

SFRI ANALYTICAL LABORATORIES – CAPABILITIES AND QA IMPLEMENTATION



FUNCTION AND MISSION

The central analytical laboratory (CAL) performs research and technology transfer on the analysis of soils, water, fertilizers and plants in agricultural and environmental fields.

CAL participates in local and global proficiency networks and complies with the ISO/IEC 17025 (2005) standard.

QA IMPLEMENTATION & TRAINING

The analytical balance is calibrated annually by the Vietnam Metrology Institute. Using this balance and under the supervision of ACIAR project expert, Dr Paul Milham, staff have received training in pipette calibration (Fig. 1a) and analysis skills (Fig. 1b).

A UV-Visible spectrophotometer (Figs. 2a-b) is used to measure non-metals such as phosphorus based on colour intensity. It has been calibrated by the Vietnam Metrology Institute. Under the supervision of ACIAR project expert, Dr Paul Milham, staff were trained to test available soil phosphorus using the Bray-I method. After training, staff applied this test to an ASPAC soil reference sample and the results are shown in Fig. 2c.



(Fig. 1a)



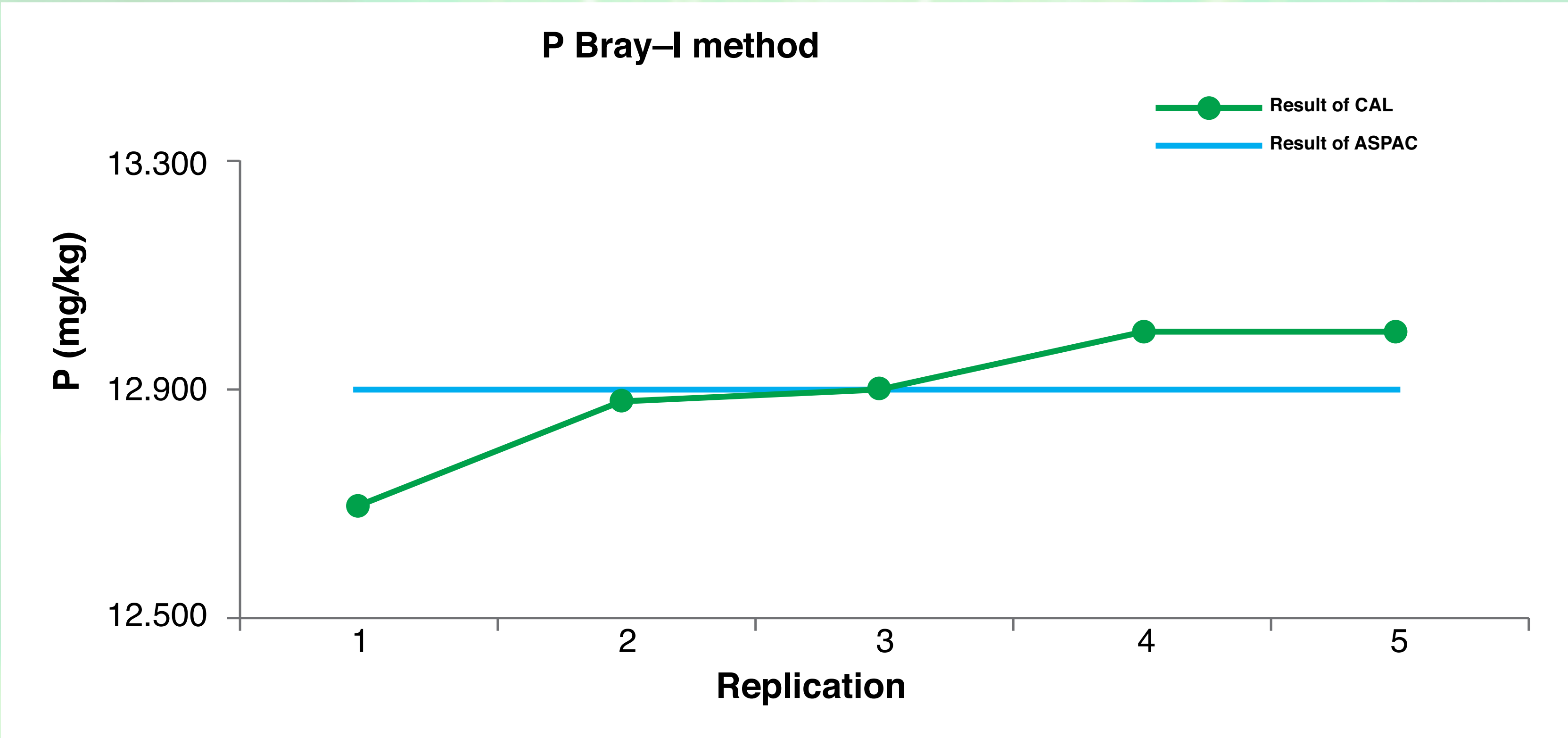
(Fig. 1b)



(Fig. 2a)



(Fig. 2b)



(Fig. 2c)

Achievements during 2014 - 2016

In December 2015, CAL received certification from the Bureau of Accreditation (BoA) Viet Nam that it conforms to the requirements of ISO/IEC 17025 (2005) in the field of chemical analysis (VILAS accreditation No 886). We have this achievement thanks to support from SFRI, colleagues, the staff of CAL, and of the ACIAR project.

Future work

- Continue capacity building in analysis techniques with the ACIAR project;
- Increase quality transparency through participation in proficiency testing with QUATEST 3 (Vietnam) and GLOBAL PROFICIENCY (New Zealand);
- Maintain CAL certification to ISO/IEC 17025 (2005);
- Cooperate in research of academic organizations in Vietnam and overseas to monitor parameters in soils and water that are sensitive to climate change.

An atomic absorption spectrometer (AAS) is used to analyze metal concentrations in solution (Fig. 3a).



(Fig. 3a)

Using the AAS, and under the supervision of ACIAR project expert, Dr Paul Milham, CAL staff have skills to determine the elements Cu, Zn, Pb, Cd, As. After training, CAL staff determined the lowest concentrations of the elements Cu, Zn, Pb, Cd that could be detected, and measured the proportion of the elements recovered from an ASPAC reference soil by the Vietnamese analysis method. Results are shown in Table 1.

ELEMENT	LIMIT OF DETECTION (MG/KG)	RECOVERY PERFORMANCE (%)
Cu	0.050	98.6
Zn	0.011	89.8
Pb	0.016	99.01
Cd	0.009	98.4
As	0.002	98.27

Table 1