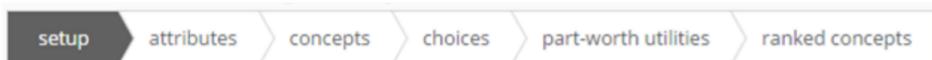


## Relevance, where it fits in breeding cycle

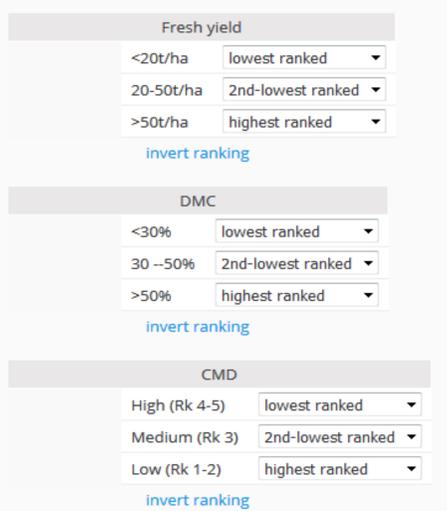
1000 minds (<https://www.1000minds.com/>) is a decision making software with a wide range of uses, including plant and animal breeding. It has been used in cattle and sheep breeding, forage grasses and most recently on cassava. The novel use of a pair wise ranking method called PAPRIKA (Hansen and Ombler, 2008), enables users to administer surveys to determine “weights” of each attribute of a product. The software has been used to set breeding priorities for a diversity of uses: setting economic values for traits in sheep breeding (Byrne *et al.* 2012), forages (Smith and Fenessy, 2014), as well as developing dairy farmer typologies (Martin-Collado *et al.*, 2015 and Slagbloom *et al.*, 2016) and setting economic values for traits in the Australian dairy farming industry (Byrne *et al.*, 2016). We are exploring the use of 1000 minds to develop economic weights for cassava breeding in Uganda, Tanzania and Nigeria, specifically to meet gender responsive and user oriented breeding targets.

## Description of steps or stages



<https://www.1000minds.com/>

The 1000 minds choice experimentation survey design begins by defining the attributes, concepts and choices that will be presented in the survey. For breeding, attributes can be “traits” (yield, disease, protein/starch content etc) along with levels that are defined for each (kg yield, amount of disease, amount of protein/starch per animal/plant etc).



**Fresh yield**

- <20t/ha lowest ranked
- 20-50t/ha 2nd-lowest ranked
- >50t/ha highest ranked

**DMC**

- <30% lowest ranked
- 30-50% 2nd-lowest ranked
- >50% highest ranked

**CMD**

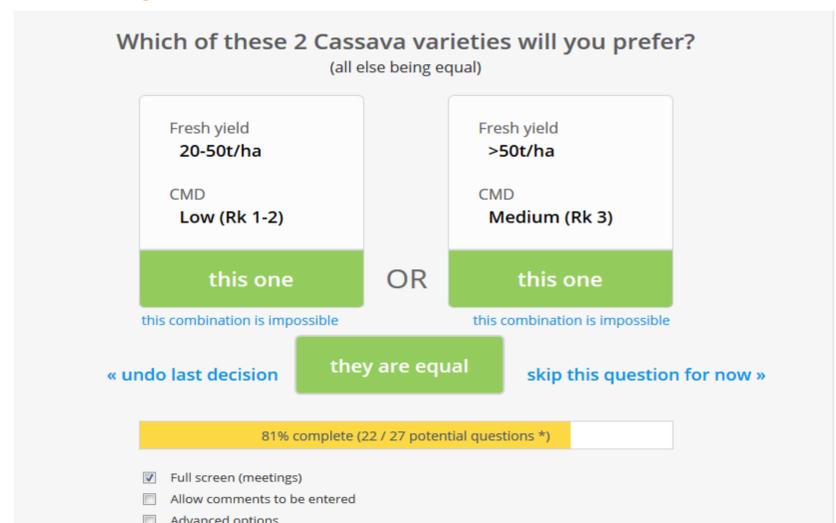
- High (Rk 4-5) lowest ranked
- Medium (Rk 3) 2nd-lowest ranked
- Low (Rk 1-2) highest ranked

Example of building “attributes” from traits of interest in cassava. Three traits were chosen for this study: Fresh yield (tons/hectare), dry matter content (%) and cassava mosaic disease (rank 1-5). For each, three levels of possibilities were defined, based on breeder criteria.

Source: Ugochukwu Ikeogu

The PAPRIKA method then involves respondents replying to a series of questions, each comparing two hypothetical concepts, and involving a trade-off. This is repeated up to 30-40 times depending on the number of attributes, with each round of questions being an adaptation based on responses to the previous, a type of adaptive conjoint analysis. The software then calculates ‘part-worth utilities’, or relative weights, for each attribute. If pre-set concepts (combinations for attributes) were defined, the results also rank concepts for their total ‘value’.

## Example of use



Which of these 2 Cassava varieties will you prefer? (all else being equal)

Fresh yield  
20-50t/ha

CMD  
Low (Rk 1-2)

this one

this combination is impossible

OR

Fresh yield  
>50t/ha

CMD  
Medium (Rk 3)

this one

this combination is impossible

« undo last decision
they are equal
skip this question for now »

81% complete (22 / 27 potential questions \*)

Full screen (meetings)  
 Allow comments to be entered  
 Advanced options

Source: Ugochukwu Ikeogu

In a 1000 minds design experiment, Ugochukwu Ikeogu tested the decision making tool for three cassava traits at three levels each. This test revealed the need for better understanding and definition of traits before developing the survey. Without clear definition and reference ranges for “good *gari*”, “big roots” and “matures early”, emerging as preferred cassava traits from open ended interviews and FGDs, it will be nearly impossible to use these for 1000 minds. Further work will need to be carried out to refine the tool before deploying with users

## Next steps in developing tool/approach

Adapting the 1000 minds method to gender responsive breeding will require detailed development work to define traits and ranges, as well as refine the interface for use in the field setting directly with cassava farmers, processors and consumers.

Points for World Café discussion:

1. How can the software be used “offline” and still give users an opportunity for direct input?
2. How can we define traits and ranges in a standardized manner- need for pre-survey focus groups?
3. What are considerations we should have in beta-testing to ensure the tool is user-friendly for example for women, young and illiterate respondents?
4. Can we adapt the tool to be more “gender responsive” beyond recording age, sex etc of respondent- what do we need to think about?

## Partners

