RWANDA
IFPRI

STRATEGY SUPPORT PROGRAM | POLICY NOTE 19 MARCH 2025

Synopsis: Commercialization and dietary diversity of Rwandan smallholder farmers: a focus on women and youth headed households

Emerence Mukangabo, James Warner

In the last two decades, the government of Rwanda has significantly lowered stunting among children under five years from 48% in 2000 to 33% in 2020 and recognizes dietary diversity as one the approaches to overcome malnutrition and micronutrient deficiencies. A key priority of the Second National Strategy for Transformation (NST2) is to tackle malnutrition and to reduce stunting rates among children. Therefore, using a household dietary diversity score as a proxy for household access to nutritious foods, this policy note outlines how commercialization impacts dietary diversity, with a focus on women and youth headed households. Key findings include:

- The rural smallholder farmers diet is predominantly based on cereals, roots and tubers as well as vegetables.
- Even when controlling for relevant variables, women do not have more diverse consumption patterns, however, they do, relative to male headed households, consume more diverse foods the greater their level of commercialization.
- Despite an overall lack of resources and income, youth-headed households show a positive relationship with household dietary diversity when compared to mature-headed households.
- Determinants that positively influence household dietary diversity include the level of commercialization, household non-farm assets, market access, education of the household head, the presence of children under five in the household, irrigation, land size, and livestock holdings.

Background

Crop commercialization has been shown to provide numerous benefits for farmers including increased income, poverty reduction, enhanced purchasing power, greater resilience, as well as

food security and increased food accessibility. Research also shows that gender and youth designations can influence the pathways between commercialization and nutrition. For example, spending of proceeds from crop sales can vary significantly depending on whether the household head is male or female. In addition, the age of the household head can also affect dietary consumption patterns, with older household heads having different priorities in which they typically do not access as diverse a diet as younger headed households.

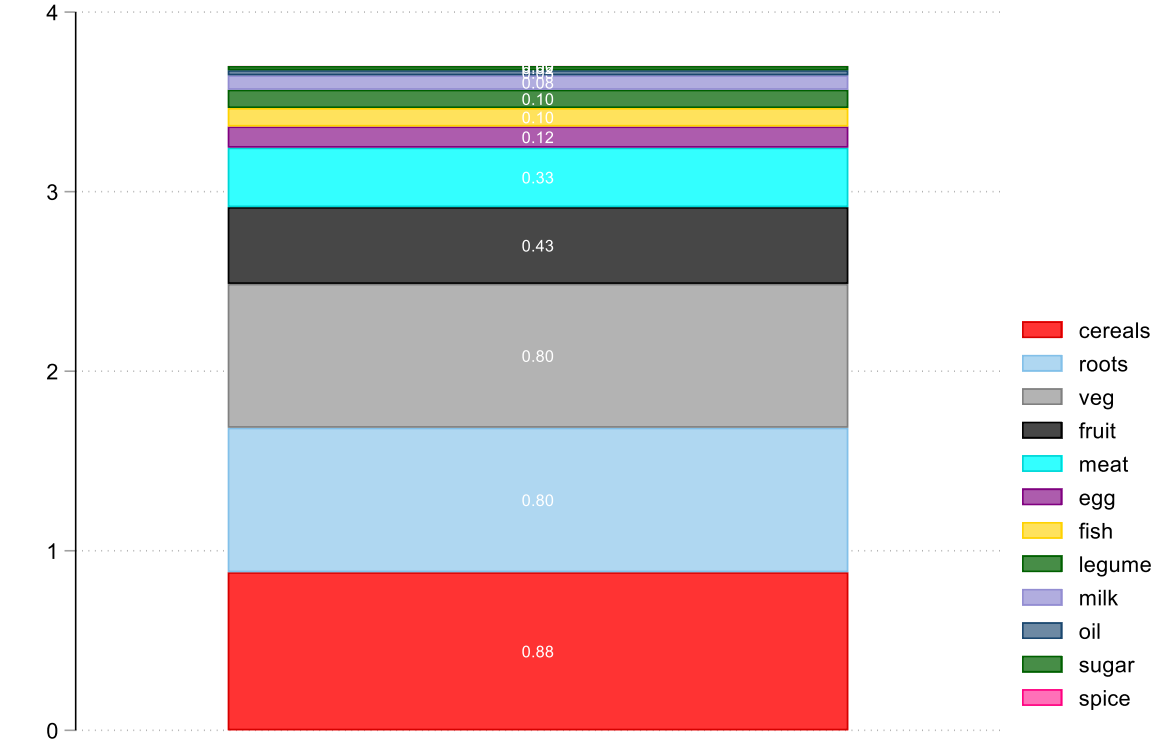
In Rwanda, the commercialization of smallholder agriculture is a central focus of Rwanda's Fifth Strategic Plan for Agriculture Transformation (PSTA 5) with the aim to shift from subsistence farming to market oriented production for economic growth stimulation and improve livelihoods. Recent research indicates that 78 percent of rural Rwandan smallholder farmers sell at least some portion of their produce, and it has been shown that commercially oriented farm households are increasingly likely to access more diverse diets than those that are not. However, there is limited knowledge about dietary diversity of more disadvantaged groups including female and youth headed households, that are typically less engaged in commercialization. Therefore, this policy note seeks to explore the key drivers that influence dietary diversity in these groups and offers practical recommendations to better achieve optimal nutrition for Rwandan society.[1]

Findings

Our results in Figure 1 indicate that the most consumed food groups by rural households, over a previous 24-hour period, are cereals (88% of all households), followed by roots and tubers (80%), vegetables (80%), fruits (43%), meats (33%), eggs (12%), fish (10%), legumes (10%), milk (8%), oil (8%) and others.

[1] For a more detailed analysis please see Rwanda SSP's Working Paper #16, Commercialization and dietary diversity of Rwandan smallholder farmers: a focus on women and youth headed households.

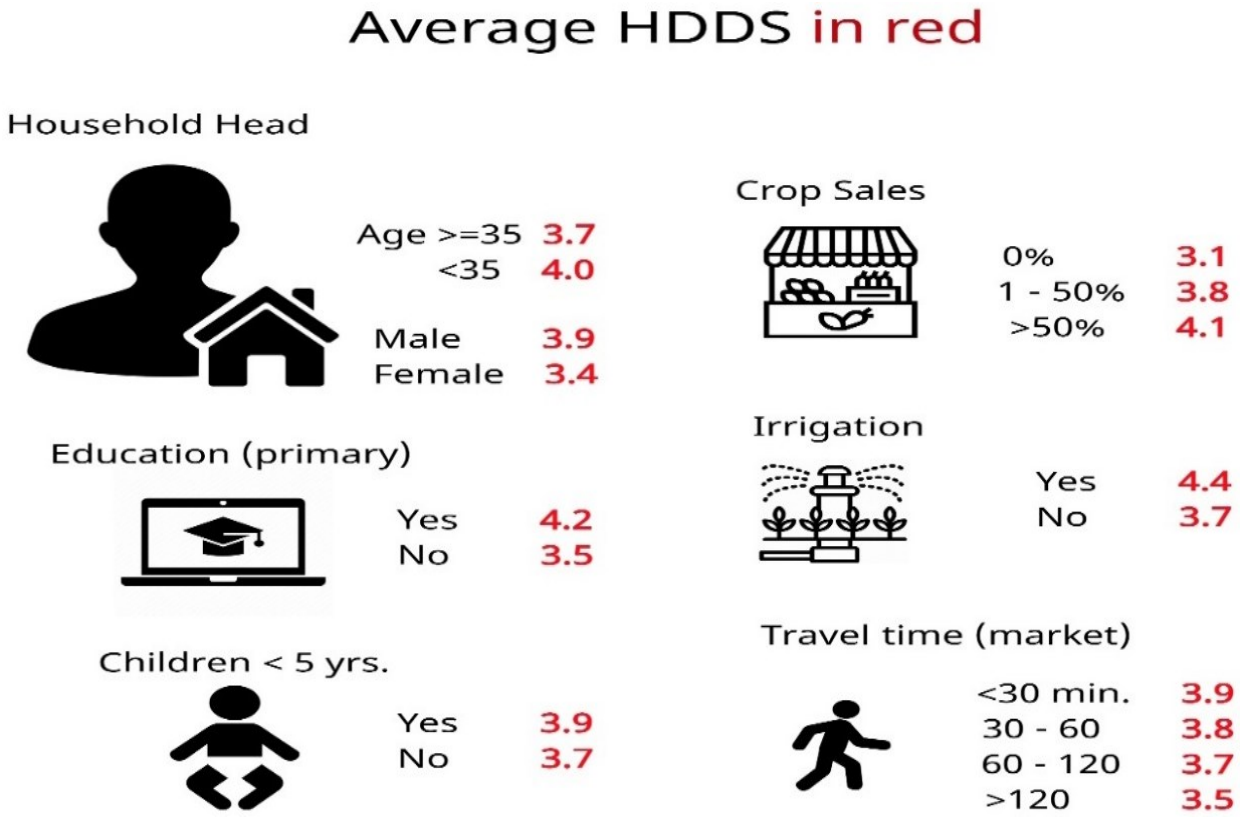
Figure 1. Total HDDS average by consumption category



Authors' calculations

The results in Figure 2 depict the Household Dietary Diversity Score (HDDS) by selected variables including age, sex, level of education of the household head, children under five years, crop market share, travel time to the market and irrigation. The findings show that, somewhat surprisingly, youth headed households have higher HDDS, and male headed households tend to have higher HDDS than their female counterparts. Education of the household head appears to contribute to the consumption of more diverse foods, as well as the presence of children under five years in the household. As the percentage level of crops sold increases, or irrigation is used, HDDS also dramatically increases. Additionally, the results also indicate that as the travel time to the market increases, HDDS decreases, an important observation regarding market accessibility, dietary diversity, and infrastructure.

Figure 2. HDDS by selected variables



Authors' calculations

An econometric model (ordered probit) was applied to relevant variables to assess their impact on HDDS, and the results are shown in Table 1. Overall, the model performed well with most variables displaying both the expected sign and statistical significance. However, even though female headed households exhibit a negative (but statistically insignificant) correlation with household dietary diversity, further results depict that higher female headed commercialization sales, increase at a greater rate than male headed households. In terms of demographics, youth-headed households indicate a positive and statistically significant relationship with household dietary diversity and households with at least one child, less than five years old, also show positive and significant correlation with HDDS. Importantly, education, crop sales and irrigation are strongly positive and statistically significant.

Table 1. Ordered Logit Results

VARIABLES	(1) HH Dietary Diversity Score
HHH Women	-0.104
HHH Women*Crop Sales (%)	0.004**
HHH Youth	0.186***
HHH Education (years)	0.0506***
HH Child under 5	0.141***
Number of Crops Produced	0.00887
Irrigation	0.277***
Inorganic fertilizer	0.00653
Dist. To Market (mins.)	-0.00133***
2nd quartile HH asset (1st quartile omitted)	0.132*
3rd quartile HH asset	0.312***
4th quartile HH asset	0.414***
Top quartile HH asset	0.580***
Crop Sales (%)	0.00310***
Landholdings (ha)	0.116**
Livestock (TLU)	0.106***
Owns Chickens	0.143**

Authors' calculations, *** p<0.01, ** p<0.05, * p<0.1

Conclusion

This policy note explores the effects of crop commercialization on nutritional outcomes of Rwandan smallholder farmers, with a focus on women and youth headed households. The key finding indicates that commercialization has a strong, positive effect on household dietary diversity, but mixed results are obtained between sub-categories of households. Overall, these results suggest that policy makers should identify potential strategies for greater household dietary diversity, particularly among more vulnerable rural households.

Recommended policy options.

- **Addressing broader economic factors, such as income support, and price stabilization** to ensure that households can access a more diverse and nutritious diet throughout the year.
- **Targeting special groups such as female headed households and mature headed households** that will yield positive results in improving their dietary diversity through nutrition education by shedding light on the benefits of diversifying their food choices.

- **Nutrition education interventions** for boosting demand for healthy foods and reducing interest in unhealthy options. Making national food-based dietary guidelines available in local languages and accessible across all platforms to inform public health strategies and foster a healthier, more sustainable food environment.
- **Introducing nutrition education into school curriculum**: This will equip children with valuable knowledge about nutrition as they grow up, fostering greater awareness of the importance of healthy eating habits.
- **Implementation of women empowerment strategies:** This will not only improve individual health and nutrition but also will yield broader social and economic benefits.
- **Facilitating market linkages and investing in market and road infrastructure** for smallholders who are confronted with longer travel times to reach markets for either selling their crops or purchasing more diverse foods.
- **Promoting agripreneurship among youth-headed households,** whose primary challenge is land scarcity, can lead to positive outcomes in improving food security, income generation and economic empowerment.
- **Encouraging investment in small livestock**. Livestock improves dietary diversity with obvious access to animal sourced foods, including eggs.
- **Expansion of irrigation infrastructure** leads to significant improvements as it plays a crucial role in crop commercialization.
- **Investing in higher value crops and adopting improved variety seeds** will yield positive results in increasing profitability and productivity.
- **Improved linkages between agriculture and nutrition** could also be emphasized through production and consumption of nutritional crops such as biofortified crops.
- **The promotion and consumption of fortified foods** will help in delivering essential nutrients particularly to vulnerable populations.
- **Future research** should focus on assessing household dietary diversity during the harvest season to explore how seasonal variations affect dietary patterns.

ABOUT THE AUTHORS

Emerence Mukangabo is a Senior Research Analyst in DSGD of IFPRI, based in Kigali, Rwanda.

James Warner is a Research Fellow in DSGD of IFPRI, and Head of the Rwanda SSP, based in Kigali, Rwanda.

ACKNOWLEDGMENTS

This policy brief was prepared under the Rwanda Strategy Support Program (Rwanda SSP), a joint initiative of the Ministry of Agriculture and Animal Resources (MINAGRI) and IFPRI. The study was made possible with the generous funding of the European Union, the United States Government, and CGIAR, which is in turn supported by contributors to the CGIAR Fund (https://www.cgiar.org/funders/). Any opinions expressed here belong to the author(s) alone and do not necessarily reflect those of the Government of Rwanda, IFPRI, CGIAR, or the funders listed above.

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
1201 Eye St, NW | Washington, DC 20005 USA
T. +1-202-862-5600 | F. +1-202-862-5606
ifpri@cgiar.org
www.ifpri.org | www.ifpri.info

IFPRI-RWANDA
KG 563 Street #7, Kacyiru
P.O. Box 1269 | Kigali, Rwanda
IFPRI-Rwanda@cgiar.org
www.rwanda.ifpri.info

The Rwanda Strategy Support Program (Rwanda SSP) is managed by the International Food Policy Research Institute (IFPRI). Funding support for Rwanda SSP is provided by the European Union (EU); and CGIAR. This publication has been prepared as an output of Rwanda SSP. It has not been independently peer reviewed. Any opinions expressed here belong to the author(s) and do not necessarily reflect those of IFPRI, EU, or CGIAR.

© 2025, Copyright remains with the author(s). This publication is licensed for use under a Creative Commons Attribution 4.0 International License (CC BY 4.0). To view this license, visit https://creativecommons.org/licenses/by/4.0.