



Unlocking Farmer-Preferred multipurpose Forage Mixtures: A Tricot Approach in Ethiopia

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Background

- 70% of the Ethiopian population relies on livestock for their livelihoods and wellbeing
- Much (90%) of the feed source comes from traditional grazing systems and the majority of this from poorly managed natural pastures
- Land degradation is mainly associated with the livestock sector due to overgrazing, and unsustainable agricultural practices



Awi zone near Injibara South of Bahir Dar with highly overgrazed highlands due to high livestock population. Photo: Belachew Gizachew

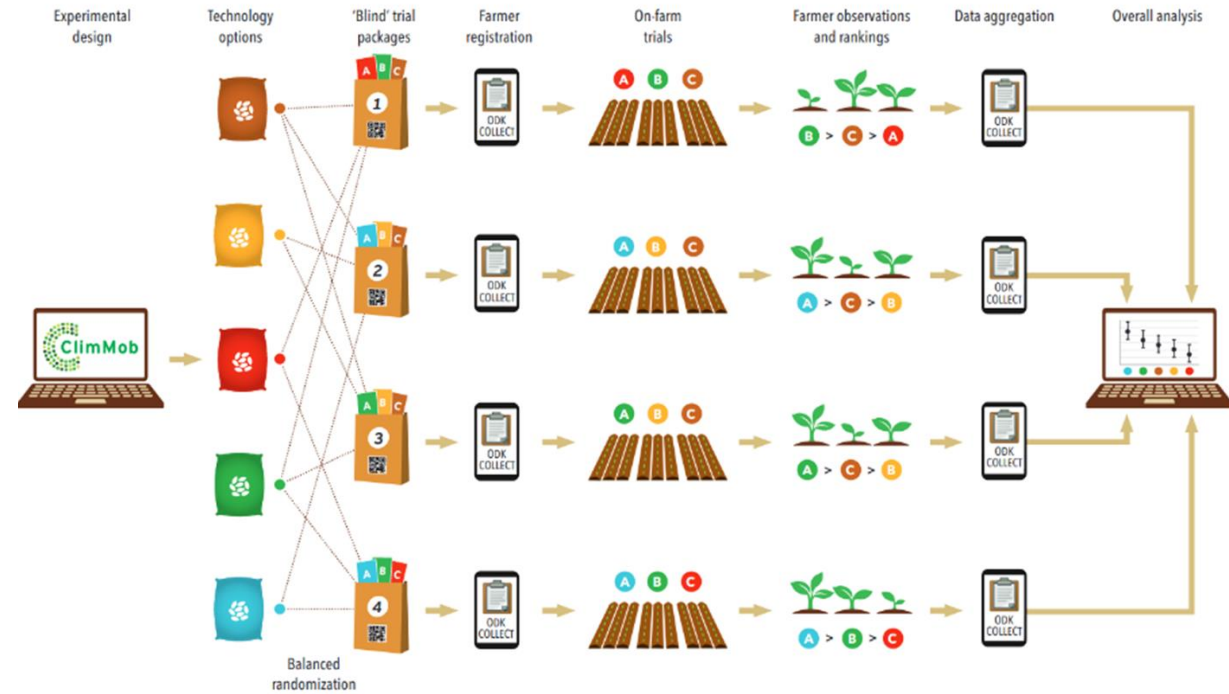
Background

- Improved forages are known to deliver multiple benefits towards quality feed and land restoration
- Farmers' participation in the identification of solutions is crucial for widespread adoption of new agricultural technologies.
- Identifying performance of mixtures and preferred traits by farmers



The tricot approach

- Triadic comparison of technology options (tricot) is a decentralized experimental approach that helps farmers to identify the most suitable technologies for the local conditions
- Tricot engages farmers as citizen scientists in the testing of new crop varieties and other promising agricultural technologies.

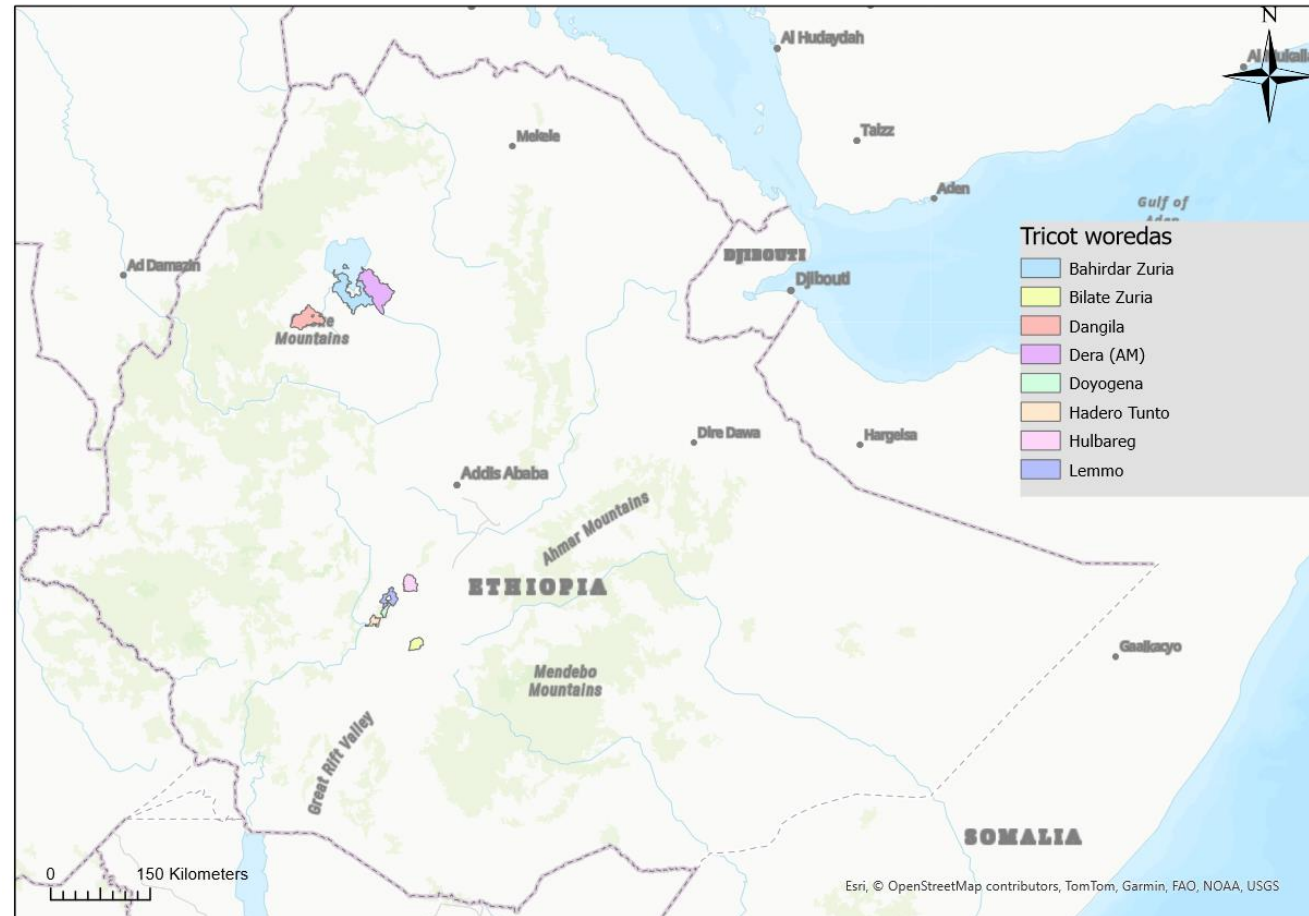


Tricot site and participant selection (1)

Mid altitude

Mixed farming systems

Different agroecology



Site and participant selection (2)

Training of woreda development agents

Previous experience on improved forage varieties promotion

Forage production potential and forage scarcity problem

Dairy potentials



Package ID

3 separate treatments packed together

The tricot approach

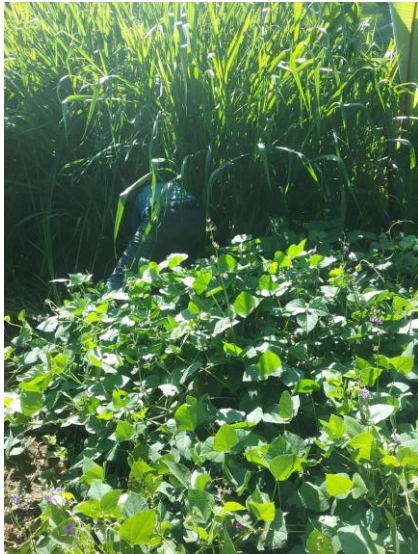


Item	Abbreviation	Freq	Relative freq
Cayman	Cayman	77	21.4%
Cayman & Desmodium	Cayman&Dsmdm	77	21.4%
Cayman & Lablab	Cayman&Lablb	77	21.4%
Cayman & Stylo	Cayman&Stylo	78	21.7%
Crotalaria	Crotalaria	78	21.7%
Desho	Desho	77	21.4%
Desmodium	Desmodium	77	21.4%
Lablab	Lablab	77	21.4%
Mombasa	Mombasa	76	21.1%
Mombasa & Cayman & Desmodium & Stylo	Mmbs&Cym&D&S	77	21.4%
Mombasa & Desmodium	Mombas&Dsmdm	78	21.7%
Mombasa & Lablab	Mombas&Lablb	77	21.4%
Mombasa & Stylo	Mombasa&Styl	77	21.4%
Stylo	Stylo	77	21.4%

Field pictures



Dangla, Dera, Amhara region

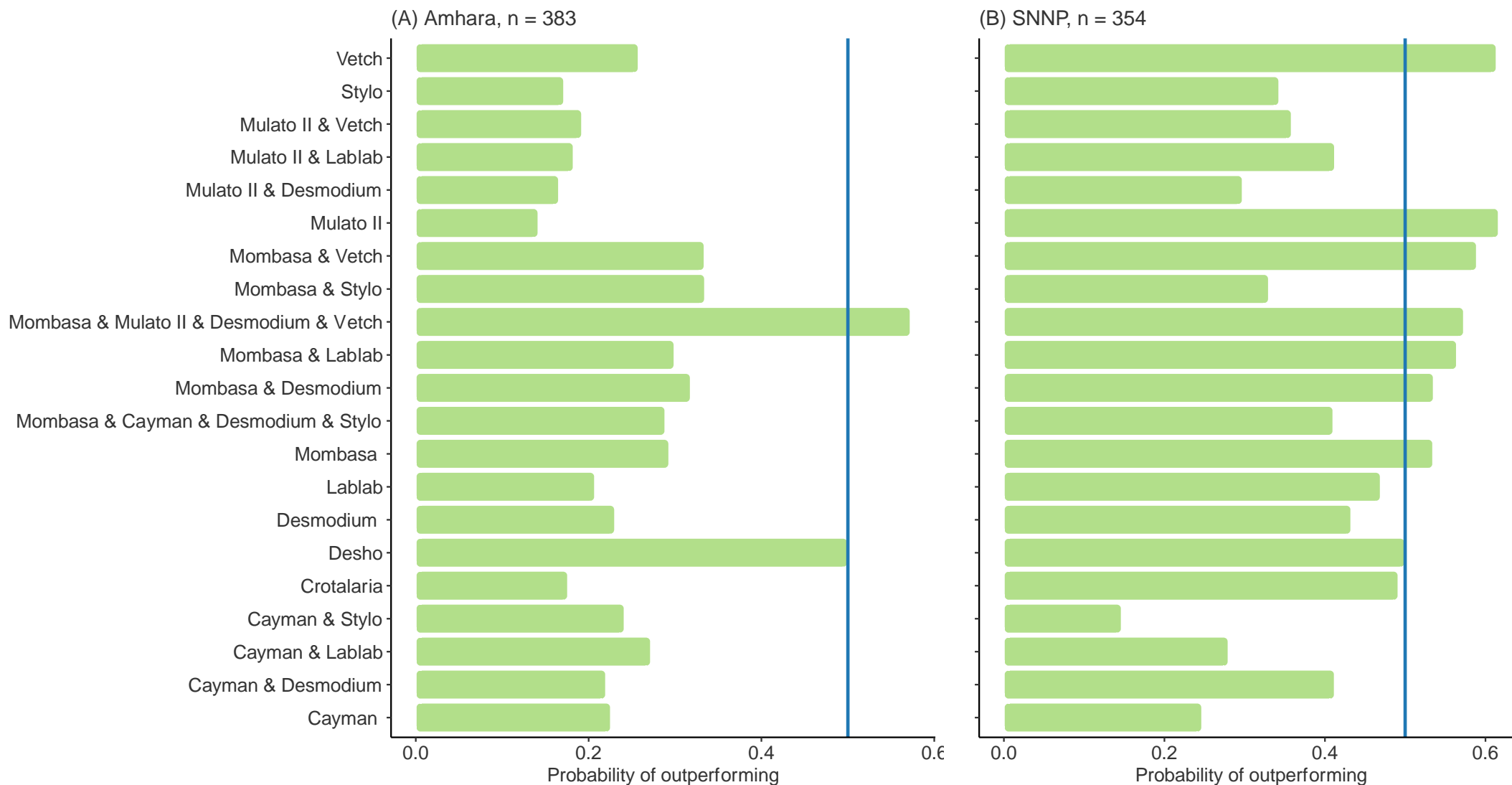


Bilate, Sidama region

Traits assessed on farm

Trait	Statement (Positive/best)	Statement (Negative/worst)
Establishment	Which option was easier to sow?	Which option was more difficult to sow?
Plant height	Which option has the tallest plants?	Which option has the shortest plants?
Soil cover	Which option is the best in covering the soil?	Which option is the worst in covering the soil?
Plant population	Which option has more plants (grass&legumes)	Which option has less plants (grass&legumes)
Grass population	Which option has more grass	Which option has less grass
Legume population	Which option has more legumes	Which option has less legumes
Weed population	Which option has less weeds	Which option has more weeds
Plant colour	Which option is greener/less green	Which option is less green
Disease resistance	Which option is more resistant to diseases?	Which option is more susceptible to diseases?
Pest resistance	Which option is more resistant to pests?	Which option is more susceptible to pests?
Drought resistance	Which option is more tolerant to drought?	Which option is more susceptible to drought?
Leaf-Stem ratio	Which option is leafier	Which option is less leafy
Nutrient requirement	Which option needs less fertiliser	Which option needs more fertiliser
Environmental co-benefits	Which option keeps more soil in place	Which option keeps less soil in place
Soil fertility improvement Yield	Which option contribute less for soil fertility improvement?	Which option contribute less for soil fertility improvement?
Yield	Which option has the higher yield?	Which option has the lower yield?
Harvesting	Which option is easiest to harvest	Which option is the most difficult to harvest
Livestock feeding	Which option do the livestock prefer first	Which option do the livestock prefer last
Transplanting	Which option is easiest to transplant	Which option is most difficult to transplant
Overall preference	Overall, which option was the best?	Overall, which option was the worst?

Performance: Biomass (yield) of forages and their mixtures



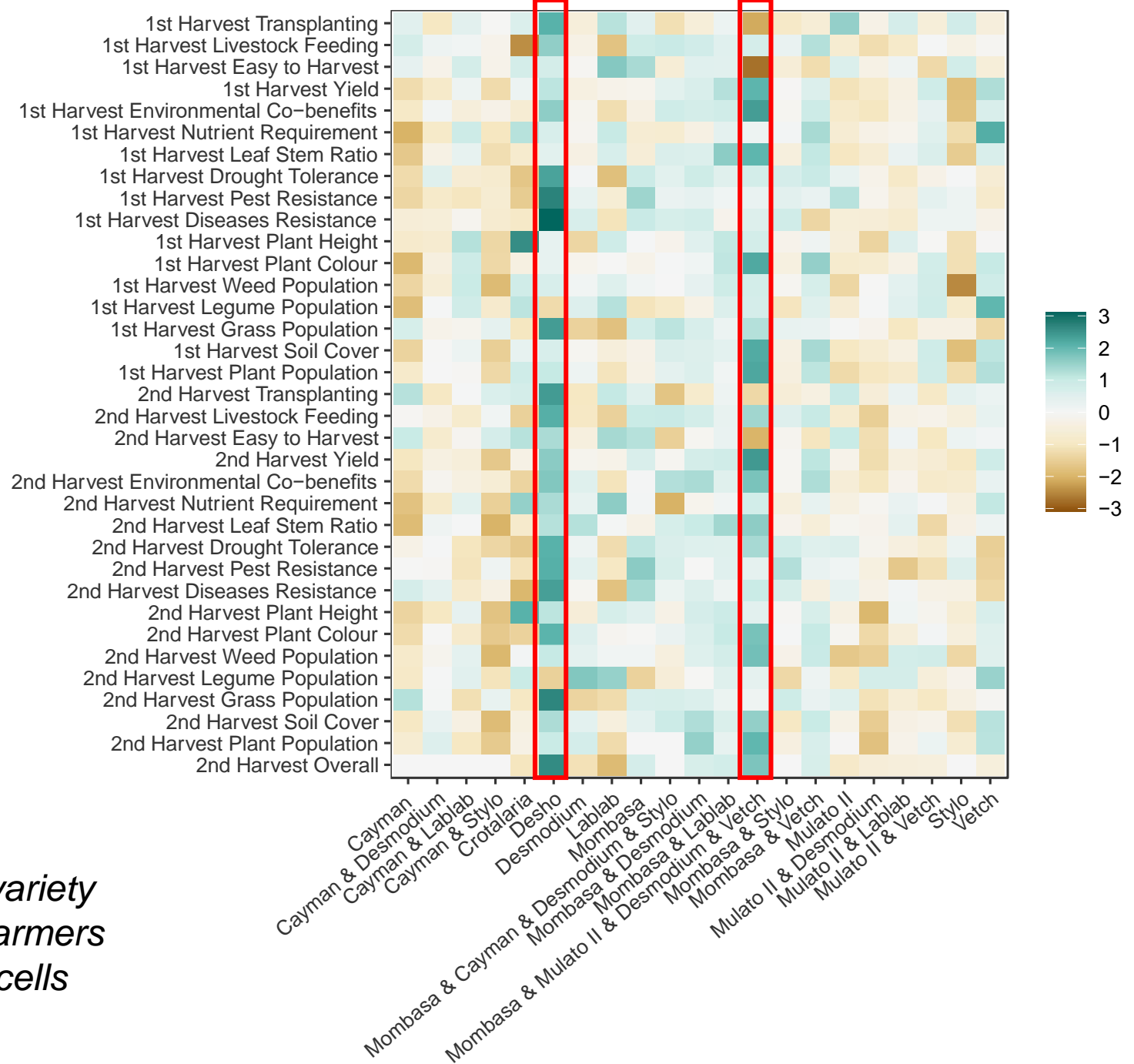
Performance of tested forages and their mixtures against the reference forage Desho

Key traits influencing the selection of forages and their combinations



Kendall correlation coefficient between 'Overall Preference' and the other traits assessed in this trial.

Trait performance on the full set of data



Plackett-Luce estimates (log-worth) of variety performance in the traits assessed by farmers during first and second harvest. Green cells indicate the best varieties/mixtures

Lessons and next steps

- Engaging farmers in selection of technologies leads to new insights and easier scaling
- Influence of existing/well known varieties affecting preferences
- Biophysical and socioeconomic factors affecting performance and preference
- Performance and preference in different niches
- Environmental and socio-economic impacts of replacing traditional feed basket with improved forages
- Enabling factors: availability of forage seed and extension services



Yordanos's story



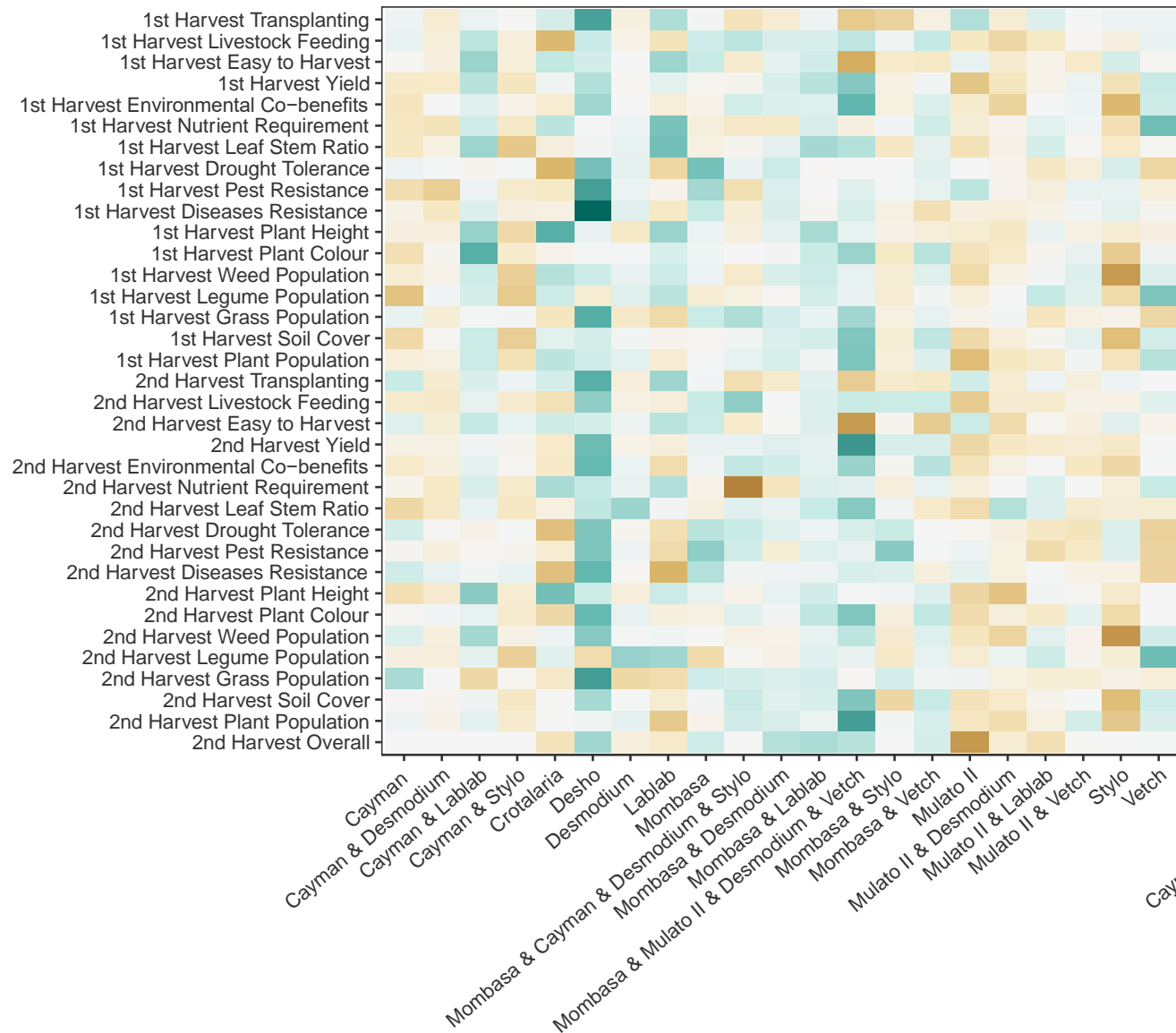
For more information:



Thanks!

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(A) Amhara, n = 383



(B) SNNP, n = 354

