Description of services for tender: DNA fingerprinting of crop varieties
Version: 2nd June 2015
Commissioning unit: CGIAR Consortium on behalf of CGIAR Standing Panel on Impact Assessment
Interested firms should contact: james.stevenson@fao.org / +39 06 570 52251 for more information

Quotes plus supporting material should be emailed to james.stevenson@fao.org no later than Friday 19th June 2015

We are requesting quotes for a service contract to cover DNA fingerprinting analysis of samples from three field surveys being carried out in 2015 (see specifications below), with the potential for further work in 2016.

- We are open to proposals using any relevant technology (e.g. NGS approaches, SNP-based, RAD Markers, DArT, etc).
- We will evaluate the proposals on the basis of: a) quality, which in this context is the expected precision with which individual samples can be clearly identified as being specific varieties in the reference library; and b) per unit cost.
- The method chosen should be common across the three experiments.
- In preparing quotes, prospective service providers can choose to outline alternative scenarios for with different technologies at different prices.

Field survey sample specifications

<table>
<thead>
<tr>
<th>Crop</th>
<th>Country</th>
<th>Material</th>
<th>DNA extraction</th>
<th>Number of plots</th>
<th>Sampling within plot</th>
<th>Number of entries in reference library</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize</td>
<td>Uganda</td>
<td>Grain</td>
<td>To be carried out by service provider</td>
<td>576</td>
<td>Bulk dried grain from 4 x 4 m crop cut quadrant (min 300 grains)</td>
<td>65 varieties</td>
</tr>
<tr>
<td>Sweet potato</td>
<td>Ethiopia</td>
<td>Leaf</td>
<td>Already completed using CBAT method</td>
<td>200</td>
<td>Single leaf sample</td>
<td>20 varieties</td>
</tr>
<tr>
<td>Cassava</td>
<td>Malawi</td>
<td>Leaf</td>
<td>Already completed using CBAT method</td>
<td>1296</td>
<td>Single sample of 2-3 leaves</td>
<td>65 – 80 varieties (to be confirmed)</td>
</tr>
</tbody>
</table>

Context for the services requested
The CGIAR Standing Panel on Impact Assessment (SPIA – http://impact.cgiar.org) is currently working in partnership with two research centers of the CGIAR, namely the International Institute for Tropical Agriculture (IITA) and the International Livestock Research Institute (ILRI), and with the World Bank Living Standards Measurement Study – Integrated Surveys of Agriculture (LSMS-ISA) project. The objective of this collaboration is to improve the quality of the data collected in agricultural household surveys in eight Sub-Saharan African countries – Malawi, Tanzania, Uganda, Ethiopia, Nigeria, Niger, Burkina Faso and Mali.

As part of this collaboration, researchers are collecting samples of leaf tissue or grains from a range of crops from farmers fields as part of household surveys carried out under the auspices of the country’s national statistical agencies. These samples of plant material are taken in order to carry out DNA fingerprinting on them, to establish the specific crop variety being cultivated by the farmer. This analysis is motivated by a growing body of evidence that shows that farmers are often unable to correctly identify the crop varieties in their own fields, owing to a number of factors including a confusion of vague local names that inconsistently map onto single variety names; potential counterfeiting in the seed markets; and the generally informal and unregulated nature of the seed system in most countries in SSA.
1) Capability statement
This should take the form of a short (approx 2 pages) statement of relevant experience by prospective service providers in DNA fingerprinting of varieties from multiple crops.

2) Terms and conditions of service
The standard terms and conditions for work carried out should be included.

Duration, scale and periodicity of the services
We are initially requesting bids for analysis of these three experiments, but expect to carry out further surveys in which plant samples will be taken for DNA fingerprinting. We estimate up to six surveys in total over the two-year period, with one (or perhaps two) crop types per survey. The frequency with which we will require DNA fingerprinting will be determined by the survey schedules and we are working in two countries at any one time (currently Malawi and Ethiopia). The number of individual samples to be fingerprinted will vary with each survey – but will be in the approximate range of 300 to 2,000 samples per survey. The number of varieties in the reference library will vary depending on the crop but will typically be in the range of approximately 30 – 60 varieties.

Researchers from the CGIAR, World Bank, and partner agencies in these countries (i.e. national statistical agencies; national agricultural research institutes) are responsible for collecting the samples correctly, labelling them with unique IDs, clearing the shipment of either extracted DNA or dried plant material (in cases where DNA extraction is to be done by the service provider) out of the country, and shipping them to the service providers.

Services and unit prices for tender
We would expect the analysis to be completed within a period of 60 days from receipt of the samples in the laboratory. The price for services should be quoted on a unit price basis. We expect that this would vary depending on the number of sample as well as on the specific genotyping technology used. Our evaluation will examine unit costs, the capability statement from potential providers, and specific attributes of the technology and overall approach proposed.