

# DIGITIZATION OF QUALITY ASSURANCE AND QUALITY CONTROL PROCESSES THROUGH iCHECK CHROMA 3 AND iCHECK CONNECT FOR EDIBLE OIL FORTIFICATION IN PAKISTAN

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## Rationale/ Objective:

Nutrition International (NI) has been supporting the introduction of iCheck Chroma 3 devices for improving quality assurance (QA) and quality control (QC) processes, as well as reporting procedures for edible oil fortification in Pakistan. NI in collaboration with BioAnalyt Germany, pilot-tested the digitization of QA and QC results of fortified edible oil through the introduction of iCheck Connect, a web-based application used with iCheck Chroma 3 devices to record and report data directly to a dashboard. This data is stored on a cloud server, which can then be transferred to the national monitoring platform Fortification Information System (FortIS) for decision-making by millers and government regulatory bodies.

The objective of the study was to introduce efficiency, transparency, and accountability in the collection and reporting of fortification related QA and QC practices by the edible oil millers and for food regulatory bodies.

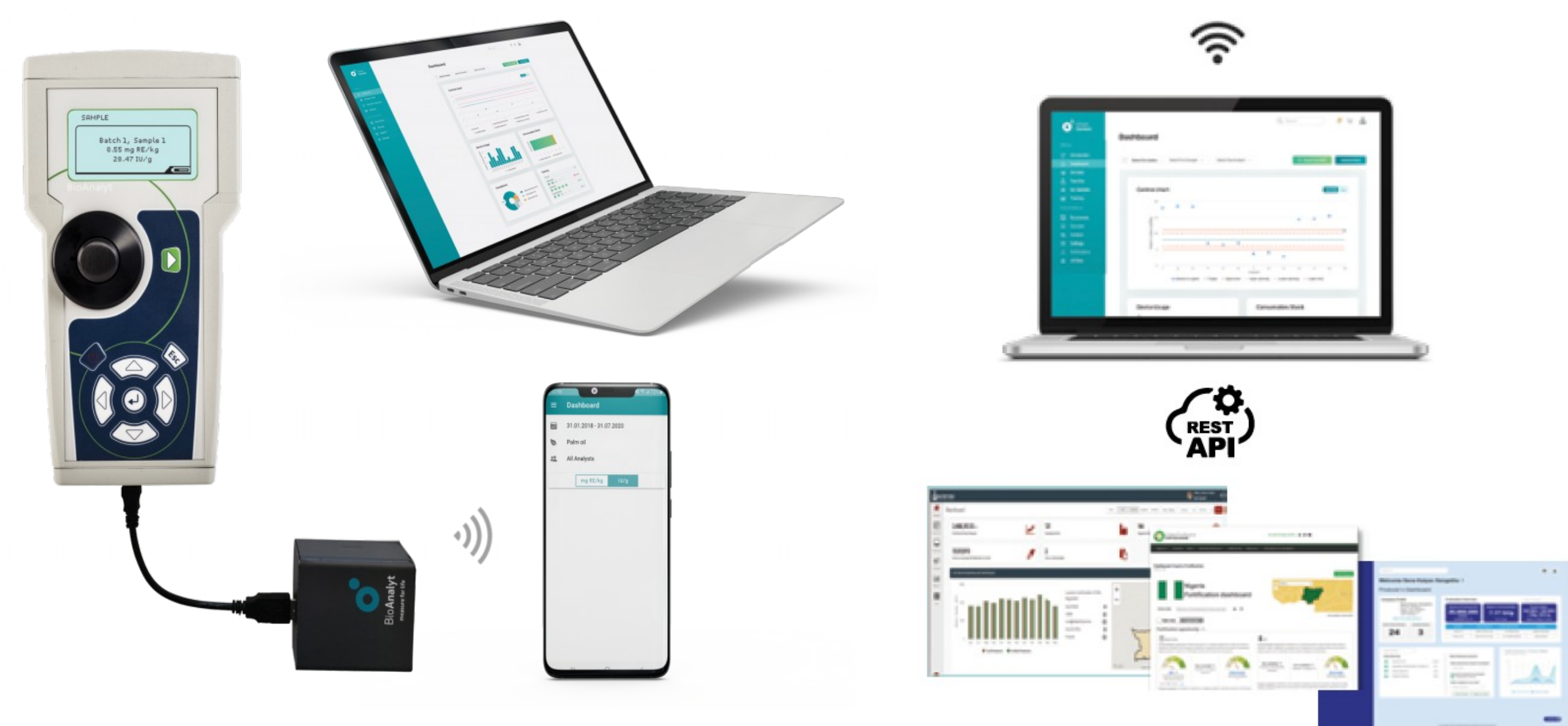


Figure 1: iCheck Chroma 3 device and iCheck Connect database

## Methods/ analysis:

A rapid assessment was conducted using qualitative research guided by review of literature and visits to the industrial units across the country, and in-depth interviews with the millers. Forty three interviews/discussions were conducted with government-level stakeholders, provincial food authorities, the National Fortification Alliance (NFA) and representatives from FortIS, BioAnalyt, and international partners like GAIN Bangladesh and WFP Innovative Accelerators followed by a review of the iCheck Connect database. Five iCheck cluster laboratories that were sharing iCheck devices between 27 mills were part of the pilot testing conducted between August-September 2022. In-depth interviews were recorded, documented, and analyzed using NVivo R1 software.

Source: FortIS and iCheck Connect Data

## Results/ Findings:

iCheck Chroma 3 was one of the methods for testing vitamin A for screening purposes. However, the following was observed during this pilot: a high variability of  $\pm 30\%$  in the test results; absence of local distributor to manage wear and tear of devices and provision of support when faced with problems during long-term use; testing vials were not locally available; use of iCheck Chroma device not deemed mandatory and not regulated by the government; and demand of these devices not high enough to set up a local distributor in the country. The use of iCheck Connect database, the digital platform for uploading results by connecting the device to the laptop, was appreciated by the Government authorities for monitoring purposes. However, issues like connectivity, anonymity and confidentiality of the mills not being maintained, non-user friendly interface, etc. were reported.



Figure 2: Quality Assurance test being performed for Vitamin A in edible oil using iCheck Chroma 3 at a local edible oil mill in Karachi, Pakistan



Figure 3: Punjab Food Authority official testing the level of vitamin A in edible oil using iCheck Chroma 3 device during a market visit in Gujranwala, Punjab, Pakistan

## Results/ Findings (Contd.):

Overall, iCheck Chroma 3 was considered to be a handy device to assess the adequacy of vitamin A content fortification in the oil. The high variance in test results can be addressed with repeated testing by the same person. Majority of millers showed their willingness to continue its use provided a supply chain mechanism is established. The concept of digitization was appreciated by millers as it reduces paper-based monitoring and does not require any formal training to use.

Introduction of iCheck Chroma 3 and iCheck Connect is relevant but requires brainstorming to ensure long-term sustainability in the country.

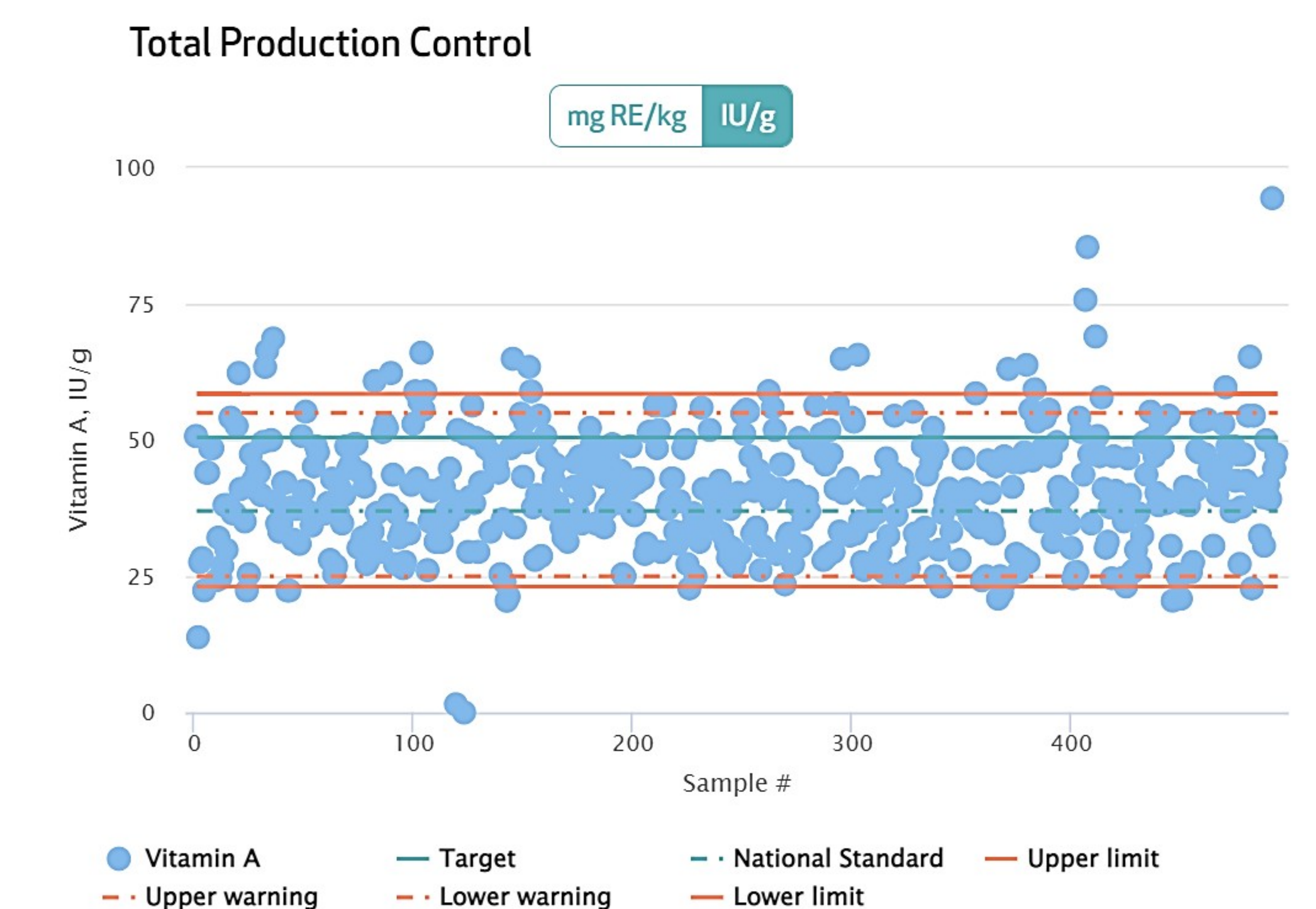


Figure 4: Test results on iCheck Connect software indicating 91% adequacy of fortification with 5% of the samples above upper limit and 4% below the lower limit

## Implications:

The iCheck devices and iCheck Connect database have a great potential in reporting real-time data and improving the QA/QC processes for edible oil fortification in Pakistan. Introduction of iCheck Chroma 3 is an effective analytical assay to test the levels of vitamin A in fortified oil. The database, which was used for the first time in Pakistan, provides visualization, categorization, and interpretation of data that can be used for decision making and course corrective actions by millers and government regulatory bodies. Use of these devices can be scaled up provided these are locally available and issues pertaining to data variability, ownership and confidentiality are resolved.