A Researcher Friendly Digital Sample Tracker for Cost Effective Sample Processing

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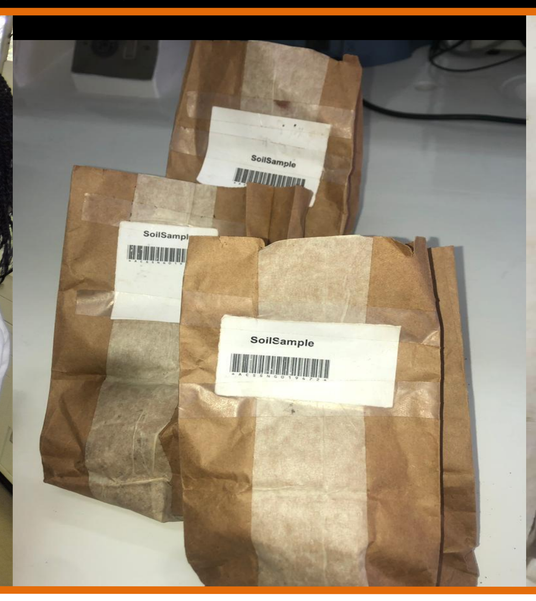


Introduction

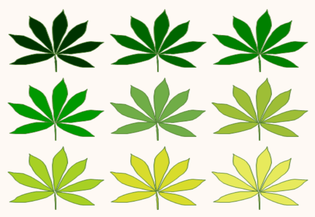
A sample tracking system is important particularly when dealing with a large number of samples collected by multiple people across multiple sites to reduce human errors of sample labelling, mismatch and mix up. Leaving the labelling and identification of samples to those collecting or handling may cause incorrect labelling and loss of information about the sample.

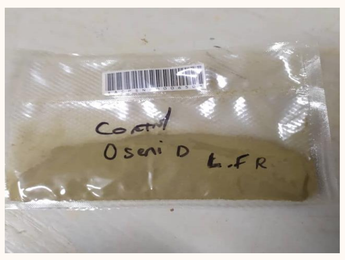
The African Cassava Agronomy Initiative (ACAI) is introducing an efficient sample tracker system that records a bar code based digital link between the samples, the plants and the plots and the trials from which they were collected. All samples are geo-referenced at sampling, thus their location of origin can be traced in case meta data are incomplete. This is facilitated by using smartphones with a bar code reader in the field when sampling and bar code readers and laptop when samples are registered and processed in the lab.

Field trials to test and develop best agronomic interventions

soil samples

Leaf samples





Ground leaf samples

Sieved soil samples

Lignified stem

Fig. 1: collection of different sample types and states

Objective

1. Easy sampling in large scale multi-location research
2. Efficient and effortless sample tracking and follow-up
3. Cost effective sample handling and processing

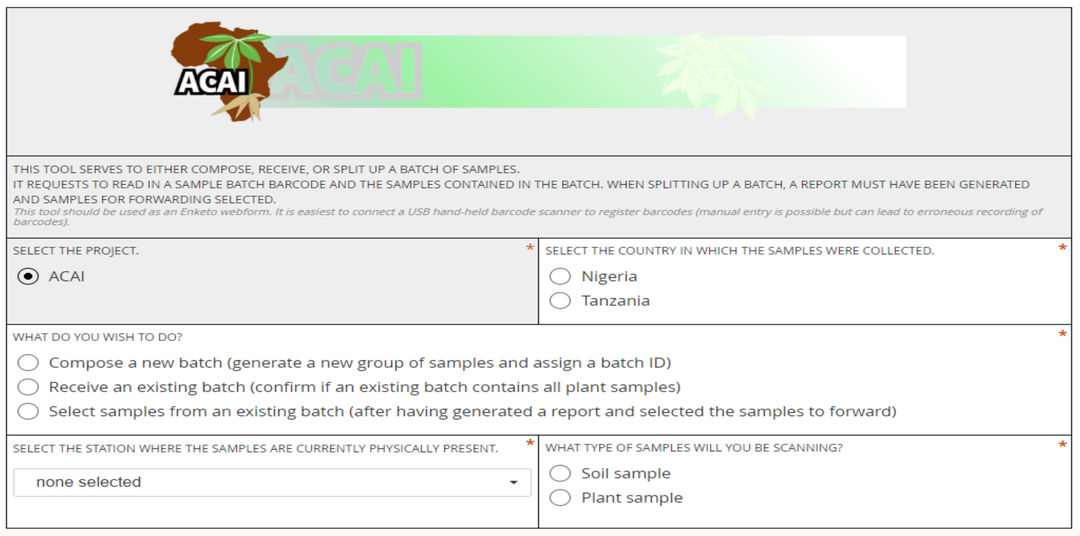


Fig. 2: Introductory page: logging in basic information of the sample .

How the Sample tracker works

The sample tracker consists of **2 web-based forms** hosted by ONA. **The first form**, an enketo web-form, is designed to i) log in all new samples by composing sample batches containing a group of similar samples, ii) log and record the fate of each sample during its life cycle in the project.

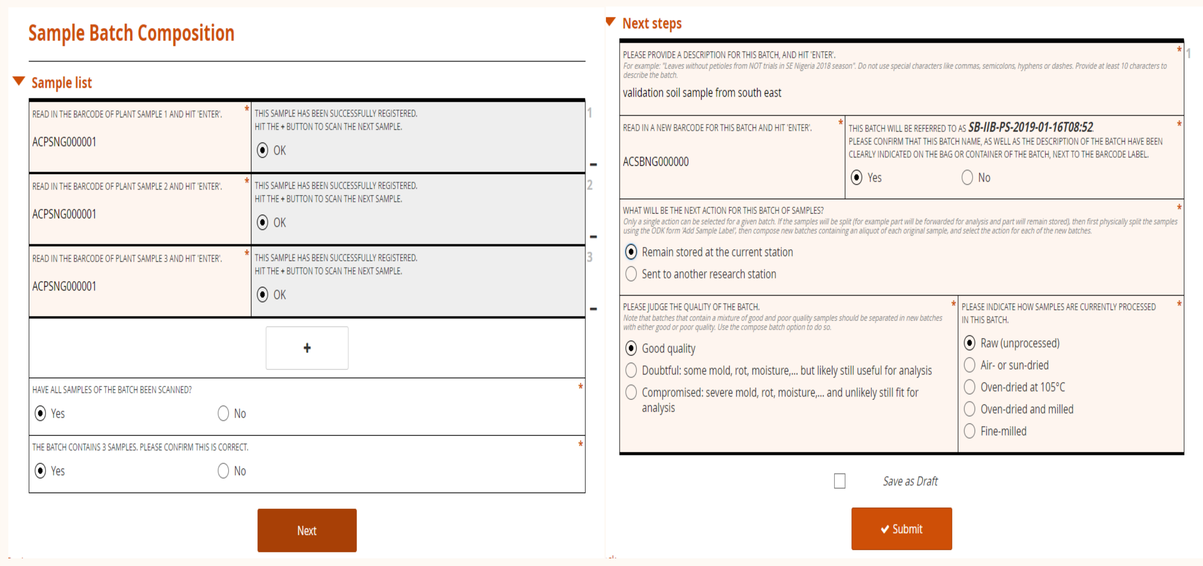


Fig. 3: composition of sample batches and logging in the state and the location of the sample on the enketo web-form

The second web-based form is a shinyapp (an interactive web app built from R) in which the decision is made to discard, store or process for analysis. These decisions are based on relevant information about the sample from the project database: trial type, location, sampling dates, validity of trials, sample quality, etc.

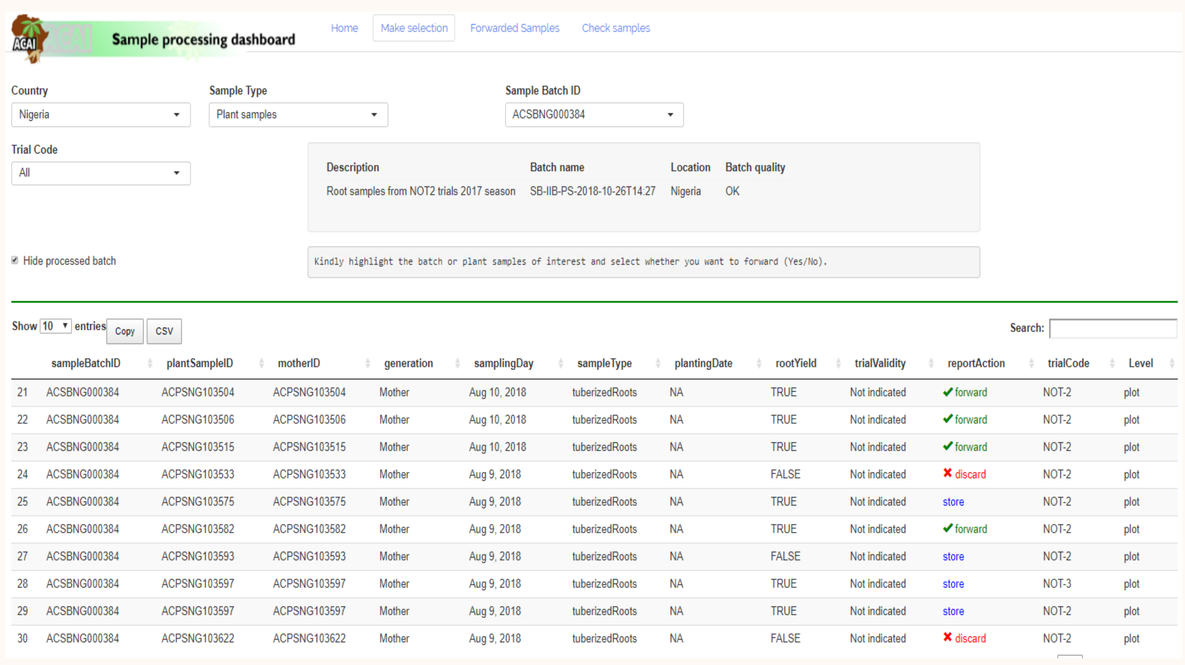


Fig. 4: ACAI sample tracker dashboard for making decisions .

Pros and Cons

Pros: The sample tracker tool enables researchers to know where a sample is located and at which stage of processing or analysis the sample is at any moment. The system helps to save on handling and processing labour, time and costs by limiting all processing and analyses to only those samples relevant to creating the decision support tools.

Cons: The batched sample still needs to be manually updated on the shiny app web dashboard using R script. Decisions are still being made manually.

Acknowledgement

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