



Gender & Breeding Initiative

GBI Tools

User Guide to the G+ Product Profile Query Tool (G+PP)

Jaqueline A. Ashby and Vivian Polar

F E B R U A R Y 2 0 2 1



GBI User Guide

User Guide to the G+ product profile query tool (G+ PP)

Correct citation: Ashby, J.A. and Polar, V. (2021). *User guide to the G+ product profile query tool (G+PP)*. CGIAR Research Program on Roots, Tubers and Bananas, User Guide 2021-2. International Potato Center: Lima, Peru. www.rtb.cgiar.org/gbi.

Published by the International Potato Center (CIP) on behalf of the CGIAR Excellence in Breeding Platform (EiB) and the CGIAR Gender and Breeding Initiative (GBI)

The CGIAR Gender and Breeding Initiative (GBI) brings together plant and animal breeders and social scientists to develop a strategy for gender-responsive breeding with supporting methods, tools and practices. The Initiative includes experts from across CGIAR centers and Research Programs, is coordinated by the CGIAR Research Program on Roots, Tubers and Bananas and the International Potato Center, and is supported by CGIAR Funders.

<http://www.rtb.cgiar.org/gender-breeding-initiative/>

Contact:

CGIAR Gender and Breeding Initiative
International Potato Center (CIP)
Apartado 1558, Lima12, Peru
rtb@cgiar.org • www.rtb.cgiar.org

ISBN: 978-92-9060-595-9

DOI: 10.4160/9789290605959

February 2021

© International Potato Center on behalf of RTB



This publication is licensed for use under the Creative Commons Attribution 4.0 International License.

Disclaimer:

This user guide is intended to disseminate research and practices about gender and plant and animal breeding, as well as to encourage debate and exchange of ideas. The views expressed in the papers are those of the author(s) and do not necessarily reflect the official position of RTB, CGIAR or the publishing institution.

CONTENTS

ACRONYMS	II
ABSTRACT	III
ACKNOWLEDGMENTS.....	IV
INTRODUCTION.....	1
WHY USE THIS TOOL?	2
WHO CAN USE THIS TOOL?.....	3
HOW TO USE THIS TOOL.....	4
GATHERING INFORMATION.....	5
Step 1: Write a product profile proposal	5
Step 2: Identify gender gaps.....	5
Step 3: Describe gendered trait preferences	7
ANALYSIS.....	9
Step 4: “Do no harm” analysis.....	10
Step 5 Positive benefit analysis	10
SCORING	11
Step 6 score gender impact.....	11
Step 7: Complete the product profile proposal with gender impact score	14
ANNEX I TEMPLATE FOR PRODUCT PROFILE PROPOSAL WITH GENDER IMPACT SCORE	17
ANNEX II G+ PRODUCT PROFILE QUESTIONNAIRE FOR “DO NO HARM” AND POSITIVE BENEFIT ANALYSIS	18
ANNEX III TRAIT PREFERENCES SUMMARY SHEET	25
ANNEX IV: G+ PRODUCT PROFILE SCORING MATRIX. COMPARE “DO NO HARM” AND POSITIVE BENEFIT ANALYSES.	26
GLOSSARY	28
REFERENCES.....	30

ACRONYMS

CIP	Centro Internacional de la Papa (International Potato Center)
G+	Gender Plus
G+PP	Gender Plus product profile query tool
GBI	Gender Breeding Initiative
IITA	International Institute of Tropical Agriculture
NERICA	New Rice for Africa
RTB	CGIAR Research Program on Roots, Tubers and Bananas
SM	Scoring matrix

ABSTRACT

This is a decision-support tool for assessing the gender-responsiveness of potential or actual breeding products (plant varieties and breeds of animals) for a defined segment of customers or users of the product. Men and women often have different roles and responsibilities in farming and agro-value chains, so they often need varieties that perform differently, requiring different traits in a new variety. You can use this tool to find out if you already have enough information to assess a breeding product for the customer segment of interest, or, if you don't, the tool will identify precisely, what additional information you will need to find. After identifying the relevant gender "gaps" that influence adoption of plant varieties (or animal breeds) in the target customer segment, and gendered trait preferences, this tool generates a gender impact score based on analyses of "do no harm" and "positive benefit" for each trait of interest in a breeders' product profile. The score summarizes the tool's analysis of potential advantages and disadvantages of an actual or future variety for men and women. A breeding team, made up of plant breeders and social scientists, will use this tool to identify how a set of proposed traits will be harmful or beneficial to men and women and the trade-offs between different breeding objectives that this involves. The tool provides a questionnaire that requires answers in the form of expert judgments that should be supplied jointly by a social scientist experienced in using gender analysis and a breeder familiar with market-led breeding approaches. The G+ Product Profile Tool is meant to be used with the G+ Customer Profile Tool.

ACKNOWLEDGMENTS

This user guide was validated and adjusted to its current version thanks to the piloting of the G+ Tools in a breeding program or project conducted by the following teams:

Cassava – IITA: Béla Teeken, Deborah Olamide Olaosebikan, Ireti Balogun, Benjamin Okoye, Tessy Madu, Steven Cole, Abolore Bello, and Elisabeth Parkes

Sweetpotato – CIP: Janeth Mwendu, Sarah Mayanja, and Julius Okello

Beans – Alliance Bioversity – CIAT: Eileen Nchanji

Banana – Alliance Bioversity – CIAT: Pricilla Marimo

Cereals and lentils – ICARDA: Dina Najjar

The following people (in alphabetical order) contributed invaluable time, thought and effort in various capacities, to an extended process that began in 2016, of bringing plant breeders and social scientists of all types together to share their experience through the Gender and Breeding Initiative (GBI), defining key ideas and shaping the evolution of this document:

Members of the GBI – Workshop Organizing Committee (January to December 2017):

Jacqueline A. Ashby, Merideth Bonierbale, Salvatore Ceccarelli, Alessandra Galie, Stefania Grando, Holly Holmes, Juliet Kariuki, Peter Kulakow, Cynthia McDougall, Esther Njuguna-Mungai, Béla Teeken, Graham Thiele, Hale Ann Tufan, Eva Weltzien.

Contributors to the GBI – Gender, Breeding and Genomics Workshop, (Nairobi, Kenya October 18-21, 2016)

Jacqueline Ashby, Luis Augusto Becerra, Mauricio Bellon; John Benzie; Salvatore Ceccarelli; Andrew Clayton, Yolande Codo, Dunia Del Carpo, Leslie Ellarby, Alessandra Gailie, Martin Gomez, Stefania Grando, Krista Isaacs, Kristopher Karlson, Enid Katungi, Peter Kulakow, Karen Marshall, Martina Mascarenhas, Cynthia Mcdougal, Losira Sanya Nasirumbi, Katherine Nelson, ESTHER NJUGUNA, Jemimah Njuki, Julie Ojango, Michael Olsen, Alastair Orr, Jacob Ouma, Wayne Powell, Ranjitha Puskur, Juan Pablo Rodriguez, Hunduma Sakatu, Deshpande Santosh, Shoba Sivasankar, Yiching Song, Reuben Tendo, WilliamThomas, Hale Ann Tufan, Eva Weltzien

Contributors to the GBI – [Workshop on Innovation in Gender-Responsive Breeding](#) (Nairobi, Kenya, 5 – 7 October 2017):

Vivienne Anthony, Jacqueline Ashby, Yoseph Beyene, Merideth Bonierbale, Hugo Campos, Sue Canney Davison, Cindy Cox, Chiedozie Egesi, Lora Forsythe, Alessandra Galie, Prakash Gangashetty, Sita Ghimire, Stefania Grando, Tiff Harris, Holly Holmes, Jean-Luc Jannink, Juliet Kariuki, Peter Kulakow, Birhanu Lenjiso, Pricilla Marimo, Thiago Mendes, Catherine Meola, Netsayi Mudege, Rosemary Murori, Seamus Murphy, Thokozile Ndhlela, Esther Njuguna-Mungai, Jemimah Njuki, Damaris Odeny, Alastair Orr, Gabrielle Persley, Vivian Polar, Ranjitha Puskur, Rhiannon Pyburn, Michel Ragot, Bela Teeken, Cu Thi Le Thuy, Graham Thiele, Hale Ann Tufan, Jacob Van Etten, Eva Weltzien.

Contributors to the GBI – [Workshop on Gender-Responsive Product Profile Development Tool](#) (Ithaca, USA, 12-13 November 2018)

Vivienne Anthony, Jacqueline Ashby, Lora Forsythe, Michael Friedmann, Alessandra Galie, Clair Hershey, Thiago Mendes, Clare Mgisha Mukankusi, Esther Njuguna-Mungai, Alastair Orr, Elizabeth Parkes, Vivian Polar, Graham Thiele, Hale Ann Tufan, Eva Weltzien.

Contributors to the GBI-EiB, [Workshop on Knowledge Sharing and Piloting Tools for Gender Responsive Product Profile Development](#) (Nairobi, Kenya, 3-6 March 2020)

Rahma Adam, Ida Arff Tarjem, Ireti Balogun, Steven Cole, Nicoline de Haan, Rachel Gitundu, Mary Kanui, Godwill Makunde, Tawanda Mashonganyika, Sarah Mayanja, Lennin Musundire, Wincaster Mutuli Makoani, Eileen Nchanji, Julius Okello, Elizabeth Parkes, Vivian Polar, Bela Teeken, Eva Weltzien

Contributors to the GBI-EiB, [On-line Workshop series on “Piloting the G+ Tools”](#) (August - December 2020)

Jacqueline Ashby, Ireti Balogun, Abolore Bello, Okoye Benjamin, Steven Cole, Chiedozie Egesi, Lydia Ezenwaka, Lora Forsythe, Michael Friedmann, Edwige Gaby-Nkouaya Mbanjo, Krista Isaacs, Peter Kulakow, Hannele Lindqvist-Kreuze, Tessy Madu, Margaret Mangheni, Pricilla Marimo, Sarah Mayanja, Thiago Mendes, Robert Mwanga, Janet Mwendu, Dina Najjar, Eileen Nchanji, Julius Okello Juma, Deborah Olamide Olaosebikan, Vivian Polar, Ismail Rabbi, Jolien Swanckaert, Ida Arff Tarjem, Bela Teeken, Graham Thiele, Hale Ann Tufan

This research was undertaken as part of the CGIAR Gender and Breeding Initiative, supported by the Research Program on Roots Tubers and Bananas (RTB) and the Excellence in Breeding Platform (EiB) and funded by [CGIAR Fund Donors](#).. This user guide was edited by Jeffery Bentley.

G+ Product Profile Query Tool

A TOOL FOR GENDER-RESPONSIVE TRAIT PRIORITIZATION IN BREEDING

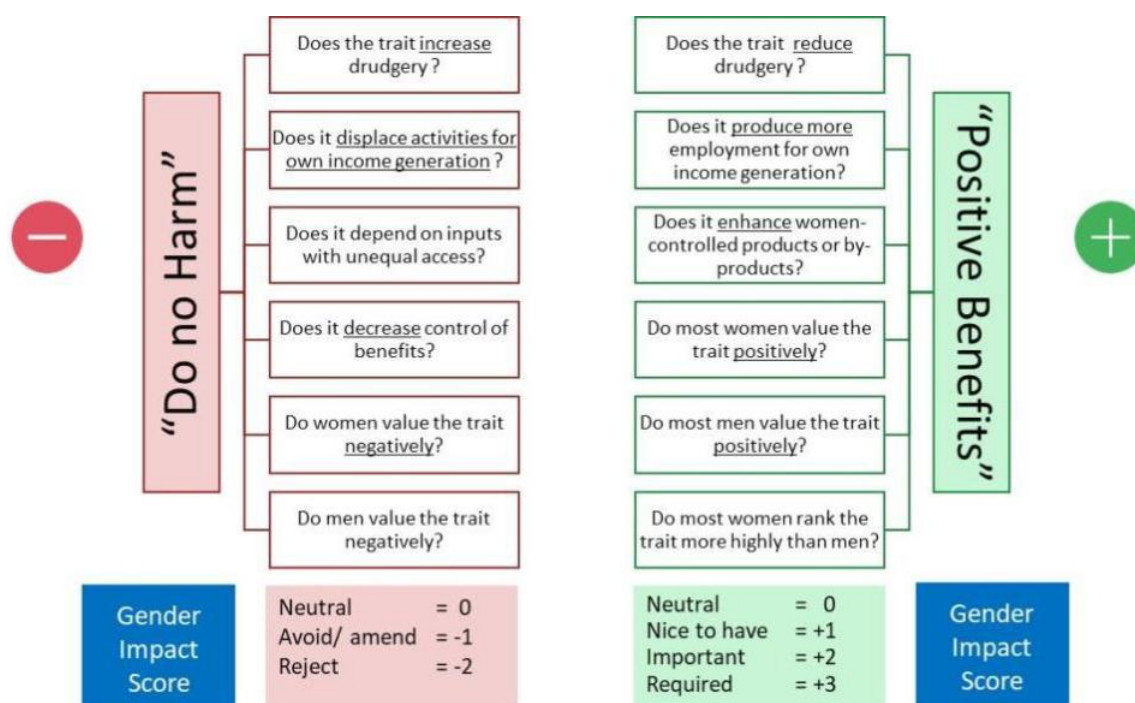
USER GUIDE

INTRODUCTION

This tool will enable you to evaluate the gender-responsiveness of individual traits of a breeding product: usually a plant variety or an animal breed. To be gender-responsive, breeding programs should always perform this check, even if the conclusion is that a product has no gender-sensitive trait.

The tool queries which individual traits are preferred by men and women users or customers for any given breeding product. It takes into account four well-researched causes of gender inequity in agriculture that can be widened or reduced by introducing new plant varieties or animal breeds. The tool generates two different gender impact scores, one for “do no harm” that will flag any negative gender impacts that breeding programs will want to avoid and another for **positive benefits** that a breeding program may include in its objectives (Figure 1).

Figure 1. The G+ Product Profile Query for “do no harm” and “positive benefits” and their gender impact score.



WHY USE THIS TOOL?

A product profile is the full set of targeted attributes, or the ideotype, that a new plant variety or animal breed is expected to meet to be successfully released onto a market segment. Attributes are traits with a specific level defined either in absolute or relative terms (Ragot et al. 2018: 5). Use this tool to evaluate gender dimensions of plant or animal traits in a breeding product profile when deciding if a product should be advanced:

- Determine whether a product profile has any implications for gender equity
- Assess whether a trait meets minimal “do no harm” standards according to an evidence-based gender analysis
- Characterize the positive benefits of a trait for women users
- Document the process of taking gender into account in the trait prioritization process.

Poor women farmers are important end-users of new crop varieties and animal breeds. More than two billion people live on almost 500 million farms of less than two hectares in poor countries, supporting half of the world’s undernourished people and most of the people living in absolute poverty (Nagayets 2005). For breeding programs with social welfare and development goals, aiming to maximize adoption of their products by resource-poor farmers, a key consideration in product advancement should be the likely impact of a new product on women farmers, processors and other female beneficiaries.

Query the implications of a trait and product profile for gender equity

Gender-responsive breeding ensures that the perceptions, interests, needs and priorities of women and men (which differ because of their different roles and responsibilities in farming) will be considered in planning and decision-making (Box 1).

The tool conducts an analysis of gender gaps in agriculture to help a breeding program detect whether a given trait has implications for gender equity in farming and in the rest of a commodity’s value chain.

Gender equity is not the same as gender equality, which is based on the premise that women and men should be treated in the same way. Delivering the same variety (or animal breed) in the same way to both men and women will not always produce equitable results. Women and men often have different needs. A gender equity approach takes account of different needs and is based on the premise that different breeding strategies may be needed to produce outcomes and impacts that are equitable.

Use for ranking traits

The G+ Product Profile Tool generates positive and negative ordinal values for a **gender impact score** to help breeders score and rank the traits to prioritize.

When breeding programs develop new crop varieties or animal breeds, they usually start with many promising candidates and progressively select a few. Selection involves deciding whether to advance a variety or animal breed under development to the next stage of breeding.

The tool’s gender analysis is especially relevant at the stage of variety design in the breeding cycle, but it can be useful whenever there is a product advancement decision.

Use to evaluate the need for more evidence on gender differences

The G+ Product Profile Query Tool can be used to identify what breeders need to know about gender differences regarding a given trait, providing a structure for a breeding team to consider the evidence that backs up each score. Scoring involves a judgment based on evidence, and the tool will help determine whether the team has adequate evidence on the essential gender difference(s) for scoring a specific trait. This documentation is summarized by the tool and should be read and discussed by the breeding team.

Use for planning the gender research relevant for breeding

The tool can be used to pinpoint the issues where breeding teams need more evidence on a gender difference that may harm or benefit women users. The tool assesses and records whether there is sufficient evidence for scoring a trait on each potentially significant gender difference. If the tool reveals that evidence for an important gender difference is too weak to generate a score, this can help focus research planning to learn more about this gender difference.

WHO CAN USE THIS TOOL?

The G+ Product Profile provides breeding programs with a practical answer to the question “What can a breeding program do to be gender-responsive?” (Box 1). The tool is intended to be used by a multidisciplinary breeding program for making product advancement decisions.

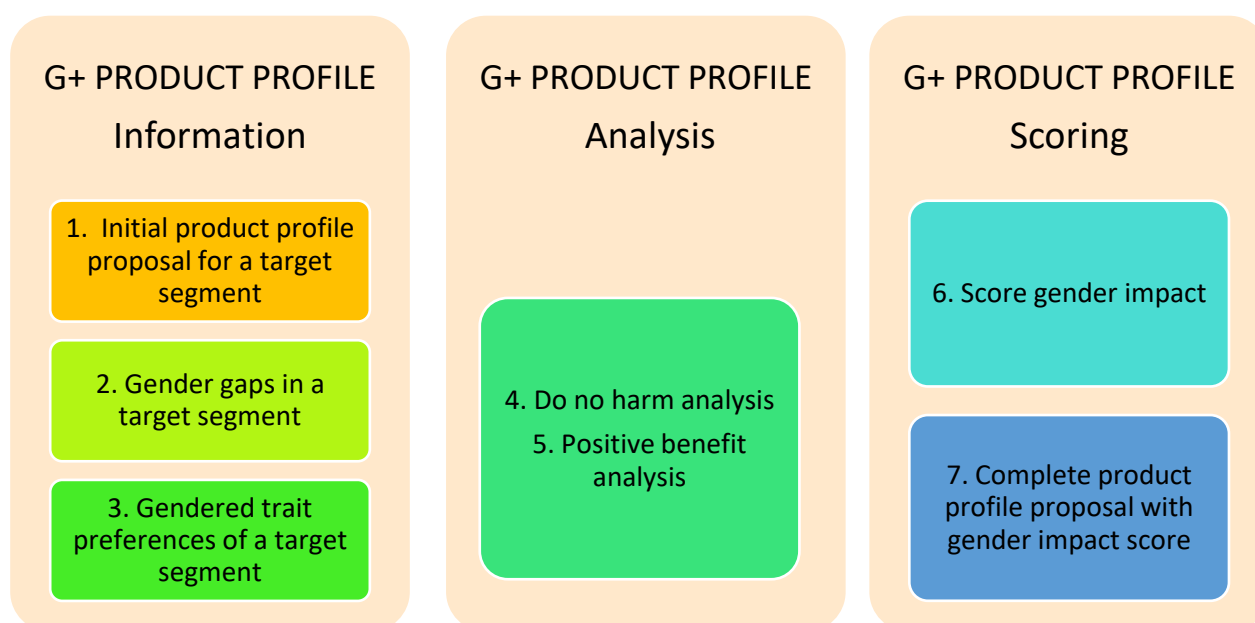
To arrive at gender impact scores, the tool requires judgments based on evidence from research about gender gaps in a well-defined population or customer segment. These judgments, and the supporting research, should be performed by a social scientist trained in gender analysis. The scores, judgments and evidence should be discussed by the social scientist with the breeders interested in the traits being evaluated.

Box 1. What can a breeding program do to be gender-responsive?

- 1) Know when, where, and why women are an important beneficiary group. Take into account important differences in constraints faced by women and men farmers that breeding can influence.
- 2) Anticipate how design decisions (e.g., defining plant ideotype, prioritizing traits, targeting and testing varieties with farmers) may impact and be influenced by women’s labor, resources and opportunities.
- 3) Design breeding objectives specifically to benefit women farmers when they are an important beneficiary group who require a special approach, and consider their needs, constraints and knowledge more generally in the breeding program.
- 4) Be accountable, making sure that the success of the breeding program is measured in ways that include positive impacts for women, as well as for households or farmers in general.

HOW TO USE THIS TOOL

Figure 2. Steps in the G+ Product Profile



GATHERING INFORMATION

Step 1: Write a product profile proposal

Identify the target customer segment

Using the G+ Product Profile Tool requires prior social targeting. This means the tool must be applied to a well-defined customer segment (see Glossary) that the program has decided to target (see [The G+ Customer Profile Tool](#)).

- The tool draws on the information about gender relations and trait preferences that are found in a gender-responsive customer profile. If there is no customer profile, the gender analysis for the tool will involve compiling some of this information.
- Ensure that the scoring judgements are based on information that is representative of the customer segment under consideration.
- If you are using the tool's templates for recording results of the analysis, the name of the customer segment should be entered into the product profile proposal (Annex I) and the scoring matrix (Annex IV).

Identify the traits to be evaluated

The traits of interest should be identified from an already existing breeders' product profile proposal. Discussion with breeders about the list of traits may cause you to add one or more traits that are important from a gender perspective, so that the gender impact scores of all the traits of interest can be compared.

- If a breeders' product profile is not available, then make a list of traits under consideration for the breeding product and enter these into the **Product Profile Proposal Template** (Annex I). There is no blueprint for a breeding product profile. What matters is that the matrix contains two columns for gender impact in addition to columns for each of the other criteria breeders use to evaluate traits. This is illustrated in the template.
- Each trait listed in the product profile proposal that is to be evaluated will require one **G+ Product Profile Questionnaire** (Annex II) and one **Scoring Matrix** (Annex IV).

Step 2: Identify gender gaps

The tool builds on well-documented aspects of gender gaps in agriculture that are associated with gender differences in technology choice directly relevant to plant or animal traits (Wodon and Blackden 2006; FAO 2011; World Bank 2012; Alkire et al. 2013; Quisumbing et al. 2014). By changing the productivity of factors like land, water, labor, capital and knowledge on small farms, a new breeding product can also change, for good or for ill, the gender relations that govern how equitably these resources are accessed, owned and shared between men and women. For example, yield increases where women do a lot of unpaid work in harvesting crops or milking cows, may increase drudgery and increase their workload (Wodon and Blackden 2006). Figure 1 summarizes the gender gaps in the target customer segment for which information is needed to make the judgments called for by the Tool's questionnaire.

Define the gender-related social category for the analysis

Gender analysis for the tool considers other social categories, besides women. The tool's questionnaire and the "do no harm" and positive benefit analysis can be applied flexibly to men, women or to any other gender-related social category, such as "women peri-urban traders" or "adolescent women farmworkers" for example.

Value chain actors: Social categories of special interest for trait evaluation are gendered value chain roles: for example, men and women processors who often face different opportunities, process different end-products and have different trait preferences. Processors may be subdivided by gender into different segments with different roles, such as women on-farm food processors and male factory owners. Conversely, value chain roles may override gender differences: commercial growers may have similar trait preferences, whether they are men or women, because they are meeting demand from the same type of processor.

To apply the tool's questionnaire flexibly, the gender-related social category of interest should be inserted into the tool questionnaire as illustrated in Box 2.

- This tool treats each gender-related social category as a customer segment. If you are using the tool's templates to record the results of the analysis, the name of a social category should be added to that of the customer segment in the product profile proposal (Annex 1) and scoring matrix (Annex IV).

Each social category you plan to use (women growers, men growers, women processors etc.) will require a scoring matrix and will obtain positive, neutral or negative gender impact scores for each trait evaluated.

Box 2. Intersection of gender: insert the social category to be used for the analysis into the G+ Product Profile tool questionnaire

Example: Question 1 applied to three different social categories

Name of trait _____

Question 1: Drudgery

- a. Does the trait involve a harmful increase in the unpaid, family labor input by **women semi-commercial farmers** in the target customer segment, to produce or to use the product, including marketing or processing for household consumption or sale?
- b. Does the trait involve a harmful increase in the unpaid, family labor input by **men commercial farmers** in the target customer segment, to produce or to use the product, including marketing or processing for household consumption or sale?
- c. Does the trait involve a harmful increase in the unpaid, family labor input by **women processors** in the target customer segment, to produce or to use the product, including marketing or processing for household consumption or sale?

Code: enter the code for your chosen response into the scoring matrix for this trait

- Increases drudgery with serious harm to individual or household health and welfare for a majority (more than half of the total) in the target customer segment = -2
- Increases drudgery with moderate harm for a majority or the variety release is conditional on implementing a guaranteed remedial intervention to remove this obstacle for a majority = -1
- No significant increase = 0
- **!!! Warning signal: not enough information available to score**
- **Not relevant to the target customer segment = 9**

Step 3: Describe gendered trait preferences

The G+ Product Profile is designed for use by breeding programs targeting customer-segments principally composed of resource-poor growers, processors and traders as well as consumers. Men and women often express different trait preferences that reflect the gendered division of rights and responsibilities in farming and in the value chain, and there are well-established methods for identifying such preferences (Bellon, 2001; Ashby, 1990). Box 3 illustrates some of the differences in trait preferences that might need to be considered in gender-responsive breeding. There will not always be significant gender differences in trait preferences. To be gender-responsive, product profile development should still check and see if gender matters.

Box 3. Differences in trait preferences of men and women producers: Data from 39 empirical studies	
Traits mentioned only by women	Traits mentioned only by men
Vigor	Pest resistance
Well adapted to diverse growing conditions	Adapted to intercropping
Leafiness	Yield/ha
Storage life	Suitability for making a local dish
Ease of dehulling	Resistance to waterlogging
Ease of threshing	
Quantity of useable flour	
Amount of stover to use as cooking fuel	
Cooking time	
Taste, grain color	
Tall plants for an easier harvest	
Traits mentioned more often or ranked higher by women than by men	
<i>Production-related traits</i>	<i>Post-harvest traits</i>
Early maturing	Food security
Ease of harvesting and transport	Ease of threshing
Grain traits	Cooking quality
Pest and disease resistance	Less loss during decortication, dehulling, milling
Multiple harvests	Market value
Requirements for weeding	Resistance to storage pests
	Straw quality for roofing
	Processing quality for locally marketed product
	Grain and leaf quality
	Medicinal properties
	Taste of specific dishes

Source: Christinck et al. 2017, Tables 3 & 4

Make a summary of known trait preferences

The tool questionnaire requires information about trait preferences of men and women. This provides a cross-check on the judgments about gender gaps (Box 4).

- For easy reference it is convenient to summarize what is known about customer trait preferences in a trait preferences summary sheet (see Annex II).
- Data on gender-differentiated trait preferences is often incomplete. Completing the trait preferences summary sheet will provide a picture of data sources and data quality issues. This can be used to plan remedial data collection.

Box 4. Why it is important to analyze customers' trait preferences with the tool questionnaire

- Trait preferences are clues to a customer's problem or opportunity, in the face of constraints and needs that are often harmful to welfare.
- The potential for harm or benefit perceived by customers for a trait may not be readily identified in the gender gap analysis.
- Negative evaluation of a trait that contradicts a neutral gender impact score derived from the gender gap analysis can be a signal that the gender analysis is incomplete.
- Disagreement about the positive value of a trait among men and women (or other social categories) in the target customer segment suggests that there may be conflicts of interest. For example, when most men think that a trait will confer a market advantage, but the majority of women value the trait negatively, because it will increase their workload.
- Customers' conflicts of interest are important for gender-responsive breeding. Conflicts may be resolved by customers bargaining over what to plant (or what type of animal to raise). In the household, or in a commercial relationship, women may not have the power to exercise their preference. The analysis of gender relations should provide insight on whose opinion is likely to predominate and why. A breeding program then has to evaluate a trade-off between traits and decide which members of the customer group to favor or to disadvantage.
- Disagreement about the negative value of a trait in the target customer segment can indicate that the segment includes customers with different, competing objectives and requirements. It may be necessary to subdivide the target customer segment, and then clarify whose preferences are important for the breeding program's objectives.

ANALYSIS

Complete the G+ Product Profile questionnaire for "do no harm" and positive benefit analysis

The G+ Product Profile questionnaire (Annex II) consists of 11 questions that are applied to each trait of interest. "Do no harm" considers the possible harm that introducing a new trait might cause women, to minimize the risk of releasing a variety that could exacerbate existing gender inequities. Positive benefit analysis queries the likelihood of a breeding product sustaining and enhancing women's control over livelihood resources.

- Each question requires a response in the form of an evidence-based judgment to be made by a social scientist trained in gender analysis, ideally in conversation with a breeder familiar with market-led breeding approaches.
- Each response is coded as defined in the questionnaire.

- Each judgment is based on research information about gender gaps in a well-defined population or customer segment. This information should support conclusions that are representative of the customers.
- The data sources and any data quality issues must be noted and form part of any presentation of the results.

Record data quality issues

If the information is not adequate to form a judgment in response to a question on the tool questionnaire, it should be coded with:

!!! Warning signal: not enough information available to score.

Write a questionnaire report

The social scientist completing the questionnaire should write a narrative explanation of the coded judgment underneath each question to provide a report on the gender analysis for a given trait that can be read by breeders.

Step 4: “Do no harm” analysis

This is an overview of the questionnaire. Each question is applied to each trait in the product profile (see full questionnaire, Annex II).

- **Questionnaire part 1: Gender gap questions 1-4**
Use the tool to examine four criteria related to gender equity in agriculture that represent a standard for “do no harm”, meaning that women should not be worse off in any one of these four aspects.
- **Questionnaire part 2: Negative trait preferences questions 5-6**
Assess gender-differentiated trait preferences that have negative implications. Examine men’s and women’s preferences to identify agreement or difference of opinion and whether men and women favor different trade-offs for a given trait.

Step 5 Positive benefit analysis

This is an overview of the questionnaire content. Each question is applied to each trait in the product profile (see full questionnaire, Annex II).

- **Questionnaire part 3: Gender benefit questions 7-9.**
Use the tool to examine three types of benefits that are critical for determining if women farmers will benefit from a breeding product. A benefit is defined as an advantage derived from using a breeding product, including the satisfaction of practical needs (e.g. nutritious food) and strategic needs (e.g. market power)
- **Questionnaire part 4: Positive trait preferences questions 10-12**
Assess gender-differentiated trait preferences that have positive implications for the trait in question. Examine men’s and women’s preferences to identify agreement or conflict of opinion and whether men and women favor different trade-offs on a given trait.

SCORING

Step 6 score gender impact

Generate values for gender impact using the G+ Product Profile scoring matrix

Use the tool's scoring matrix (Annex IV) to analyze the set of 12 coded judgments for an individual trait generated by applying the tool's questionnaire (Box 5). Record the result in the positive benefit or "do no harm" column of the product profile proposal (Annex I).

Box 5. Step by step guide to scoring gender impact using the scoring matrix (Annex IV)

Use the Scoring Matrix worksheet to score ONE trait

- You will generate **two** gender impact scores for each trait.
- Record the score in the product profile column for "do no harm" or positive benefit.

Overview

- Part 1 of the scoring matrix covers the gender gap questions 1-4.
- Part 2 covers negative preferences of women and men with respect to the trait from questions 5 and 6.

This generates a **gender impact score** for "do no harm". Enter this score in the space provided on the scoring matrix sheet.

- Part 3 of the scoring matrix covers the gender benefit questions, 7-9
- Part 4 covers positive preferences of women and men with respect to the trait from questions, 10, 11 and 12.

This generates a **gender impact score** for **positive benefits**. Enter this score in the space provided on the scoring matrix sheet.

Scoring procedure parts 1 & 2: “do no harm”

Follow the scoring guide provided at the bottom of the scoring matrix template:

Steps
1&2

One item scored -2 or two items scored -1 based on questions 1-4 in part 1 is sufficient to decisively conclude “reject”

Enter -2 in the “do no harm” column of the product profile. This signals a definite need to weigh the potential for a harmful outcome in trait prioritization.

If you have scored -2, no further scoring is required for “do no harm”.

Step
3

If **all items** in Part 1 are zero or only one item in part 1 is scored -1, then scoring will check what has been learned from the negative preference evaluations in part 2

Step
4

If all items in Part 1 and Part 2 are zero, this is decisive for concluding “neutral”.

Enter 0 in the “do no harm” column of the product profile.

If you have scored 0, no further scoring is required for “do no harm”.

Step
5

If the majority of men and women agree on a negative valuation, this is decisive for concluding “reject”

Enter -2 in the “do no harm” column of the product profile.

If you have scored -2, no further scoring is required for “do no harm”.

Note: Agreement of men and women for a negative valuation for the trait is given more weight than a zero derived from questions 1-4 because it suggests a strong likelihood of low acceptance of the trait by all producers in the target customer segment. It also suggests revisiting the **gender gap analysis** that may have missed something about the trait that is of significance to most men and women in the target customer segment.

Step
6

If a majority of women in the target customer segment express a negative evaluation, even if most men do not agree, or if men’s opinions are unknown, this is decisive for concluding “avoid or amend”.

Enter -1 in the “do no harm” column of the product profile.

If you have scored -1, no further scoring is required for “do no harm”.

Note: Changes in production introduced by breeding may need to be accompanied by another innovation, e.g. small threshers. Thus, identifying a trait with a negative gender impact might not be a reason to avoid it, but rather signal the need for mitigation by ensuring that the release of the variety is accompanied by a complementary innovation.

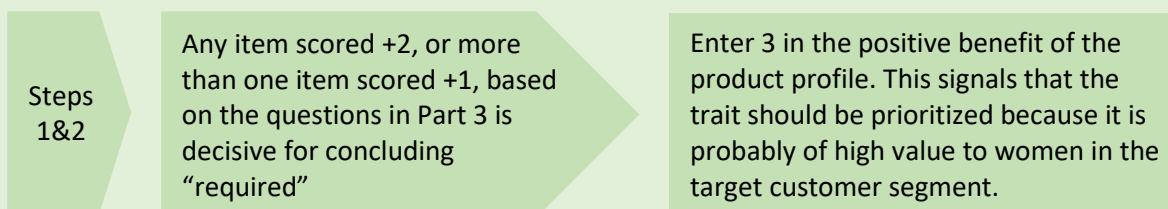
- “Avoid or amend” signals the importance of considering whether breeding objectives need adjustment to meet women’s needs and preferences. If a majority of women express a negative valuation for the trait, this is given more weight than a zero derived from questions 1-4 because it suggests that the gender gap analysis has missed something about the trait that is significant to most women in the target customer segment.

Scoring Procedure parts 3&4: positive benefit

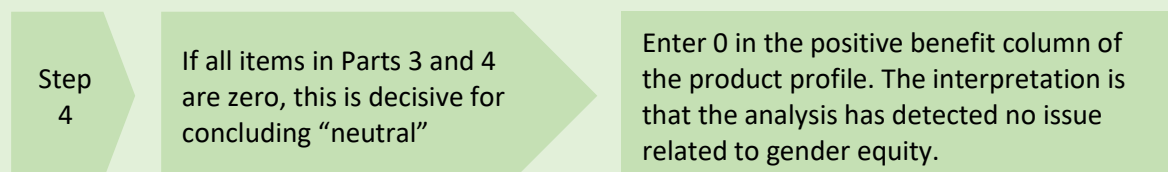
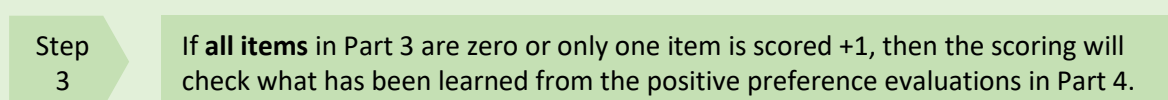
Part 3 of the scoring matrix covers the “gender benefit” questions 7-9.

Part 4 covers positive preferences of women and men with respect to the trait from questions 10, 11 and 12.

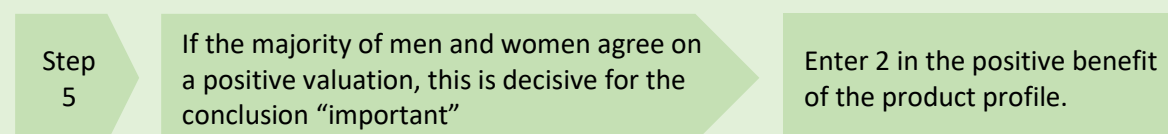
Follow the scoring guide provided at the bottom of the scoring matrix template:



If you have scored 3 here, no further scoring is required for positive benefit.

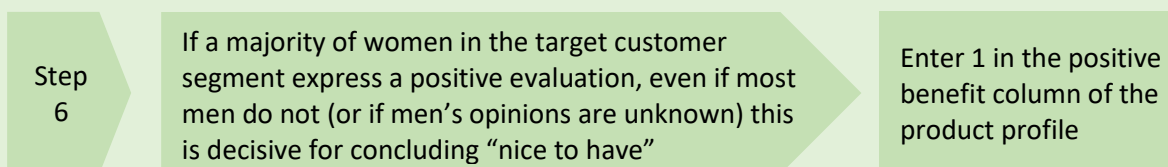


If you have scored 0 here no further scoring is required for positive benefit



If you have scored 2 here, no further scoring is required for positive benefit.

Note: Agreement of men and women for a positive valuation for the trait either confirms the positive benefit for women identified in questions 7-9 or it contradicts the zero identified there. Agreement about the positive value of a trait is given more weight than a zero derived from questions 7-9 because it indicates that there is a strong likelihood of acceptance of the trait by men as well as women farmers in the target customer segment. The score “important” signals the opportunity for trait prioritization to promote a desirable feature of the product from the perspective of gender equity.



Note. This conclusion either confirms the positive benefit identified in questions 7-9 or it overrides a zero result from those questions. If a majority of women express a positive valuation for the trait, this is given more weight than a zero derived from questions 1-4 because it suggests that the “gender benefit” analysis may have missed something about the trait that is of significance to most women in the target customer segment. Finding that most men do not positively value the trait (or their opinion is unknown) signals the need for further analysis to understand if and why men’s and women’s preferences diverge, and to identify trade-offs that may cause them to value the trait differently.

Record data sources and data quality Issues in the scoring matrix

The gender impact scores assigned to a trait are the products of expert judgment and are only as valid and reliable as the evidence and interpretation supporting the judgment.

- The scoring matrix provides a checklist of all the questionnaire items where information is inadequate.
- Gender experts will need to define their standards for “satisfactory evidence” and share these with breeders. (For further discussion of standards see [The Gender Tool Box](#)). The tool requires this supporting argument to be explained in the column provided for “commentary.”

Step 7: Complete the product profile proposal with gender impact score

Look at scores for all the traits together: the whole product.

With gender impact scores entered into the product profile proposal for all the traits in question, the gender-responsiveness of the whole product can be assessed.

A gender-responsive breeding program should at least opt for a neutral gender impact score of 0 on “do no harm” in a product profile. A value of 0 on both “do no harm” (Box 6) and on “positive benefit” (Box 7) identifies a gender-neutral breeding product. A program that aims to positively benefit women will opt for a profile that contains at least one trait with a positive gender impact score. The tool will not make this decision about what traits to include in the product profile: it is a decision about breeding program objectives and desired impact.

Box 6. Examples for “do no harm”

Example 1.

The trait in question is the bran content (percent) of sorghum flour after manual (on-farm) processing. (derived from Isaacs et al., 2018)

The customer segment is small-scale, West African sorghum producers.

In Part 1, none of the “do no harm” questions 1-4 scored -2. Three of the questions lacked sufficient information to generate a score. However, question 4 scored -1. This identified the issue that sorghum, while generally considered a men's crop in West Africa, is also grown by women on their own plots to supplement children's meals and for generating own income. Low quality is associated by women with high bran content of this important food source controlled by women.

Information on preferences is available and this was examined to see whether this confirms or throws doubt on the analysis in Part 1. In the example, the majority of women in the target customer segment expressed a negative valuation for varieties with a high percent of bran content after hand processing. No information was available on men's opinions. The scoring guide provides a conclusion of “avoid or amend” and a score of -1 is entered in the “do no harm” column of the G+ Product Profile.

The example underscores the need for precise information, not only about the use of the product, but about who controls different aspects of its production, processing or sale and about the proportion of the target customer segment affected by changes in varietal

performance. Even with partial information, the gender analysis draws attention to a potential harmful effect that should be considered in trait prioritization.

Example 2

The trait in question is the shelf-life of fresh cassava roots. (derived from Teeken et al, 2018)

The customer segment is women and men producing cassava on a small-scale in southwestern Nigeria.

One of questions 1-4 scores -1. This identifies a potential conflict of interest between men and women regarding the shelf-life of fresh cassava roots and the opportunity for sale to distant markets. Men desire increased opportunity to sell to other markets while women rely heavily for income on processing cassava that they either grow or purchase in the local market. If longer shelf-life and expanded market access increase prices in the local market, this may be detrimental to women's income generation.

Other questions had insufficient information to score. Following the scoring guide, one item = -1 in Part 1 is not decisive.

Examination of trait preferences confirmed that women have different priorities than men. The scoring guide provides a conclusion of "avoid or amend" and a score of -1 is entered in the "do no harm" column of the G+ Product Profile. This result indicates that prioritizing improved starch quality as a breeding objective may not be the most gender-responsive option. In this example, the main constraint identified is gender inequity in market access. It may not be possible for breeding to address this inequity directly. An option may be to consider prioritizing other traits that would increase the supply of fresh roots and stabilize local prices, or, if local prices increase, improve the return to food processing carried out by women.

Box 7. Example of positive benefit

The trait of interest is early maturity of cassava. (derived from Olaosebikan et al.,2018).

The customer segment is women and men producing cassava on a small-scale in southwestern Nigeria.

One of the "gender benefit" questions scored +1, because women favor early-maturing varieties that enable them to weed less often. Some labor for weeding is provided by the household, mainly by women. It is unclear what proportion of women producer-processors in the target customer segment would benefit. Therefore, it is not possible to say that a significant reduction in drudgery would benefit most women in the target customer segment.

Two of the questions lacked sufficient information to score them. Following the scoring guide, this is not decisive.

Information on preferences was examined to see whether preferences confirm the analysis. In the example, the majority of women as well as most men in the target customer segment expressed a positive valuation for the trait. The scoring guide provides a conclusion of "important" and a score of 2 is entered in the positive benefit column of the G+ Product Profile.

Look for trade-offs: a choice about a trait is also a choice about people

A trade-off occurs when making one choice in favor of something means losing something else, usually a benefit or an opportunity. Or a trade-off may involve accepting something harmful because you will get something good that you calculate outweighs the harm (Box 8).

The key point is that when breeders prioritize traits to be included in a product, this involves making a choice about whose preferences take priority. A choice about a trait is also a choice about people.

“Do no harm” and positive benefit gender impact scores should not be added together to make one score, because they each represent a potential trade-off.

For example, a trait may include:

- Gender impact scores of both positive benefit and negative harm. It may be best to sacrifice the positive benefit in order to “do no harm”. Or vice versa, it might be desirable to capture the positive benefit and run the risk of doing some harm.
- Two or more traits with competing characteristics, such that you cannot have both, with different value for men and women. For example, you can either have large grains and lower yields or small grains and higher yields. Women may prefer higher yields (more food) and men may prefer larger grains (better sales). Breeders must decide which trait, which preference and thus, which social group to prioritize.
- Traits with a positive benefit and other traits with a negative “do no harm” score. A breeding product profile can only accommodate a few traits, so some of them must be eliminated from the product profile or an additional, new product must be defined.

Box 8. Trade-offs to look for in the product profile proposal

1. Trade-offs on a single trait: Compare gender impact scores of the same trait. Does the positive benefit of the trait outweigh the risk of harm for the customer?
2. Trade-offs between multiple traits for one customer: Compare gender impact scores of different traits for one customer. Does the positive benefit of one trait outweigh the negative harm of a different trait?
3. Trade-offs between social groups: Compare gender impact scores on all the traits for women and on all the traits for men (or all the social categories considered). Is it important to include traits in the final product profile that benefit one social group more than another?

Remember, at a minimum, a gender-responsive program will aim for a gender impact score of 0 or neutral on all traits to be included in the final product profile.

ANNEX I

TEMPLATE FOR PRODUCT PROFILE PROPOSAL WITH GENDER IMPACT SCORE

G+ Product Profile Template #1: PRODUCT PROFILE PROPOSAL							
PRODUCT NAME							
Customer segment for this product:							
Social category for this product:							
TRAIT DESCRIPTION			BENCHMARK	VALUATION CRITERIA			
Trait category	Trait No	Trait name and description	Variety benchmark	Agronomic performance required	Market impact	Gender impact	
						"Do no harm"	Positive benefits
e.g. Yield	1. 2.						
Biotic stress	3. 4. 5						
Abiotic stress	6. 7.						
Post-harvest	8. 9.						
Value chain actor	10. 11. n.						
NARRATIVE SUMMARY Briefly explain the rationale for gender impact scores for each trait. Describe any important trade-off between opportunity for benefit or risk of harm.							

ANNEX II

G+ PRODUCT PROFILE QUESTIONNAIRE FOR “DO NO HARM” AND POSITIVE BENEFIT ANALYSIS

Instructions

Each question requires prior analysis to support a judgment that generates a coded response for the question.

For each question, write your narrative explanation of the coded response in the space provided.

Specify the target customer segment at the head of the questionnaire.

Specify the social category to be used in each question (see section above, “step 2: gender gaps”).

The term “majority” of the target customer segment means a simple majority: “more than half the total,” i.e. 51 percent. Users of the tool can set their own value for this parameter (e.g. a two-thirds parameter), taking care to use the same value throughout.

- When information is insufficient to generate a judgment, a warning to this effect should be coded into the Scoring Matrix. **!!! Warning signal: not enough information available to score.** This means it may be risky to proceed with product advancement when this aspect of gender is an unknown.
- The coded response for each question should be entered in the G+ Product Profile scoring matrix supplied in Appendix 2.
- If a question cannot be applied to the social category for which the analysis is being conducted, then code: **Not relevant to the target customer segment = 9**

G+ Product Profile questionnaire for “do no harm” and positive benefit analysis			
PRODUCT NAME		Data assessment completed by	
Name of customer segment:		Name of person(s) doing the assessment:	Name of customer segment:
Social category:		Institution:	Social category:
Name of the trait:		Date of assessment:	Name of the trait:

Questionnaire Part 1: Gender gap questions

Gender gap question 1: Drudgery

Does the trait involve a harmful increase in the unpaid, family labor input by women in the target customer segment, to produce or to use the product, including marketing or processing for household consumption or sale?

In scoring, “majority” means “more than half of the total” e.g., 51%.

SCORE

Increases drudgery with serious harm to individual women’s or household’s health and welfare for a majority in the target customer segment	-2
Increases drudgery with moderate harm for a majority, or the variety release must be accompanied by a guaranteed mitigation to remove this obstacle for a majority	-1
No significant increase	0

!!! Warning signal: not enough information available to score
Not relevant to the target customer segment = 9

Write your narrative assessment of the data here

Question 1 - Example of trait preferences affected by increased drudgery

Women in Ethiopia objected to modern short-straw sorghum varieties that would increase their work load (Mulatu and Belete 2001). In East Africa, maize adoption lagged because women objected to hard-dent maize varieties that were difficult to grind and so increased their workload (Ashby and Polar 2019). In West Africa, women were critical of NERICA rice because it increased their field labor in weeding and bird scaring (Lodin 2012).

Gender Gap Question 2: Displacement of women’s productive activity.

Can the trait involve a reduction in, or removal of a major activity for production, use or marketing that women in the target customer segment rely on for income generation?

In scoring, “majority” means “more than half of the total” e.g., 51%.

SCORE

Displaces women’s activities with serious loss for a majority of women in the target customer segment	-2
Displaces women’s activities with moderate loss for a majority	-1
No significant displacement for a majority	0

!!! Warning signal: not enough information available to score
Not relevant to the target customer segment = 9

Write your narrative assessment of the data here

Question 2 - Example of trait preferences affected by displaced productive activity

Women in Ethiopia objected to modern short-straw sorghum varieties that reduced their income from sale of cooking fuel (Mulatu and Belete 2001). In Nigeria, processing traits of cassava such as sweet varieties that are low in fiber, low in moisture, easy to peel, and have food color (cream when toasted into gari and white when processed into fufu and abacha) are more important to women. In the four regions, the men paid attention to processing traits, but ranked them as less important than agronomic traits (e.g., yield). Because women process most of the cassava, they mentioned processing traits (e.g., being easy to peel) more often than the men did. When cassava is difficult to peel, women have less time available for other important tasks and end up cutting off some of the good root with the peel. Being hard to peel not only lowers the efficiency of women’s labor but also lowers the crop’s economic yield (Teeken et al. 2018). In Uganda, about 78% of hybrid banana varieties evaluated for release had low heat-retaining capacity, which made the cooked food harden very fast when served. The hybrids required prolonged cooking time to soften the texture and so required more labor to gather fuelwood, which was an additional burden to the already overworked women (Sanya et al. 2018).

Gender gap question 3: Control of production inputs

Can crop improvement associated with the trait depend critically on access to an essential input (e.g., water, fertile land, labor, capital, transportation, knowledge, technology) that is more difficult for the women to obtain than for men?

In scoring, “majority” means “more than half of the total” e.g., 51%.

SCORE

Access to and control over at least one essential input is seriously unequal to the disadvantage of a majority of women in the target customer segment	-2
Access to and control over at least one essential input is seriously unequal to the disadvantage of a majority of women, or the variety release must be accompanied by a guaranteed mitigation to remove this obstacle for a majority	-1
No prevailing gender inequality in access to an essential input for a majority	0

!!! Warning signal: not enough information available to score

Not relevant to the target customer segment = 9

Write your narrative assessment of the data here

Question 3 - Example of trait preferences affected by control over inputs

In Tanzania, the improvement of traditional grazing systems (ololili) depended on having power and status in the community to claim land to establish an ololili, to discourage other people’s livestock from invading it, and building fences to protect it: all these were difficult for women livestock keepers, particularly for poorer women and widows. These governance constraints needed to be addressed in parallel to any technical intervention to ensure equitable outcomes. In fact, planting drought-resistant crops in the ololili could cause more invasions by neighbors stricken by extreme drought. This would mean that, as a result of the intervention, participating farmers (particularly women and widows) who could not defend the ololili would lose all their forage and thereby be worse off (Galiè et al. 2018).

Gender gap question 4: Control of products and by-products

Can the trait remove or reduce the quantity or quality of a product (e.g. a traditional intercrop) or by-product (e.g. fodder), a source of food (e.g. edible leaves) or source of income-generation normally under the control of women in the target customer segment?

In scoring, “majority” means “more than half of the total” e.g., 51%.

SCORE

Loss of product or income will be incurred with serious harm to health and welfare of a majority of women or their children in the target customer segment	-2
Loss will be incurred with moderate harm to health and welfare of a majority of woman or their children	-1
No loss for a majority	0

!!! Warning signal: not enough information available to score

Not relevant to the target customer segment = 9

Write your narrative assessment of the data here

Question 4: Example of trait preferences affected by control over products or by-products

In East Africa, poultry are mostly under the care of women and are a vital source of income and food under their control. A study of chicken producers’ trait preferences in Ethiopia found that men focused on productivity, health, and marketing of chickens. Their interest in poultry was mainly to scale up to an intensive, commercial scale of production, prioritizing productivity and sales of birds. In contrast, women wanted to increase the scale of production, but to keep this at a household level, and thus valued the traits that allowed chickens to be kept in an extensive system while increasing productivity. In part, this was because women were constrained to supply the increased labor and space required to keep chickens at a commercial scale. In some countries, as poultry production has become more profitable, men have taken it over from women (Ramasawmy et al. 2018).

Questionnaire Part 2: Negative trait preferences

Known gender-differentiated trait preferences that have negative implications for the trait in question.

Question 5: Negative trait preferences (WOMEN)

Do women in the target customer segment value the trait negatively?

In scoring, "majority" means "more than half of the total" e.g., 51%.

SCORE

Yes: the majority value it negatively	-1
NO: most women do not value the trait negatively	0

!!! Warning signal: not enough information available to score

Not relevant to the target customer segment = 9

Write your narrative assessment of the data here

Question 5: Example of women's negative trait preferences

Women in Burkina Faso object to modern white grain sorghum varieties because women depend on red-grained sorghums for producing malt for local beer, an important source of income (vom Brocke et al. 2010). In central Malawi (Chiwona-Karlun et al. 1998) the poorer women reject sweet cassava because bitter cassava is less likely to be stolen from their fields, despite the extra post-harvest labor required to remove the toxic compounds from bitter varieties.

Question 6: Negative trait preferences (MEN)

Do men in the target customer segment value the trait negatively?

In scoring, "majority" means "more than half of the total" e.g., 51%.

SCORE

Yes: the majority value it negatively	-1
NO: most men do not value the trait negatively	0

!!! Warning signal: not enough information available to score

Not relevant to the target customer segment = 9

Write your narrative assessment of the data here

Question 6: Example of men's negative trait preferences

In Uganda, there was a significant difference between women and men in the overall acceptability score for hybrid M9: women who cooked the banana tended to appreciate hybrid M9 more than men did. Men generally rejected M9, despite the big bunch, because it did not attract a higher market price (Sanya et al. 2018).

Questionnaire Part 3: Gender benefit questions

Gender benefit question 7: Reduce drudgery

Can the trait involve a beneficial decrease in the unpaid, family labor to produce or to use the product by women in the target customer segment, including marketing or processing for household consumption or sale?

In scoring, “majority” means “more than half of the total” e.g., 51%.

SCORE

Decreases drudgery with significant improvement for a majority of individual women’s and/or household’s health and welfare	+2
Decreases drudgery with moderate benefit for a majority	+1
No significant decrease for a majority	0

!!! Warning signal: not enough information available to score

Not relevant to the target customer segment = 9

Write your narrative assessment of the data here

Question 7: Example of trait preferences affected by reduced drudgery

Women responsible for rice harvest preferred tall rice varieties for ease of harvesting (Gridley 2002; Manzanilla et al. 2014). Women who transported harvested pearl millet panicles from the fields preferred long panicles for easier handling (Baidu-Forson 1997). Women responsible for threshing sorghum and rice wanted traits that made threshing easier (Kudadjie 2006); the same was true for pearl millet (Baidu-Forson 1997, see also Dorward et al. 2007; Manzanilla et al. 2014).

In Nigeria women farmers in four regions preferred early maturing cassava varieties to reduce the number of times that they need to weed (Teeken et al. 2018).

Gender benefit question 8: Employment for own income generation

Can the trait maintain or increase employment, as hired field labor on or off-farm, or in agroenterprise, so that women in the target customer segment can generate income under their discretionary control?

In scoring, “majority” means “more than half of the total” e.g., 51%.

SCORE

Increases or maintains women’s employment with significant gain in their own income for a majority of women in the target customer segment	+2
Increases or maintains women’s employment with moderate gain in own income for a majority	+1
No significant decrease for a majority	0

!!! Warning signal: not enough information available to score

Not relevant to the target customer segment = 9

Write your narrative assessment of the data here

Question 8: Example of trait preference affected by control of own income generation

In Malawi, women who sell leaf sauce in the local market valued positively the edible leaves of cowpea and cassava (Chiwona-Karlton et al. 1998; Kitch et al. 1998)

In Nigeria, women who processed cassava foods (gari, fufu and abacha) prioritized traits important for these products: sweetness, low in fiber, low in moisture, easy to peel, suitable food color (cream when toasted into gari and white when processed into fufu and abacha).

Gender benefit question 9: Are women-controlled products or by-products increased or improved?

Can the trait maintain or increase the quantity or quality of an important product or by-product of the variety or animal breed (e.g., food, seed, fodder, manure, fuel) normally under women’s control?

In scoring, “majority” means “more than half of the total” e.g., 51%.

SCORE

At least one important product or by-product under the control of women is significantly improved for a majority of women in the target customer segment	+2
At least one important product or by-product under the control of women is moderately improved for a majority	+1
No product or by-product under the control of women is affected for a majority	0

!!! Warning signal: not enough information available to score

Not relevant to the target customer segment = 9

Write your narrative assessment of the data here

Question 9: Example of trait preferences related to women’s control over products or by-products

In Mali, sorghum grain produced by women on their own plots is a safety-net used for feeding children outside of the main meals and when the men’s granaries run empty (Bauchspies et al. 2017). Women prefer early maturing and tall sorghum varieties which can be intercropped in their groundnut fields. The men, who are responsible for producing sorghum as the staple cereal for the main family meals, value positively high-yielding varieties to plant as monocrops (Christinck et al. 2018). In Nigeria, men ranked cassava yield as more important than processing traits given importance by women (Teeken et al. 2018). In several countries, commercialization of shea nut led men to increase their involvement in producing and using revenue from what had been primarily a women’s activity (Kent 2018). In several African cases, women’s control of income declined as total household income increased from beans, groundnut and soybeans (Njuki et al. 2011).

Questionnaire Part 4: Positive trait preferences

Question 10: Positive trait preferences (WOMEN)

Do women in the target customer segment value the trait positively?

In scoring, “majority” means “more than half of the total” e.g., 51%.

SCORE

Yes: the majority of women value it positively	-1
No: most women do not value the trait positively	0

!!! Warning signal: not enough information available to score

Not relevant to the target customer segment = 9

Write your narrative assessment of the data here

Question 10: Example of women’s positive trait preferences

Low-caste women in western Rajasthan preferred early flowering and high tillering varieties of pearl millet that performed well on poor quality land (Christinck 2002).

Men and women bean producers who derived higher utility from production traits (i.e. yield and drought tolerance) comprise a target customer segment that preferred varietal traits associated with improved production. This segment was 54% of the sample, especially women (61% of members). These people had poor access to land and water. A different segment consisted of wealthier men and women who preferred quality traits such as taste and cooking time over production traits. They comprised 46% of the sample, 60% of whom were men (Katungi et al. 2018).

Question 11: Positive trait preferences (MEN)

Do men in the target customer segment value the trait positively?

In scoring, "majority" means "more than half of the total" e.g., 51%.

SCORE

Yes: the majority of men value it positively	-1
No: most men do not value the trait positively	0

!!! Warning signal: not enough information available to score

Not relevant to the target customer segment = 9

Write your narrative assessment of the data here

Question 11: Example of men's positive trait preferences

In Mexico, men are mainly responsible for maize production. Men prefer traits related to production, while women valued other traits, related to consumption (Smale et al.1998).

Unlike women, men preferred aspects of cowpea fodder quality for feeding livestock (Kitch et al. 1998).

In Nigeria, men and women farmers in all regions generally expressed a preference for early-maturing varieties—for men, to make quick cash, and for women, to reduce the number of times that they need to weed (Olaosebikan et al. 2018).

Question 12: Positive trait preferences:

Do women in the target customer segment value (rank) this trait more highly than men, and why?

In scoring, "majority" means "more than half of the total" e.g., 51%.

SCORE

Yes: the majority of women rank the trait more highly than men	+1
No	0

!!! Warning signal: not enough information available to score

Not relevant to the target customer segment = 9

Write your narrative assessment of the data here

Question 12: Example of different values for a given trait

Women predominantly responsible for weeding lowland rice in West Africa preferred competitive varieties for weed suppression more frequently than men (Gridley 2002).

In Mexico, women and men rank maize traits in different order of priority reflecting different objectives and responsibilities (Bellon et al. 2003; Bellon 2006).

Farmers demand numerous traits and there are gender differences (maize in Mexico)



	Coast of Oaxaca		Frailesca, Chiapas	
	Males	Females	Males	Females
Number of households	162	162	161	158
Vulnerability				
Resistant to lodging	69.8	98.8	82.6	94.3
Tolerant to drought	75.9	83.3	75.2	72.2
Tolerant to excess water	54.3	84.6	70.8	88.6
Does not rot (good husk cover)	61.1	75.2	68.9	80.4
Duration (growing cycle)	49.4	80.9	62.1	82.3
Resistant to pests	66	83.3	69.6	80.4
Resistant to insects in storage	58.6	75.9	61.5	80.5
Produces something even in a bad season	58	75.9	64.6	76.7
Good for sale	55.9	65.4	63.8	81.8
Consumption related:				
Good for consumption	59.9	80.2	70.2	84.9
Good for atole	59.3	91.4	68.9	90.6
Good "elote" for sale and consumption	50.6	69.8	60.2	74.2
Good for "antojitos"	58.6	75.9	65.2	79.2
Easy to shell	70.4	76.5	42.9	73
Good for nixtamal	61.1	84.6	68.9	83.6
Good pasture	27.8	54.8	49.1	64.8
Productivity:				
Yield of dough to make tortillas	77.2	92	83.9	89.2
Yield by weight	84.6	67.9	89.4	67.1
Yield by volume	67.9	61.1	72.7	68.4

† Non parametric correlation between expenditure and rating of importance. A negative sign indicates that the importance increases with poverty, and vice versa.
 *, **, correlation significant at the .10, .05 level respectively.

ANNEX III TRAIT PREFERENCES SUMMARY SHEET

TARGET SEGMENT: Trait Preferences Summary								
Product Name:								
Name of Target Segment:								
Social Category:								
Product attribute (include trait #)	Breeders trait description	Selection objective	Men's opinion*		Women's opinion*		Data sources	Data quality
			Positive	Negative	Positive	Negative		
GENDERED TRAIT PREFERENCES FLAGGED FOR TEAM ATTENTION			Note the trait name and number here:					
SUMMARY OF DATA ISSUES								
RECOMMENDED NEXT STEPS IN PREFERENCE IDENTIFICATION								

ANNEX IV: G+ PRODUCT PROFILE SCORING MATRIX. COMPARE “DO NO HARM” AND POSITIVE BENEFIT ANALYSES.

USE THE G+PRODUCT QUERY TOOL QUESTIONNAIRE TO FILL IN THIS SCORING MATRIX SHEET FOR ONE TRAIT

TEMPLATE #4: G+ PRODUCT PROFILE SCORING MATRIX SHEET FOR ONE TRAIT “DO NO HARM”						
1. PRODUCT NAME:						
2. Customer segment for this product:						
3.Social category						
4.Trait name:						
5.Evidence sources:						
6.Final gender impact score for “do no harm”						
“Do no harm” questions		Fill in CODE from Questionnaire			Lacks information	Evidence citations and commentary
No.	Part 1: “Gender Gap”	-2	-1	0	!!!	Notes on scoring and/or information needed
1	Increases drudgery?					
2	Displaces women’s activities?					
3	Depends on input with unequal access?					
4	Decreases control of benefits					
No.	Part 2: Trait preferences	Yes: majority	Blank	No	!!!	Commentary
5	Do women in the target customer segment value the trait negatively ?					
6	Do men in the target customer segment value the trait positively (opinion conflicts with that of women)?					

TEMPLATE#4: G+ PRODUCT PROFILE SCORING MATRIX SHEET FOR ONE TRAIT POSITIVE BENEFITS						
1.PRODUCT NAME:						
2.Customer segment for this product:						
3.Social category						
4.Trait name:						
5.Evidence sources:						
6.Final gender impact score for Positive Benefit						
“Do no harm question”		Fill in CODE from Questionnaire			Lacks information	Evidence citations and commentary
No.	Part 3:	+2	+1	0	!!!	Notes on scoring and/or information needed
7	Reduces drudgery?					
8	More employment for own income generation					
9	Better control by women of products or by-products?					
No.	Part 4: Positive Trait preferences	Yes: majority	Blank	No	!!!	Commentary
10	Do women in the target customer segment value the trait positively ?					
11	Do most men in the target customer segment value the trait positively (agreement with women)?					
12	Do most women in the target customer segment rank this trait more highly than men?					

SCORING GUIDE: "DO NO HARM"		"DO NO HARM" GENDER IMPACT SCORE	Commentary on Scoring
STEP 1	Any item of part 1= -2	-2	Reject
STEP 2	Two or more items in part 1= -1	-2	Reject
STEP 3	All items in part 1= 0: OR Only one item in part 1= -1	No score	Go to steps 5 and 6
STEP 4	All items in part 1 & part 2 = 0	0	Neutral
STEP 5	The majority of women and the majority of men in the target customer segment value the trait negatively (opinions agree)	-2	Reject
STEP 6	The majority of women value the trait negatively and men's opinions are unknown OR most men do not value the trait negatively. Question 5 = 0 and Question 6= -1 or 9; OR Question 5= -1 & Question 6=0 or 9.	-1	Avoid or amend Consider information in questions 5 and 6

SCORING GUIDE: POSITIVE BENEFIT		POSITIVE BENEFIT GENDER IMPACT SCORE	Commentary on scoring
STEP 1	Any item of part 3= +2	3	Required
STEP 2	Two or more items in part 3= +1	3	Required
STEP 3	All items in part 3= 0 OR One item in part 3 = +1 and the remaining 2 items = 0	No score	Go to steps 4, 5 and 6
STEP 4	All items in part 3 & part 4 = 0	0	Neutral
STEP 5	The majority of women and the majority of men in the target customer segment value the trait positively (positive opinions agree): Question 10 = +1 and Question 11 = +1	2	Important
STEP 6	No identified consensus about the value of the trait. The majority of women value the trait positively (score =1) and men's opinions are unknown or most men do not value the trait positively (score =0) or women rank the trait more highly than men do.	1	Nice to have

RECORD THE FINAL SCORE IN LINE 6 OF THE MATRIX

GLOSSARY

Breeding. Creating new crop varieties or new breeds of animals by systematically selecting for certain desired traits.

Breeding product. The tangible result of breeding, usually in the form of a crop variety or animal breed with specific attributes of a defined value, that have been targeted by breeders.

Customer (for a breeding program). An actor who will potentially use the new crop variety or livestock breed produced by the breeding program.

Customer profile. A description of the target users of a breeding product, to help the breeding program prioritize customers. The description may include customer's gender, role in the value chain and location. A G+ Customer Profile identifies product preferences that are important for women and ensures that their preferences are reflected in the design of new products.

Customer segment. A group of users who have both a common set of constraints and a common, unique and relatively homogenous need (demand) for a breeding program product.

“Do no harm” analysis. An analysis of the possible harm that introducing a new trait might cause to women or any social category of customers identified for the analysis. The “do no harm” analysis is designed to minimize the risk of releasing a variety that could increase gender inequity.

Gender gap. Differences between men and women regarding access to factors of production (land, labor and capital), as well as access to information, freedom of movement and other resources and opportunities.

Gender equality. Men and women are treated in the same way.

Gender equity. Targeting men and women differently, if need be, to produce outcomes and impact that are equitable.

Gender impact score. A number from -2 (reject) to 3 (required) based on the “do no harm” analysis and “positive benefit” analysis which ranks the traits in a potential new product (e.g., crop variety), taking into account whether the trait will harm or benefit women.

Gender perspective. A view of men and women, which considers their links, roles, responsibilities, and their potential for conflict or cooperation in households, communities and societies.

Gender-responsive. Ensuring that the different perceptions, interests, needs and priorities of women and men are considered in planning and decision-making.

Household. A group of people who eat and sleep in the same house. Households are generally responsible for reproduction (e.g. raising children). Rural households especially often work together to produce goods, such as a harvested crop, but this does not mean that everyone in the household shares the same objectives or preferences.

Positive benefit analysis. An analysis of the likelihood that a new trait will be beneficial to women and men or another social category of customer defined for the analysis.

Product advancement decision. A decision to advance genetic material from one stage of a breeding program to the next stage.

Product profile. A definition of the attributes that a new plant variety or animal breed must meet to be successfully released, identifying preferences that are important for women, and taking into account a do no harm analysis and a positive benefit analysis.

Gender-responsive Product Profile: a description of the attributes that a new plant variety or animal breed must meet to be successfully released, beneficial to and adopted by most women in the target customer segment

Trade-off. An option that implies gaining something, but losing something else, where two choices are mutually exclusive. For example, there is a trade-off between spending money now vs saving it for the future.

Trait preferences. Qualities that a given user desires in a new product, e.g. color, flavor, pest resistance, yield, size, days needed to reach maturity, processing qualities and many others.

Trait prioritization in breeding. A ranking of key traits that breeders will bring into a new product. This may help to make decisions regarding trade-offs. E.g. if higher yields come at a cost of better flavor, which of those two traits is more important?

Value chain actors. People or organizations who participate in the production, transport, processing, sale and consumption of agricultural goods (and services), from planting to plate.

REFERENCES

- Alkire, S., Meinzen-Dick, R., Peterman, A., Quisumbing, A. R., Seymour, G. and Vaz, A. (2013). The Women's Empowerment in Agriculture Index. Oxford Poverty & Human Development Initiative (OPHI) working Paper No. 58. Oxford Department of International Development Queen Elizabeth House (QEH), University of Oxford <https://www.ophi.org.uk/wp-content/uploads/ophi-wp-58.pdf>
- Ashby, J. A. (1990). *Evaluating technology with farmers: A handbook*. Centro Internacional de Agricultura Tropical (CIAT). <https://hdl.handle.net/10568/54029> .
- Ashby, J. A., & Polar, V. (2019). The implications of gender relations for modern approaches to crop improvement and plant breeding. In C. E. Sachs (Ed.), *Gender, agriculture and agrarian transformations: Changing Relations in Africa, Latin America and Asia* (Chapter 2). Routledge.
- Baidu-Forson, J. (1997). On-station farmer participatory variety evaluation: A strategy for client-oriented breeding. *Experimental Agriculture*, 33, 43–50.
- Bellon, M. Adato, M., Becerril, J. and Mendik, D. (2006) Poor Farmers' Perceived Benefits from Different Types of Maize Germplasm: The Case of Creolization in Lowland Tropical Mexico. *World Development* Vol. 34, No. 1, pp. 113–129. doi:10.1016/j.worlddev.2005.05.012
- Bellon, M. R. (2001). *Participatory research methods for technology evaluation: A manual for scientists working with farmers*. Centro Internacional de Mejoramiento de Maiz y Trigo (CIMMYT). <https://repository.cimmyt.org/xmlui/bitstream/handle/10883/1023/74275.pdf?sequence=1>
- Bellon, M. R., Berthaud, J., Smale, M., Aguirre, J. A., Taba, S. Aragón, F., Díaz, J., & Castro H. (2003). Participatory landrace selection for on-farm conservation: An example from the central valleys of Oaxaca, Mexico. *Genetic Resources and Crop Evolution*, 50(4), 401–416.
- vom Brocke, K., Trouche, G., Weltzien, E., Barro-Kondombo, C. P., Gozé, E., & Chantreau J. (2010). Participatory variety development for sorghum in Burkina Faso: Farmers' selection and farmers' criteria. *Field Crops Research*, 119(1), 183–94. <https://doi.org/10.1016/j.fcr.2010.07.005>.
- Chiwona-Karlton, L., Mkumbira, J., Saka, J., Bovin, M., Mahungu, N. M., & Rosling H. (1998). The importance of being bitter - A qualitative study on cassava cultivar preference in Malawi. *Ecology of Food and Nutrition*, 37(3), 219–45.
- Christinck, A. (2002). *This seed is like ourselves: A case study from Rajasthan, India, on the social aspects of biodiversity and farmers' management of pearl millet seed*. Weikersheim, Germany. Margraf Publishers.
- Christinck, A, Weltzien, E, Rattunde, F, Ashby, J. A. (2017). *Gender differentiation of farmer preferences for varietal traits in crop improvement: Evidence and issues*. Working Paper No. 2. CGIAR Gender and Agriculture Research Network, CGIAR System Management Office and International Center for Tropical Agriculture (CIAT). <https://hdl.handle.net/10947/4660>

- Dorward, P., Craufurd, P., Marfo, K., Dogbe, W. & Bam, R. (2007). Improving participatory varietal selection processes: Participatory varietal selection and the role of informal seed diffusion mechanisms for upland rice in Ghana. *Euphytica*, 155, 315–327. doi: DOI 10.1007/s10681-006-9333-y
- FAO. (2011). The state of food and agriculture, women in agriculture, closing the gender gap in agriculture. FAO.
- Galiè, A., Kizima, J., Mangesho, W., & Lukuyu, B. (2018). Gender-responsive forage intensification in the *ololili* system of Tanzania. In H. A. Tufan, S. Grando, & C. Meola (Eds.), *State of the knowledge for gender in breeding: Case studies for practitioners* (pp. 44-54). Lima (Peru). CGIAR Gender and Breeding Initiative. Working Paper. No. 3. <https://cgspace.cgiar.org/handle/10568/92819>
- Gridley, H. (2002). Participatory varietal selection in West and Central Africa. Quantitative analysis of data from participatory methods in plant breeding. Centro Internacional de Mejoramiento de Maiz y Trigo (CIMMYT).
- Isaacs, K., Weltzien, E., Diallo, C., Sidibe, M., Diallo, B. & Rattunde, F. (2018). Farmer engagement in culinary testing and grain-quality evaluations provides crucial information for sorghum breeding strategies in Mali. In H. A. Tufan, S. Grando, & C. Meola (Eds.), *State of the knowledge for gender in breeding: Case studies for practitioners* (pp. 74-85). Lima (Peru). CGIAR Gender and Breeding Initiative. Working Paper. No. 3. <https://cgspace.cgiar.org/handle/10568/92819>
- Katungi, E., Aseete, P., Mukankusi, C., & Nkalubo, S. (2018). Towards a more gender-responsive bean breeding program: Lessons from East Africa. In H. A. Tufan, S. Grando, & C. Meola (Eds.), *State of the knowledge for gender in breeding: Case studies for practitioners* (pp. 23-34). Lima (Peru). CGIAR Gender and Breeding Initiative. Working Paper. No. 3. <https://cgspace.cgiar.org/handle/10568/92819>
- Kent, R. (2018). ‘Helping’ or ‘appropriating’? Gender relations in shea nut production in Northern Ghana. *Society & Natural Resources*, 31 (3), 367–381.
- Kitch, L. W., Boukar, O., Endondo, C., & Murdock, L. L. (1998). Farmer acceptability criteria in breeding cowpea. *Experimental Agriculture*, 34(4): 475–86. <https://doi.org/10.1017/S0014479798004049>.
- Kudadjie, C. Y. (2006). Integrating science with farmer knowledge: Sorghum diversity management in north-east Ghana (No. 81). Wageningen University and Research Centre.
- Lodin, J. B., (2012). Intrahousehold bargaining and distributional outcomes regarding NERICA upland rice proceeds in Hoima district, Uganda. *Gender, technology and development*, 16(3), 253-278.
- Manzanilla, D. O., Paris, T. R., Tatlonghari, G. T., Tobias, A. M., Chi, T. T. N., Phuong, N. T., Siliphouthone, I., Chamarek, V., Bhekasut, P., & Gandasoemita, R. (2014). Social and gender perspectives in rice breeding for submergence tolerance in Southeast Asia. *Experimental Agriculture*, 50(2), 191–215. <https://doi.org/10.1017/S0014479713000409>.
- Mulatu, E. & Belete, K., (2001). Participatory varietal selection in lowland sorghum in eastern Ethiopia: impact on adoption and genetic diversity. *Experimental Agriculture*, 37(2), 211-229.
- Nagayets, O. (2005). Small farms: Current status and key trends. Information brief. *Future of Small Farms Research Workshop*. Wye, UK.

- Njuki, J., Kaaria, S., Chamunorwa, A., & Chiuri, W. (2011). Linking smallholder farmers to markets, gender and intra-household dynamics: Does the choice of commodity matter? *The European Journal of Development Research*, 23(3), 426–443.
- Olaosebikan, O., Kulakow, P., Tufan, H., Madu, T., Egesi, C., & Teeken, B. (2018). A case study of cassava trait preferences of men and women farmers in Nigeria: Implications for gender-responsive cassava variety development. In H. A. Tufan, S. Grando, & C. Meola (Eds.), *State of the knowledge for gender in breeding: Case studies for practitioners* (pp. 35-43). Lima (Peru). CGIAR Gender and Breeding Initiative. Working Paper. No. 3.
<https://cgspace.cgiar.org/handle/10568/92819>
- Quisumbing, A. R., Meinzen-Dick, R., Raney, T. L., Croppenstedt, A., Behrman, J. A., & Peterman, A. (Eds) (2014). *Gender in agriculture: Closing the knowledge gap*. Springer Science & Business.
- Ragot, M., Bonierbale, M., & Weltzien, E. (2018). From market demand to breeding decisions: A framework. Lima (Peru). CGIAR Gender and Breeding Initiative. GBI Working Paper. No. 2. Available online at: www.rtb.cgiar.org/gender-breeding-initiative
- Ramasawmy, M., Galiè, A., & Dessie, T. (2018) In H. A. Tufan, S. Grando, & C. Meola (Eds.), *State of the knowledge for gender in breeding: Case studies for practitioners* (pp. 55-65). Lima (Peru). CGIAR Gender and Breeding Initiative. Working Paper. No. 3.
<https://cgspace.cgiar.org/handle/10568/92819>
- Sanya, L. N., Ssali, R. T., Akankwasa, K., Nowankunda, K., Barekye, A., Namuddu, M. G., & Kubiriba, J. (2018). Gender-differentiated preferences in breeding for new *matooke* hybrids in Uganda. In H. A. Tufan, S. Grando, & C. Meola (Eds.), *State of the knowledge for gender in breeding: Case studies for practitioners* (pp. 87-94). Lima (Peru). CGIAR Gender and Breeding Initiative. Working Paper. No. 3. <https://cgspace.cgiar.org/handle/10568/92819>
- Smale M; Bellon M; Aguirre A. 1998. Variety choice and land allocation decisions in a center of maize diversity. Selected paper presented at the Annual Meetings of the American Agricultural Economics Association, Salt Lake City, UT.
- Teeken, B., Olaosebikan, O., Haleegoah, J., Oladejo, E., Madu, T., Bello, A., Parkes, E., Egesi, C., Kulakow, P., Kirscht, H., & Tufan, H. A., (2018). Cassava trait preferences of men and women farmers in Nigeria: Implications for breeding. *Economic Botany*, 72(3), 1-15.
- Wodon, Q., & Blackden, C. M. (Eds) (2006). *Gender, time use, and poverty in sub-Saharan Africa*. The World Bank.
- World Bank. (2012). World development report 2012: Gender equality and development. The World Bank.



The CGIAR Gender and Breeding Initiative brings together plant and animal breeders and social scientists to develop a strategy for gender-responsive breeding with supporting methods, tools and practices. The Initiative includes experts from across CGIAR centers and Research Programs, is coordinated by the CGIAR Research Program on Roots, Tubers and Bananas and the International Potato Center, and is supported by CGIAR Funders.