Opportunities and challenges of DNA based Adoption/Impact study: Case of Nigeria improved cassava

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Why DNA based VI?

- Development oriented Impact assessment often measures impact of adoption on:
  - Income, food security and poverty
  - Heterogeneity effects – e.g., gender dimensions

- However, measurement errors in adoption rates introduce bias in impact estimates.

- Sources of measurement error include:
  - Contamination and mixed up by distributors and users
  - Wrong identification of improved and traditional varieties
Why DNA Identification?
DNA based varietal identification offers a reliable method to accurately identify varieties grown by farmers.

Unlike phenotype-based methods, DNA is independent of environment conditions or plant growth stage.

More abundant than morphological descriptors.

In doing so, it increases the accuracy of measurement of adoption rates.
Opportunities

- Through DNA based varietal identification and precise measurement of adoption rates
  - Track adoption rates: important for designing dissemination policy
  - Credible identification of the determinants of adoption and dis-adoption

- Beyond tracking adoption, it allows credible causal estimation of effects of adoption on possible outcome indicators:
  - Yield
  - Consumption growth
  - Poverty and food security
Challenges

- DNA based VI improves casual identification when used to track adoption

- However, It can be:
  - Prone to sampling error, how many samples per plot?
  - Costly ?
  - Requires reliable library, which can be hard
  - Prone to field logistical errors- eg., wrong labelling

- Precision issues
  - Cut-off level for identification
  - Discrimination power – cluster analysis
Going forward

• Estimate cost effectiveness for increased precision
• Important to establish clear field protocols – like the Nigeria case.
• Although costs are going down, need to increase options for service provision in Africa.
• Consensus on best approach for sequencing – Does protocol affect identification?
• Need for the standardized approach for discriminating between improved and landrace/traditional
  – might be crop and/or context specific
Thank you