Tools and concepts for mainstreaming gender in aflatoxin research at the International Livestock Research Institute

CGIAR

RESEARCH PROGRAM ON Agriculture for Nutrition and Health

LED BY IFPRI

ILRI PROJECT REPORT

FoodAfrica

Tools and concepts for mainstreaming gender in aflatoxin research at the International Livestock Research Institute

Elizabeth Waithanji and Delia Grace

Editing: Tezira Lore

Design and layout—ILRI Editorial and Publishing Services, Addis Ababa, Ethiopia.

Cover photo credit: ILRI

ISBN 92–9146–347–7

Citation: Waithanji, E and Grace, D. 2014. *Tools and concepts for mainstreaming gender in aflatoxin research at the International Livestock Research Institute.* Nairobi, Kenya: International Livestock Research Institute.

ilri.org
Better lives through livestock
ILRI is a member of the CGIAR Consortium

Box 30709, Nairobi 00100, Kenya
Phone: + 254 20 422 3000
Fax: +254 20 422 3001
Email: ILRI-Kenya@cgiar.org

Box 5689, Addis Ababa, Ethiopia
Phone: +251 11 617 2000
Fax: +251 11 617 2001
Email: ILRI-Ethiopia@cgiar.org

Contents

Acknowledgements iv

List of abbreviations and acronyms v

Introduction 1

- Purpose of this document 1
- CGIAR Research Program on Agriculture for Nutrition and Health 1
- Gender in A4NH 2
- Gender analysis and terminology 2

Justification and rationale 4

- Gender in agriculture 4
- Closing the gender gap 4

Gender targeting of mycotoxin research 5

Theory of change 7

Gender-responsive goals, objectives and research questions 9

- Research questions 9

Gender-responsive activities and outcomes 11

- Gender-related activities in the research cycle (including implementation, methods, data and consultation) 12
- Research cycle approach 13

Monitoring and evaluation system 15

References 19

Acknowledgements

This output was produced with support from the CGIAR Research Program on Agriculture for Nutrition and Health (A4NH), led by the International Food Policy Research Institute (IFPRI). We also acknowledge support from the FoodAfrica Programme, financed as a research collaboration of the Ministry of Foreign Affairs of Finland, MTT Agrifood Research Finland, the International Food Policy Research Institute, the International Livestock Research Institute, the World Agroforestry Centre, Bioversity International, the University of Helsinki and HAMK University of Applied Sciences.

List of abbreviations and acronyms

A4NH	CGIAR Research Program on Agriculture for Nutrition and Health
AAD	agriculture-associated diseases
FAO	Food and Agriculture Organization of the United Nations
IFPRI	International Food Policy Research Institute
ILRI	International Livestock Research Institute

Introduction

Purpose of this document

This document sets out a gender strategy for work on mycotoxins, which are toxins produced by fungi, for the research carried out by the International Livestock Research Institute (ILRI) and its partners and which is supported by the CGIAR Research Program on Agriculture for Nutrition and Health (A4NH) and various bilateral programs. It first provides background on A4NH and the program's approach to gender. It then provides a rationale for a gender-mainstreamed approach more generally in agriculture and how women are targeted in mycotoxin research. It next suggests how gender can be integrated into research activities, outcomes and impact pathways and, finally, discusses monitoring and evaluation.

Throughout, the strategy draws on the gender strategy of the CGIAR Research Program on Livestock and Fish (CGIAR Research Program on Livestock and Fish 2013) and the A4NH gender strategy (IFPRI 2012). The purpose of the document is to provide the context and case for gender in mycotoxin research and to guide the research theory of change so that gender is integrated in the all research initiatives of this component in ways that it will transform power relations between men and women.

CGIAR Research Program on Agriculture for Nutrition and Health

The CGIAR Research Program on Agriculture for Nutrition and Health (A4NH) is a 10-year strategic partnership of CGIAR with a goal of improving nutrition and health of poor people by exploiting and enhancing the synergies between agriculture, nutrition and health (IFPRI 2012).

A4NH will address its goal and deliver the stated objectives through four major research components, namely, nutrition-sensitive value chains; biofortification; control of agriculture-associated diseases (AAD); and integrated agriculture, health and nutrition programs.

The gender strategy presented in this document will inform part of the third component on prevention and control of AAD. AAD has three sub-components, namely, improving food safety; zoonotic diseases and diseases emerging from animals; and other health risks in agro-ecosystems. AAD will assess, prevent and mitigate agriculture-associated health risks through research for improved food and water safety; and control of pathogens (bacterial, viral, parasitic or fungal diseases) that are zoonotic (can be transmitted from animals to humans).

Gender in A4NH

Women are the guardians of household food security and nutrition worldwide, but in spite of this, women and girls are more likely than men and boys to be at risk of under-nutrition, micronutrient malnutrition and poor health. While some of this difference is attributable to biology (women are more prone to auto-immune diseases, and pregnancy brings many risks to health), differences in health and nutrition states are also attributable to gender. Women are more at risk than men for some health and nutrition problems associated with agriculture. However, for other problems men may be more at risk. The objective of A4NH is to understand the differential exposure and risk of women and men in order to manage risk more effectively and more equitably. The latter consideration implies that where one group bears the bulk of risks or their health risks have been historically neglected, then this group has a claim to priority. But it is important to note that our concern covers women and men, and girls and boys.

In order to ensure that benefits from interventions are equally distributed between women and men and boys and girls, and that the gender benefit gap narrows or, at least, does not widen, A4NH has developed a gender strategy for adoption and adaptation by its four component actors. The strategy presented here is the adopted and adapted version of the A4NH gender strategy for the AAD sub-component on improving food safety through mycotoxin research.

Gender analysis and terminology

Gender refers to the socially constructed roles, behaviour, activities and attributes that determine the power relations between men and women. It is a central organizing principle of societies, and often determines the processes of production and reproduction, consumption and distribution (FAO 1996). Gender analyses take a close look at women's relationships with men and how these relations define women's roles, rights (access to and control of resources), division of labour, interests and needs. This distinction in roles and responsibilities may give rise to gender inequalities that systematically favour men over women (Bravo-Baumann 2000). Box 1 provides a glossary of gender-related concepts and definitions used in this document.

Box 1: Some gender concepts and definitions

Gender refers to the socially constructed roles and status of women and men, and girls and boys. It is a set of culturally specific characteristics defining the social behavior of women and men, and the relationship between them. Gender roles, status and relations vary according to place (countries, regions and villages), groups (class, ethnicity, religion or caste), generations and stages of the lifecycle of individuals. Gender is, thus, not about women but about the relationship between women and men.

Gender equality entails the concept that all human beings, both men and women, are free to develop their personal abilities and make choices without the limitations set by stereotypes, rigid gender roles or prejudices. Gender equality means that the different behaviours, aspirations and needs of women and men are considered, valued and favoured equally. It does not mean that women and men have to become the same, but that their rights, responsibilities and opportunities will not depend on whether they are born male or female.

Gender equity means fairness of treatment for women and men, according to their respective needs. This may include equal treatment or treatment that is different but considered equivalent in terms of rights, benefits, obligations and opportunities. In the development context, a gender equity goal often requires built-in measures to compensate for the historical and social disadvantages of women.

Gender analysis is a tool or set of tools to assist in strengthening development planning, implementation, monitoring and evaluation, and to make programs and projects more efficient and relevant. Gender analysis should go beyond cataloguing differences to identifying inequalities and assessing relationships between women and men. Gender analysis helps us to frame questions about the roles and relations of women and men to avoid making assumptions about who does what, when and why. The aim of such analysis is to formulate development interventions that are better targeted to meet both women's and men's needs and constraints.

Empowerment implies people – both women and men – taking control over their lives by setting their own agendas, gaining skills (or having their own skills and knowledge recognized), increasing their self-confidence, solving problems and developing self-reliance. It is both a process and an outcome. Empowerment implies an expansion in women's ability to make strategic life choices in a context where this ability was previously denied to them.

Gender mainstreaming is a strategy for making the concerns and experiences of women and men an integral dimension in the design, implementation, monitoring and evaluation of policies and programs in all political, economic and social spheres so that women and men benefit equally and inequality is not perpetuated. The ultimate goal is to achieve gender equality.

Gender-neutral approaches do not account for the differences between women and men and do not consider how women and men may be marginalized and harmed or may not benefit from research, programs and policy.

Gender-aware (or gender-responsive) approaches are designed to meet the needs of both women and men. These approaches ensure that both women and men will benefit, and neither will be harmed by research, programs and policy, such as, for example, by exacerbating their work burdens.

Gender transformative approaches actively strive to examine, question and change rigid gender norms and the imbalance of power as a means of achieving development goals as well as meeting gender equity objectives. These research, programmatic and policy approaches challenge the distribution of resources and allocation of duties between men and women.

Source: Njuki et al. (2013)

Justification and rationale

Gender in agriculture

Gender equality and empowerment of women in agriculture has a utilitarian as well as moral justification. Participation of men and women in agricultural research and development leads to better decision outcomes, performance, creativity and innovation (Pelled et al. 1999). Gender analyses have revealed that owing to gender norms, women are often constrained in terms of access to assets, which include natural resources as well as physical, human, financial, social and political capital (Meinzen-Dick et al. 2011b). Health, nutrition, education, skills and knowledge – which are all embodied in the labour of individuals – constitute human capital (ibid.). The gender gap in access to assets has been used to explain much of the deficit in agricultural production. As a thought experiment, if the asset gap were to be closed and women were to have equal access to productive inputs as men, they would produce the same yields as men and, as a result, agricultural output in developing countries would increase by 2.5–4%. These production gains could reduce the 925 million undernourished people in the world today by 12–17%, equivalent to 100 to 150 million people (FAO 2011).

In addition, studies have found that when women control income they spend up to 90% of it on their families, whereas men spend 30–40% (Nike Foundation cited by Hausmann et al. 2009), and strengthening women's marital bargaining power and 'voice' within household decision-making increases women's control (Agarwal 1997; Quisumbing 2003). Children's health and nutrition are intrinsically linked with their mother's health and nutrition status and the mother's workload and availability to feed the child (Sreenath et al. 2011).

Closing the gender gap

Gender gaps should not be approached in an absolutist framework but rather in the context of complex agricultural systems and socio-cultural considerations. To give a simplistic example, if butchering of large animals is traditionally the domain of men and feeding of infants the domain of women, it may not be appropriate to attempt to close the gender gap simply for the sake of doing so. Rather, the wider implications for men, women and society should be taken into account.

Although there is no blueprint for closing the gender gap in any of the multiple areas, there exist some universal principles which, if applied, will most likely yield desirable results and narrow the gender benefit gap. These include the following: governments, the international community, civil society and the private sector working together to eliminate discrimination against women under the law by strengthening investments in labour-saving technologies and public services to alleviate their household burden; building rural institutions and making them gender-aware; strengthening the human capital of women and girls; improving the collection and analysis of sex-disaggregated data; ensuring that agricultural policies and programs are gender-aware; and making women's voices heard as equal partners for sustainable development (FAO 2011).

Gender targeting of mycotoxin research

Mycotoxins are produced by moulds that are ubiquitous in nature. They contaminate as much as one quarter of the world's harvests. More than 400 mycotoxins have been identified and they have a range of adverse effects on human and animal health. Aflatoxins are one of the better-studied mycotoxins. Ingestion of large amounts of aflatoxin can cause death. There is also a causal association between chronic ingestion of aflatoxins and liver cancer. There are further associations between aflatoxin ingestion and stunting and immunosuppression in children. Aflatoxins are common in maize, groundnuts and sorghum. If dairy cows eat aflatoxin-contaminated feed, around 3–7% of aflatoxins are passed into the milk. Pigs and poultry are especially vulnerable to aflatoxins and consumption of aflatoxin-contaminated feed is associated with lower productivity in livestock.

A gender perspective is required for mycotoxin control for the following reasons.

- In Africa, women generally have the responsibility for producing food for home consumption. Good production and harvesting practices are key to reducing mycotoxins.
- Women have the primary role in post-harvest storage of crops produced for home consumption. It is at this stage where increase in mycotoxin is most marked.
- In Africa, women often have responsibility for feeding livestock kept on the farm; these livestock are usually fed the most contaminated material.
- Women have the primary role in food processing for home consumption, which can have an important impact on reducing mycotoxins (for example, fermentation).
- Women have an important role in food purchase and in storage of food in households.
- Women have the primary responsibility for preparing family meals. Decisions around meal preparation can have a major impact on the extent of exposure both in terms of foods used and preparation techniques.
- Women have the primary responsibility for caring for and feeding infants, who are most biologically vulnerable to aflatoxins. Risk targeting implies that health resources are targeted to those most at risk. Hence, involving women is key to reducing aflatoxin exposure for foetuses and infants.
- Men have a higher risk of liver cancer than women. This may be associated with greater alcohol intake, but males may also be more biologically vulnerable to aflatoxins than females. Men need to be targeted for messages on prevention and treatment.
- Introduced technologies can result in a greater burden for women. It is necessary to ensure the overall impact of better mycotoxin control is not negative for women.
- Women often have less access to information, extension and education than men. This implies additional targeting is needed to reach women with information and options.

- Overall, women are less likely than men to adopt improved practices or technologies (Doss 2001). Hence, additional strategies are needed to ensure that women – who play key roles in managing risks in production of food for home consumption, post-harvest processes, making family meals, care of infants and feeding of livestock – are able to adopt and use improved practices for mycotoxin management from field to fork.

Overall, mycotoxin research is targeted at women as the most important risk managers and of greater vulnerability with respect to their reproductive role.

Theory of change

By working through projects that mainstream gender, A4NH has undertaken to change gender power relations. In the case of this research agenda, giving new information and options aimed at women, who are the primary risk managers for mycotoxins, will narrow the gender power gap in terms of decision-making and control of assets. Research will seek to demonstrate the following trends: increasing and protecting assets of women and the poor; increasing income of women and the poor; increasing consumption of animal-source food by the poor, especially pregnant women and children in the first two years of life; decreasing risk of disease for women and the poor; and improving or sustaining [as before the program] environment.

More specifically, the mycotoxin research will aim at narrowing the gender power gap by giving women more information about aflatoxins and management options. As a research program, we work directly with women and men farmers at a pilot scale. Women in these pilot areas will directly benefit from knowledge and training in aflatoxin control options.

In order to achieve impact at scale the program undertakes to:

- generate evidence on the importance of women as mycotoxin risk managers and options for empowering them to manage risk more effectively; and
- develop new technologies with potential to reduce the risk of aflatoxins pre- and post-harvest.

There are different sets of identified partners the program needs to influence, with associated influence pathways and outcomes:

1. Science community through publications and presentations
   Outcome: continuing research on mitigating aflatoxin risks which mainstreams gender

2. Donor community through evidence briefs and direct engagement
   Outcome: investment in scaling out information on aflatoxins and their management targeted for use by women risk managers

3. National and regional decision-makers through development of briefs, technical packages and stakeholder meetings
   Outcome: investment in scaling out information on aflatoxins and their management targeted for use by women risk managers

4. Development community through evidence briefs and direct engagement
   Outcome: investment in scaling out information on aflatoxins and their management targeted for use by women risk managers

5. Media through press releases and responding to requests from journalists
   Outcome: newspaper articles that pass accurate information that influences different actors towards appropriate aflatoxin control

6. Private sector through evidence and options for reducing risk
Outcome: The private sector is able to provide agricultural inputs to minimize risk and products which are safe

Gender-responsive goals, objectives and research questions

The goal of A4NH is to accelerate progress in improving the nutrition and health of poor people, particularly women and children, by exploiting and enhancing the gender-sensitive synergies between agriculture, nutrition and health across its four key research components.

The 'improving food safety' sub-component of AAD addresses the following objectives:

- To improve understanding of diseases in systems being used to target research
- To use the acquired understanding of systems to inform policies and programs for foodborne diseases
- To use integrated health risk and socioeconomic assessment to inform the prevention and control of foodborne diseases in effective, equitable (including gender) and sustainable ways
- To ensure stakeholder awareness of evidence and innovation of risk-based management for primary foodborne diseases
- To provide support that will enable policies, programs and the private sector (formal and informal) to adapt and scale up the research outputs of AAD components for the prevention and control of foodborne diseases
- To increase capacity and skills of communities, programs and decision-makers for prevention and control of AAD

Research questions

This gender strategy further narrows its focus to the subcomponent on improving food safety, and the objective on using integrated health risk and socioeconomic assessment to inform the prevention and control of foodborne diseases in effective, equitable (including gender) and sustainable ways. Among the critical areas of food safety identified in the subcomponent are mycotoxins, biological hazards, plant toxins and agricultural inputs (chemicals). More specifically, this strategy addresses only the mycotoxins program. Mycotoxins are fungal toxins, which contaminate staple foods, feeds and animal source foods in most of the humid tropics and cause acute poisoning and chronic disease.

The following research questions and sub-questions were developed from the knowledge gaps identified during the development of the mycotoxin research proposal.

What is the health risk and socioeconomic impact of mycotoxins in the feed-dairy chain in Kenya?

- How do exposure, vulnerability and risk vary by gender and age?
- How does socioeconomic impact vary by gender?

What interventions can be used to prevent and control this exposure?

- What do women and men in these value chains need to reduce their occupational related exposure to mycotoxins?
- How does gender influence ability to manage risk of mycotoxins?

What indigenous practices by women and men mitigate exposure to mycotoxins at different stages of the production and consumption cycle?

- What interventions can be used to enhance and scale up these practices?
- What gender considerations influence uptake and scaling up?

Gender-responsive activities and outcomes

Key gender objectives	Key activities	Outcomes
To generate evidence on the differential mycotoxin exposure between men and women by measuring the mycotoxin levels along the critical exposure points of the maize and dairy feed value chains and in the blood and milk of actors in these value chains	Conduct gendered maize and dairy feed value chain analysis looking at the critical mycotoxin exposure points in the value chains Measure the mycotoxin levels in maize and feeds at these critical exposure points Measure mycotoxin levels in milk and blood from lactating cows fed on tested feed and/or maize Measure mycotoxin levels in milk and blood of lactating mothers who are maize and livestock feed value chain actors Measure mycotoxin levels in the blood of other men and women actors from the maize and feed value chains	Improved understanding of the gender disaggregated risks and livelihood impacts of mycotoxin exposure to farmers and key stakeholders
To identify gender-specific needs to mitigate mycotoxin exposure	Conduct needs assessments of men and women actors of the maize and dairy feed value chains	Improved understanding of the gender-disaggregated needs for the reduction of exposure to mycotoxins
To enhance the role of women in mitigating the risk of mycotoxins in the household by increasing women's access to mycotoxin risk mitigation technologies	Establish existing and effective indigenous mycotoxin risk mitigation strategies in user communities, for example, traditional fermentation of maize and grain (flour) by women Establish existing and effective non-indigenous mycotoxin risk mitigation strategies in user communities, for example, fermentation of feed (such as silage and adding brewers mash) Introduce new and effective mycotoxin risk mitigation strategies or technologies for each critical exposure point in the maize and dairy feed value chains Train women – who already have fermentation skills (since this is traditionally a woman's activity) – in other existing and new technologies for mycotoxin control to train less knowledgeable maize and dairy feed value chain actors at risk of mycotoxin exposure on integrated mycotoxin risk management strategies	Gender and value chain critical exposure point specific mycotoxin control strategies or technologies targeting women and men differently in place Increased employment or engagement of women as mycotoxin risk management technicians in the maize and dairy feed value chains Reduction in gender income disparities and decision-making power within households (including voice)

Key gender objectives	Key activities	Outcomes
To enhance gender-equitable uptake of existing indigenous as well as novel mycotoxin risk management technologies and close the gender gap in intra-household technology access and use	Affirmative action: Mobilize women into groups and target women groups for training in technology use and distribution of equipment/materials to the groups Ensure that at least 50% of trainees as novel mycotoxin control technology users and trainers are women Train men and women beneficiaries of mycotoxin control technologies in gender (for awareness) and engage them in behavioural change and communication on intra-household technology access and use	Gender-equitable intra-household access to and use of mycotoxin control technology Acceptance of women as mycotoxin risk prevention and control technicians by community Widely accepted and rapidly adopted and adapted combinations of indigenous and novel mycotoxin risk management technologies in the maize and dairy feed value chains
To increase nutritional and health benefits to men, women, boys and girls through consumption of more readily available mycotoxin-reduced (or mycotoxin-free) grain and dairy products as a result of the integrated mycotoxin risk management in grain and dairy feed	Target women and women's groups in agriculture, nutrition and health programs for education and technology dissemination in mycotoxin risk management Reduce the number of cases of foodborne illnesses caused by mycotoxins Assess health risks due to exposure to occupational hazards and conduct interventions to reduce these	Improved individual dietary diversity and calorie intake Narrowed gender disparities in food allocation and nutritional status Reduced mycotoxin burden and associated costs on women – in terms of food/feed waste; reduced production (human labour and milk by dairy animals); and money spent on diagnosis and treatment of mycotoxicoses or mycotoxin-related diseases in women, families and communities as well as in livestock
To identify best practices in integrated mycotoxin risk management for achieving maternal and child nutrition and health	Integrate mycotoxin risk management trainings in agriculture and nutrition in health programs targeted at women at different stages of their life cycles, for example, agriculture and nutrition education in ante and post natal health	Improved health and nutrition for women and for children under 24 months
To increase participation of women in mycotoxin risk management technology development and policy dialogue	Enhance participatory mycotoxin control and extension services Strengthen organizational capacity of women and women's groups to enable them to advocate for appropriate policy	Increased adoption and use of safer mycotoxin-reduced or mycotoxin-free foods by women and their families Women as individuals and in groups participate more actively and influence nutrition and health policies associated with mycotoxin control
To improve the gender skills of research and development partners implementing the integrated mycotoxin risk management	Build capacity in gender and nutrition approaches for research and development partners	Research and development partners are applying gendered approaches in their agriculture, health and nutrition projects

Gender-related activities in the research cycle (including implementation, methods, data and consultation)

Mainstreaming gender throughout the research cycle is essential for ensuring gender issues are addressed throughout the program. For new activities, an engendered research cycle will be applied across activities. For ongoing activities that did not use an engendered research cycle, where feasible, some will adapt the engendered research cycle to accommodate the activity and incorporate mid-activity correction when sufficient financial, human and time resources are available.

A gender-responsive program that uses agriculture as a vehicle for improving nutrition and health outcomes requires a comprehensive understanding of how the system works from priority setting, research and development, extension, adoption and evaluation. The program's research cycle will aim to address gender in all five stages of the system. The activities outlined below apply to all A4NH programs and were lifted, verbatim, from an earlier draft of the A4NH gender strategy (IFPRI 2012).

Research cycle approach

Priority setting

In defining the program's activities, the project will consider who are involved in the priority-setting process including the gender and discipline (agriculture, nutrition and health) of research decision-makers, researchers, implementers, end users and evaluators. The program will develop activities through a lens of food systems which is more likely to create a more 'gender-balanced picture' as it considers not only crops but also 'fish, livestock, garden production, water, trees, soil and natural resources'. A food-systems approach also goes beyond production to include 'homestead gardens, post-harvest, processing, supply chains, consumption and nutrition outcomes'. Some key questions posed by Meinzen-Dick et al. (2011a) to ask during the priority setting process include the following: Where and how are the differential needs, interests and priorities of women and men reflected? Who makes the decisions regarding the kinds of activities that will receive investment? Are there mechanisms to take into account the needs of women and men?

Research and development

The program will consider the gender and gender capacity of the agriculture, nutrition and health researchers within CGIAR and its partners (private and public sector) involved in each activity. Given team structures and gender capacity, the program may involve internal or external gender expertise to support the research and development process. Some key questions posed by Meinzen-Dick et al. (2011a) to ask during the research and development process include the following: Who are the researchers? How attuned to gender issues are they, and what support is needed?

Extension and dissemination of education

With implementing partners, the program will consider who is delivering agricultural extension as well as nutrition and health education programs, as this will influence who receives the education and technology and how receptive they are to this information. For agricultural extension, the program will clearly define the clients of the intervention instead of relying on the culturally-defined definition of a 'farmer'. The program, with implementing partners, will also consider who is delivering the extension service, how it is being delivered and its implication for spillover effects. If the extension service is mainly provided by males and to the household head, then the program and its partners need to consider the implication of how this will affect women's access to knowledge and technology. If the nutrition and health education programs are targeted mainly at women, however, then the program needs to consider the implication of men's support, acceptance and adoption of nutrition and health behaviours or interventions. Some key questions posed by Meinzen-Dick et al. (2011a) to ask during the extension and education dissemination process include the following: Who delivers extension services and nutrition and health education programs? Who receives the extension services and nutrition and health program information? Are women recognized as farmers and clients of the extension services? How are men recognized as clients of nutrition and health programs? How are the extension and nutrition and health programs delivered?

Adoption of innovations

Engendering the earlier processes of priority setting, research and development, and extension will be precursors for adopting agriculture, nutrition and health innovations. The program will, however, need to consider additional factors that constrain the adoption of agriculture, nutrition and health innovations, such as lack of necessary cash, labour, skills and property rights, each of which may differ for men and women. Some key questions posed by Meinzen-Dick et al. (2011a) to ask during the adoption process include the following: Who can and will adopt agricultural, health and nutrition innovations? Who can benefit from them? What constrains men and women from adopting these innovations?

Evaluation and impact assessment

In evaluating and assessing the impact of A4NH, the program will not only assess the costs and benefits of agricultural innovations that improve nutrition and health outcomes and how they are distributed, but also the savings that can be retained if agricultural innovations led to improved nutrition and health outcomes. The program will assess gender differences in the outcomes and impacts on men, women, boys and girls. The evaluation and impact assessment design will consider measures that are not implicitly gender biased. The program may consider, for example, not marketed production but also home consumption or micronutrient quality.

The program will feed back the lessons learned throughout this system into the priority-setting process. In addition to the general approach specified above, each component will explicitly integrate gender, when necessary, through its activities as described in the following section.

Monitoring and evaluation system

The mycotoxins program will not have a separate monitoring and evaluation system to monitor the integration of gender into the program. Engendered indicators, outputs and outcomes have been included in its monitoring and evaluation system. In monitoring and evaluating the program for gender integration, it is important to consider:

- the extent to which women's involvement in the project has increased, decreased or not changed as a result of the program;
- reduction of gender disparities in access to productive resources and control of incomes as a result of the program; and
- improvements in diets or nutritional status of individuals, particularly in areas where there are marked gender disparities in nutritional status or nutrient adequacy.

Project impacts	Outcomes	Outputs	Output indicators
Clear understanding of gendered risks and livelihood impacts of mycotoxin exposure to key stakeholders	Improved understanding of the gender-disaggregated risks and livelihood impacts of mycotoxin exposure to farmers and key stakeholders	Conducted gender-disaggregated risk assessment of mycotoxin exposure to farmers and other key stakeholders	Number of women, men, girls and boys interviewed and sampled during the assessment Documented gendered risk assessment and results of sample analyses
Clear understanding of gendered needs for reduction of mycotoxin exposure to key stakeholders	Improved understanding of the gender-disaggregated needs for the reduction of exposure to mycotoxins	Conducted men's and women's needs assessments and identified priorities based on gender needs for intervention and technology	Gender-disaggregated lists of needs Gender-disaggregated priorities for intervention and technology
Increased income for stakeholders engaged as mycotoxin control technicians	Gender and value chain critical exposure point specific mycotoxin control strategies or technologies targeting women and men differently in place	Established critical exposure points for women and men in each value chain studied Established gender-specific critical exposure point specific mycotoxin control measures	Data indicating critical mycotoxin exposure points for women and men for different value chains generated and documented List of measures for mycotoxin control for women and men at each critical control point published

Project impacts	Outcomes	Outputs	Output indicators
Women technicians have control of the income they earn during delivery of mycotoxin control services	Increased employment or engagement of women as mycotoxin risk management technicians in the maize and dairy feed value chains Reduction in gender income disparities and decision-making power within households (including women's voice)	Women involved in control of mycotoxins using established measures for women at established critical exposure control points for women Men involved in control of mycotoxins using established measures for men at established critical exposure control points for men Established employment for women and men as mycotoxin control technicians at critical exposure control points for women and men, respectively Women's claims that they control the income they earn as mycotoxin control technicians Factors (if any) hindering women from controlling the income that they earn identified and addressed	Measures for mycotoxin control specific for women and men at each critical control point established and in use Reports of payments for mycotoxin service delivery to women and men at critical control points and documented monthly (periodic) incomes for women and men Change in number of women stating that they are in full control of the income they earn Documented steps taken to address barriers to women's control of income
Assets of women mycotoxin control technicians increased and protected	Gender equitable intra-household access and use of mycotoxin control technology Acceptance of women as commercial mycotoxin risk prevention and control technicians by community Widely accepted and rapidly adopted commercially available combinations of indigenous and novel mycotoxin risk management technologies in the maize and dairy feed value chains Wide and sustained gender-equitable adoption and adaptation of novel and indigenous mycotoxin control technologies commercially supplied by local men and women technicians	**Gender-specific and disaggregated into indigenous and novel mycotoxin control technologies**, henceforth referred to as 'technologies', available for and used equitably by women and men from dual adult households Factors (if any) hindering gender-equitable intra-household access to and use of technology identified and addressed Gender-specific mycotoxin control technologies commercially available and used equitably by women and men within the community Factors (if any) hindering access to and use of technology by men and women technicians and community member households identified and addressed	Documented commercial mycotoxin control technologies available for women and men and used within the household Documented gendered factors hindering intra-household access to and use of technology Documented steps taken to address gendered barriers to intra-household access to and use of technologies Documented commercial mycotoxin control technologies available for women and men technicians and community member households Documented gendered factors hindering access to and use of technology by men and women technicians and community member households Documented steps taken to address gendered barriers to access to and use of technologies by women and men technicians and community member households Documented prices of each technology available Documented charges of all commercial mycotoxin control services

Project impacts	Outcomes	Outputs	Output indicators
Enhanced consumption of animal-source foods Increased incomes of beneficiaries from sale of surplus animal-source foods	Improved individual dietary diversity and calorie intake Narrowed gender disparities in food allocation and nutritional status Reduced mycotoxin burden and associated costs on women, in terms of food and feed waste; reduced production (human labour and milk by dairy animals); and money spent on diagnosis and treatment of mycotoxicoses or mycotoxin-related diseases in women, families and communities as well as in livestock	Increased availability to **individuals within households, disaggregated by gender and age** (henceforth referred as 'individuals'), and across **households, disaggregated by male- and female-headed** (henceforth referred as 'households'), of mycotoxin-free or mycotoxin-decontaminated human foods and livestock feeds Increased consumption of mycotoxin-free and mycotoxin-decontaminated foods by individuals and in households, and feeds by livestock, leading to increased production of animal-source foods and hence increased consumption of mycotoxin-free milk, meat and eggs among the individuals and households (increased quantities, types and quality of food) Reduced expenditure of money and time by women and men on mycotoxin-related expenses (mycotoxin burden)	Documented types, quantities and quality (mycotoxin contamination levels) of available and palatable foods and feeds disaggregated into those protected from mycotoxin contamination and those decontaminated using the available technologies Documentation of dietary diversity scores and calorie intake within and across households Documented changes in mycotoxin burden among individuals and households
Improved health and nutrition for women and for children under 24 months	Improved nutrition and enhanced consumption of animal-source foods	Increased access to and use of mycotoxin control information and technologies by women attending ante and post natal clinics.	Number of ante and post natal clinics providing mycotoxin information and prevention and control technologies to visiting women Documented monthly maternal and child weights Documented incidences and prevalence of diseases associated with mycotoxins in clinics
Mycotoxin control commercially sustained by communities and established as a policy requirement	Increased adoption and use of safer mycotoxin-reduced/free foods by women and their families Individual women and women in organizations participate more actively and influence policies related to nutrition and health associated with mycotoxin control	Enhanced consciousness about the dangers of mycotoxins and available technologies for preventing and reducing contamination when and if it occurs Created demand for demonstration of mycotoxin levels in commercial food and feeds requiring a display of mycotoxin levels on product packaging, and commercial storage facilities to undergo periodic checks of levels of mycotoxin contamination Involvement of grassroots organizations in putting pressure on policymakers to enforce mycotoxin surveillance in food, feeds and their stores	Number and gender compositions of grassroots groups that discuss mycotoxins in their agenda Number of times mycotoxins in food or feeds are discussed in grassroots group meetings Number of food or feed millers or packers complying to the demand to display mycotoxin levels of the content on product packaging Number of requests made to policymakers to enforce regular mycotoxin surveillance in food, feeds and their stores by grassroots groups Proportion of women and men willing to pay more per unit of milk, meat, eggs and livestock feeds free of mycotoxins, and how much more they are willing to pay

Project impacts	Outcomes	Outputs	Output indicators
A4NH research gender mainstreamed	Research and development partners are applying gendered approaches in their agriculture, health and nutrition programs	Gender-integrated research projects	Number of projects integrating gender throughout the program
		Strategic gender research in agriculture for health and nutrition projects	Number of projects having a strategic gender research component
			Number of gender-integrated research projects with gender assigned budgets funding specific gender integration activities

References

Agarwal B. 1997. *Bargaining and gender relations: Within and beyond the household.* FCND Discussion Paper 27. Washington, DC: IFPRI.

Bravo-Baumann H. 2000. *Gender and livestock: Capitalisation of experiences on livestock projects and gender*. Working document. Bern, Switzerland: Swiss Agency for Development and Cooperation.

CGIAR. 2012. *The CGIAR strategy and results framework: Draft action plan, 31 August 2012*. Montpellier, France: CGIAR.

CGIAR Research Program on Livestock and Fish. 2013. *Gender strategy of the CGIAR Research Program on Livestock and Fish.* Nairobi, Kenya: ILRI. (Available from https://cgspace.cgiar.org/handle/10568/32843) (Accessed 21 March 2014)

Doss CR. 2001. Designing agricultural technology for African women farmers: Lessons from 25 years of experience. *World Development* 29(12): 2075–2092.

FAO (Food and Agriculture Organization of the United Nations). 1996. *Gender: Key to sustainability and food security.* Plan of action for women in development 1996–2001. Rome, Italy: FAO.

FAO (Food and Agriculture Organization of the United Nations). 2011. *The state of food and agriculture 2010 – 2011*. Women in agriculture: Closing the gender gap for development. Rome, Italy: FAO.

Hausmann R, Tyson L and Zahidi S. 2009. *The global gender gap report.* Geneva, Switzerland: World Economic Forum.

IFPRI (International Food Policy Research Institute). 2012. *CGIAR Research Program on Agriculture for Nutrition and Health: Gender strategy.* Washington, DC: IFPRI. (Available from http://library.cgiar.org/handle/10947/2838) (Accessed 21 March 2014)

Meinzen-Dick R, Quisumbing A, Behrman J, Biermayr-Jenzano P, Wilde V, Noordeloos M, Ragasa C and Beintema N. 2011a. *Engendering agricultural research, development, and extension.* Washington, DC: IFPRI.

Meinzen-Dick, RS, Johnson N, Quisumbing A, Njuki J, Behrman J, Rubin D, Peterman A and Waithanji E. 2011b. *Gender, assets, and agricultural development programs: A conceptual framework*. CAPRi Working Paper 99. Washington, DC: IFPRI.

Njuki J, Waithanji E, Bagalwa N and Kariuki J. 2013. *Guidelines on integrating gender in livestock projects and programs.* Nairobi, Kenya: ILRI.

Pelled, LH, Eisenhardt KM and Xin KR. 1999. Exploring the black box: An analysis of work group diversity, conflict and performance. *Administrative Science Quarterly* 44: 1–28.

Quisumbing AR (ed.) 2003. *Household decisions, gender, and development: A synthesis of recent research.* Washington, DC: IFPRI.

Sreenath S, Watkins AJ, Wyatt AJ, Yearous-Algozin A, Ramakrishnan U, Webb-Girard A, Yount K, Baltenweck I, Njuki J and Randolph T. 2011. *Exploratory assessment of the relationship between dairy intensification, gender and child nutrition among smallholder farmers in Buret and Kipkelion Districts, Kenya.* Nairobi, Kenya: East Africa Dairy Development project.

ISBN 92–9146–347–7

ILRI
INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

The International Livestock Research Institute (ILRI) works to improve food security and reduce poverty in developing countries through research for better and more sustainable use of livestock. ILRI is a member of the CGIAR Consortium, a global research partnership of 15 centres working with many partners for a food-secure future. ILRI has two main campuses in East Africa and other hubs in East, West and Southern Africa and South, Southeast and East Asia. ilri.org

CGIAR

CGIAR is a global agricultural research partnership for a food-secure future. Its science is carried out by 15 research centres that are members of the CGIAR Consortium in collaboration with hundreds of partner organizations. cgiar.org