Correct determination and expression of cassava root yields –

Precondition for Commercialization

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Cassava root yields are dominantly expressed as raw fresh roots. The literature on cassava is marred by incomplete descriptions of the method by which the roots were harvested, what exactly was weighed and the fact that variation in root water content are ignored.
The objective of this presentation is to show that new and sound methodologically approaches are required to overcome the shortcomings in expressing yields of cassava in a way that allows valid comparisons within cassava crops and with yields of other crops.
Looking at other crops

Cereals and grain legumes – yield is expressed as grain – with a specified dry matter content. Other ways to express yield would not be accepted!
Looking at other crops

No one would accept maize yields expressed as “on the cob” mass or “still in husks and fresh” . . . . . . .
So,

Why do cassava researchers express yields in raw fresh mass?

The equivalent of fresh maize in husks and with a stalk piece attached
Even raw roots would be the equivalent of fresh maize in husks.

Cassava peels are not used, at least not generally and everywhere, thus have the role of husks and cob in maize.
Not all damages are visible, unless roots are cut – non-edible material would be considered yield.

Losses due to rot are variable and age related thus need to be determined and rotten material has to be excluded from yield determinations.
What portion of the production is actually used – many roots are deemed unsuitable for processing.

Losses due to small, crooked or otherwise deformed roots are soil, variety and age related thus need to be determined and excluded from yield determinations.
Peeled roots would be the equivalent to fresh maize grain – no husks, no cobs

Peeling losses are related to the root length and diameter but are generally larger than 20% of the fresh mass.
Cassava root water content is highly variable ranging from about 55 to >75%, depending on variety & season.

Water content is probably the most important factor to consider in adjusting cassava yields to validly compare within Root & Tuber crops and with other (grain) crops.
Taking all materials and the water content into account the raw fresh root yield of cassava will shrink to a mere 20-30 % when expressed as edible dry matter.

This means a raw fresh root yield of 15 Mg ha\(^{-1}\) will result in between 3 and 4.5 Mg ha\(^{-1}\) edible dry matter after processing.

The value of which needs to consider the processing costs .. .. ..
and do not forget, the maize farmers goes home with the grain about 3 months after seeding!

They could even grow another crop on the same land before a root or tuber crop is harvested.

Does time matter?
It certainly does matter, or why would there be the “Time is money” word?
If the time required to produce a crop is considered the long growing phase of cassava will change the expression of yields considerably.

While this may not appear to be important to farmers, the land use intensity in a farm will be affected as will be the overall farm household income.
A crop that grows for 12-18 months before it can be harvested and generate income has a different effect on the household than crops that are harvested after 3 or 6 months.
Therefore farmers have to balance the time a crop occupies the land against the income to be expected from it.
Thank you for your attention