It tests soil, water, and plant tissue, as well as nutrient solutions, fertilizers, agricultural salts, substrates, and phytosanitary samples. Producers and food companies use those results to adjust fertilizer programs, protect crop health, and ensure long-term soil sustainability.

Today, the laboratory processes approximately 700 to 900 samples per day, with volume rising from January through June and again during the rainy season. Ammonium, phosphate, sulfur, chloride, nitrate, and arginine are among its most requested determinations.

“Our customers are making decisions about their entire growing seasons based on the data we send them,” said David Maldonado, Operations Manager at FERTILAB®.

“Time is always of the essence; our data has to be correct, and it has to arrive when the customer still has time to act on it.”



SmartChem® 450 Discrete Analyzer from KPM Analytics.



However, the testing throughput FERTILAB® runs today was not previously possible without their investment in an automated discrete analysis solution: The SmartChem® 450.

THE LIMITS OF MANUAL WET CHEMISTRY

Before FERTILAB® invested in a KPM Analytics wet chemistry system, the laboratory ran its colorimetric work manually, one sample at a time, on a manual UV visible spectrophotometer. Chloride and ammonium were determined by manual titration. Covering the full test required more than one instrument and constant analyst attention.

“We were capable of very good work, but because we could only test one sample at a time, our efficiency had much room for improvement,” Mr. Maldonado said. “Every additional test meant another instrument, another set of hands, and another chance for a transcription error.”

The laboratory set out to consolidate methods onto a single platform, shorten turnaround time, reduce reagent and labor costs, and limit sources of contamination.

WHY FERTILAB® SELECTED THE SMARTCHEM® 450

FERTILAB® found KPM Analytics through an online search, then evaluated the SmartChem® 450 discrete analyzer against other options on the market. Two factors determined

the purchase. The first was a demonstration coordinated by SICA Medición, KPM Analytics' partner for the wet chemistry product range in Mexico for more than six years, in which the analyzer's precision and accuracy were confirmed on FERTILAB®'s own sample types. The second was the strength of after-sales service and warranty response.

"The demonstration answered the technical concerns we had," Mr. Maldonado said. "The service commitment and warranty support answered the business concerns."

GREATER TESTING CAPACITY AND PRODUCTIVITY

FERTILAB® has now run the SmartChem® 450 daily since its purchase in 2024, reaching full command of the system approximately two to three months after training. The laboratory reports a daily capacity of 500 samples per day for chloride, 100 for ammonium, and approximately 50 for arginine. Just as importantly, analysts are no longer tied to the bench for routine colorimetry.

"The SmartChem® has considerably raised our employees' productivity," Mr. Maldonado said. "The same staff who used to spend the day pipetting and titrating are now developing methods and building new services. That shift is the real return." FERTILAB® estimates a payback period of approximately

two years, driven largely by the launch of its arginine service. The team developed its own methodologies for arginine and ammonium on the platform, opening a higher-value tier in its service offering for customers.

"Precision, accuracy, ease of use, and programming flexibility are what we value most," Mr. Maldonado said. "The programming is a main reason why we can start asking what our customers need next."

WHAT COMES NEXT?

FERTILAB® is now evaluating an expansion into water analysis, including natural water, wastewater, treated water, and drinking water, as well as new determinations such as silicon and biuret.

"We bought the analyzer to solve a throughput problem," Mr. Maldonado said. "Within two years, it has significantly improved how we can serve our customers."

LOCAL DISTRIBUTOR PARTNERSHIP: SICA MEDICIÓN

FERTILAB®'s success is closely tied to the work of SICA Medición and the KPM Analytics wet chemistry applications team. Both groups supported the laboratory from the initial demonstration through installation, training, and daily use, taking a consultative approach

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David Maldonado, Operations Manager,
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rather than a transactional one. Maintenance services and consumables have remained readily accessible throughout the full two years, which matters for a laboratory operating at this volume every day.

"KPM Analytics and SICA Medición understood right from the beginning that they were helping us design a workflow," Mr. Maldonado said. "That is the reason the installation went as successfully as it did."

WOULD FERTILAB® RECOMMEND SMARTCHEM® DISCRETE ANALYSIS TO OTHER LABS LIKE THEIRS?

"Yes, and for a specific reason," Mr. Maldonado said. "It gives you very strong control over your analytical results, it removes sources of human error, and it lets you put your people where they create the most value. Those three things together have helped our laboratory reach greater heights in a very short time period."

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Contact us to discover how our discrete and continuous flow analyzers can support your laboratory's analytical needs.

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