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Lentils, Traits and Adoption in Ethiopia

Dina Najjar, Gender Scientist, International Center for Agricultural Research in the Dry Areas (ICARDA)

Protecting Ethiopian Lentil Crops Initiation Workshop, October 11-13, 2021

Background

- Gain a more nuanced understanding of legumes as a "women's crop" through looking at labour contributions, access to resources in lentil production, trait preferences, innovations adoption, marketing and ability to control related income.
- Lentil is a cash and subsistence crop (women and men farmers are thus interested in a variety of attributes)
    - the sale of lentils constitutes 50 to 100 percent of smallholders' income.

Objectives:

- What are the trait preferences for women and men farmers, processors and millers?
- What are the implications for adoption of varieties?
- What are the implications for breeding programs?

- Conducted studies in major lentil growing areas of Ethiopia (land/area coverage)

Why do we need to consider gender in traits and adoption studies?

- Gender gaps in agriculture include lower rates of adoption of modern varieties (MVs) for women producers
- Women can be made worse off by MVs that have traits they find unacceptable or that increase their workload e.g. MV of maize that was hard to thresh, MV of sorghum that did not tolerate P deficiency on women's plots
- Breeders are concerned to "do no harm" and to include more women in the benefits of MVs

Methods

- Data on adoption and trait preferences collected from July 2018 to December 2020

Type	Interviews with farmers (half men, half women)	Quantitative survey (half men, half women)	Focus Groups (half men, half women)	Key informant interviews (half men, half women)	Traders (one woman)
Number	30	280	8	4	6

- Qualitative data was collected, translated and now being coded in Nvivo 10 and SPSS was used in analyzing the quantitative survey **looking for sex-disaggregated and differential impacts related to lentil traits and adoption**

Which lentil variety did you grow in the long rain season?											
	None	N	*Alemaya*	N	Local Variety	N	*Derash*	N	*Teshale*	N	N
Female	2.9%	4	48.6%	68	47.1%	66	1.4%	2	0.0%	0	140
Male	2.9%	4	46.4%	65	45.0%	63	5.0%	7	0.7%	1	140
total	2.9%	8	47.5%	133	46.1%	129	3.2%	9	0.4%	1	280

5 men mentioned of growing *Teshale* from in-depth-interview participants

Factors Impacting Variety Adoption:

- Yellow rust ("*wag*")
  - Local variety widely used ***both*** in Amhara and in Oromiya
- Decreasing yield (*Alemaya*)
- Lack of availability of new improved varieties
- Market price
- Lack/inadequate attention to lentil (extension service)
- Unfair sharecropping practices
- Ease of splitting

What is Gender-Responsive Breeding?

Gender responsive breeding will:

1) Know when, where, and why women are an important beneficiary group.

2) Anticipate how design decisions (e.g., defining plant ideotype, prioritizing of traits, targeting and testing varieties with farmers) **may impact and be influenced by women's labor, available resources and opportunities**.

3) Design breeding **objectives specifically to benefit women farmers** and consider their needs, constraints and knowledge more generally in the breeding program.

4) Be **accountable**, making sure success is measured in ways that include positive impacts for women.

Easy threshing trait looks promising!

"Do no Harm"

- Does the innovation increase drudgery ?
- Does it displace activities for own income generation ?
- Does it depend on inputs with unequal Access?
- Does it decrease control of benefits?
- Do women value the technology negatively?
- Do men value the technology negatively?

Neutral = 0
Avoid/ amend = -1
Reject = -2

"Positive Benefits"

- Does the innovation reduced drudgery ?
- Does it produce more employment for own income generation?
- Does it enhance women-controlled products or by-products?
- Do most women value the technology positively?
- Do most men value the trait positively?
- Do most women rank the technology more highly than men?

Neutral = 0
Nice to have = +1
Important = +2
Required = +3

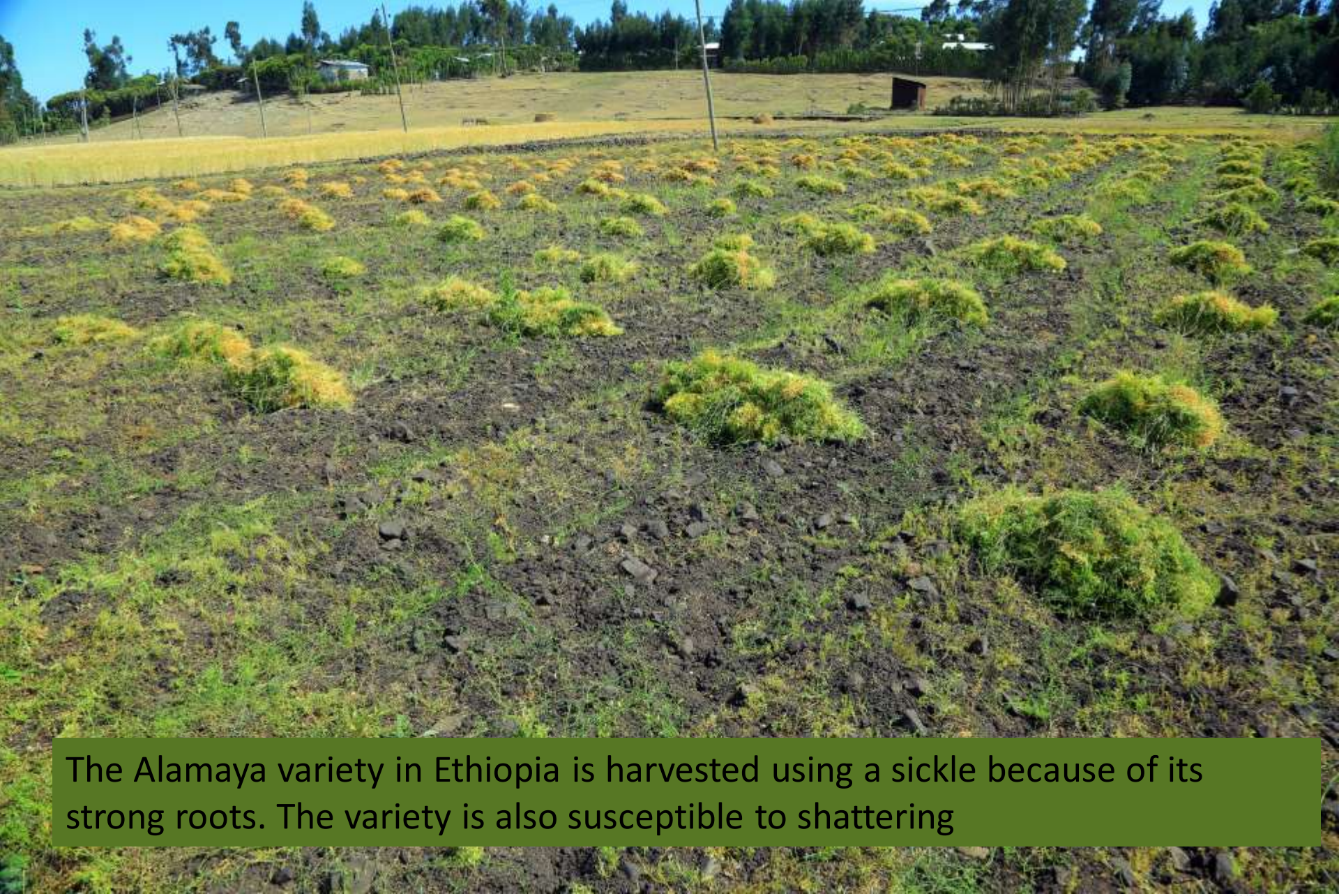
Palatability + high biomass

Splitting

After using the G+ Product Profile, a breeding project will have a Gender Impact Score for a product profile (i.e. breeders' list of desired traits), evaluating gender differences for
Do No Harm- traits to potentially avoid in the product profile
Positive Benefits- traits to potentially include in the product profile
Or the result may be to identify a gender-neutral product profile.

Trait Preferences

- Resistance to rust
- Market price
- Yield/productivity
- Taste
- Ability to split properly (+traders and processors)
- Ability to dry without spoiling (storage) (+traders and processors)
- Amount of residue



The Alamaya variety in Ethiopia is harvested using a sickle because of its strong roots. The variety is also susceptible to shattering

Recommendations for Breeding Program

What are breeders breeding for?

- yield, earliness, seed size, disease resistance

What does gender responsive breeding entail?

- Market traits, good taste, higher residue amount as well as traits with negative workload implications deserve more attention in breeding programs

More generally:

- Lentil breeding and adoption research programs in Ethiopia should consider a **diversity of traits** beyond grain yield to encompass **the range of production, processing, and consumption attributes** that are valued by farmers
- Lentils deserve attention in **extension, release and making available new varieties** given its significant role in generating income and better nutrition for households

Thank you! Any questions?

Traits

Gender and Breeding Working Group developed **'Product Profile Proposal with Gender Impact Scores'** (this should list all the traits under consideration);

Recording the result of a "DO No Harm" analysis and a Positive Benefits analysis of a given trait, form a gender perspective.

- Is there risk of harm (a negative value) from any trait? If yes, summarize the harm and its seriousness for the target customer segment.
- Is there any trait with both negative result (harm) and positive value(benefit)? If yes, what is the relative importance of these outcomes, in your judgment?
- Does the product profile proposal contain positive values, indicating gender-responsiveness? Summarize the positive benefit and its significance for the target customer segment.

Need sex-segregated data to make informed decisions

Findings from Ethiopia Study

- Challenges were faced by both male and female farmers, including the increased variability of rainfall, the lack of attention to agronomic practices, and problems accessing new rust-resistant lentil varieties. The improved varieties that are available – Alemaya, Derash, and Teshale – were introduced several years ago, and are no longer rust-resistant and increasingly susceptible to wilt and pests such as aphids. They are also unpopular. In Oromiya, for instance, Derash is only cultivated by some 6.5 percent of female farmers and 10.4 percent of male farmers, attributed to the fact that it is hard to split, less productive than local varieties, and attracts less demand in local markets.
- While lentil losses affect both male and female farmers, however, they tend to be greater for women. For example, in Oromiya, among survey participants, some 50 percent of female-headed households and 28.6 percent of male-headed households experienced losses. When interviewed, female farmers and traders also explained that the traditional way of threshing increased losses and reduced the cleanliness of the crop, which negatively affected market value.
- When growing lentils, women were more affected by labor shortages (64.1 percent of women versus 26.1 percent of men), and also more likely to lack access to plow animals (10 percent of women vs. 4.5 percent of men). Women also explained how the norms surrounding farm-related divisions of labor did not allow them to plow, since plowing is mainly perceived as a “male only role.” This forced women to work as sharecroppers or to enter into a labor exchange arrangement to continue farming. This, and other challenges such as crop losses, are compelling female household heads without access to male labor to abandon farming all together.