Enhancing milk quality and consumption for improved income and nutrition in Rwanda

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Rwanda Innovation Platform meeting, 2nd April 2019 at the Hotel Mille Collines, Kigali, Rwanda
**RATIONALE**

- High levels of child malnutrition
  - 37% of children less than 5 years of age are stunted
- Several dairy development programs
  - Girinka program – increased household income and reduce child malnutrition among poor households
  - USAID Feed the Future-funded Rwanda Dairy Competitiveness Program II – 2012-2017
  - Many achievements, but challenges still exist as regards:
    - Production of high quality milk
    - Achieving competitiveness in milk market channels
    - Governance of dairy cooperatives and low value proposition to members
- Lack of evidence linking dairy value chain interventions to nutrition outcomes
OBJECTIVE 1

MAIN AIMS:
• Evaluate the impact of a social and behavior change communication (SBCC) intervention on animal source food (ASF) and milk consumption and nutrition outcomes in children 1-3 year olds and pregnant and lactating women, among Girinka beneficiaries.
• Compare ASF consumption and nutritional status in young children and women among Girinka beneficiary and Girinka eligible households.

OVERALL ACCOMPLISHMENTS:
• Randomized cells in Nyabihu and Ruhango Districts to SBCC or no SBCC
• Created sampling frames of Girinka beneficiary and Girinka eligible households
• Completed baseline nutrition survey
• Analyzed survey data
• Drafted baseline report
• Conducted formative research for the development of SBCC plan
• Developed and began implementing SBCC intervention
STUDY DESIGN - CLUSTER RANDOMIZED CONTROLLED TRIAL

115 Cells in Ruhango and Nyabihu Districts

58 Cells with ASF nutrition education

STUDY ARM 1
234 HHs with a Girinka cow

57 Cells with no ASF nutrition education

STUDY ARM 2
228 HHs with a Girinka cow

STUDY ARM 3
224 HHs without a Girinka cow (Girinka eligible)
**BASELINE RESULTS: NUTRITIONAL STATUS**

<table>
<thead>
<tr>
<th></th>
<th>Girinka and SBCC (N=234)</th>
<th>Girinka only (N=228)</th>
<th>Girinka eligible (N=224)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CHILD</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height-for-age z-score (HAZ)</td>
<td>-1.80</td>
<td>-1.61</td>
<td>-2.04***</td>
</tr>
<tr>
<td>Weight-for-age z-score (WAZ)</td>
<td>-0.74</td>
<td>-0.62</td>
<td>-0.91***</td>
</tr>
<tr>
<td>Weight-for-height z-score (WHZ)</td>
<td>0.21</td>
<td>0.25</td>
<td>0.15</td>
</tr>
<tr>
<td>Stunting (HAZ&lt;-2 SD)</td>
<td>40.6%</td>
<td>37.7%</td>
<td>47.8%*</td>
</tr>
<tr>
<td><strong>MOTHER</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body-mass index (BMI)</td>
<td>22.60</td>
<td>22.56</td>
<td>22.64</td>
</tr>
</tbody>
</table>

* p < .05, *** p < .001, *difference between Girinka only and Girinka eligible.
## DIETARY DIVERSITY & ASF CONSUMPTION

<table>
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</thead>
<tbody>
<tr>
<td><strong>CHILD</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum dietary diversity</td>
<td>51.3%</td>
<td>44.3%</td>
<td>43.8%</td>
</tr>
<tr>
<td>Any ASF consumption</td>
<td>55.6%</td>
<td>47.8%</td>
<td>43.8%</td>
</tr>
<tr>
<td>Any dairy consumption</td>
<td>44.0%</td>
<td>36.4%</td>
<td>34.8%</td>
</tr>
<tr>
<td>Cow’s milk consumption</td>
<td>9.4%</td>
<td>7.5%</td>
<td>5.4%</td>
</tr>
<tr>
<td><strong>MOTHER</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum dietary diversity</td>
<td>29.9%</td>
<td>29.8%</td>
<td>20.1%*</td>
</tr>
<tr>
<td>Any ASF consumption</td>
<td>33.3%</td>
<td>36.0%</td>
<td>21.9%***</td>
</tr>
<tr>
<td>Any dairy consumption</td>
<td>25.6%</td>
<td>28.1%</td>
<td>8.0%***</td>
</tr>
</tbody>
</table>

* p < .05, *** p < .001, *difference between Girinka only and Girinka eligible.
MATERNAL & CHILD FRESH MILK CONSUMPTION (7 DAYS)

- Girinka and SBCC
  - Mother consumed milk: 30%
  - Child consumed milk: 40%

- Girinka only
  - Mother consumed milk: 40%
  - Child consumed milk: 40%

- Girinka eligible
  - Mother consumed milk: 20%
  - Child consumed milk: 20%
**MILK FOOD SAFETY PRACTICES**

<table>
<thead>
<tr>
<th></th>
<th>Girinka and SBCC (N=64)</th>
<th>Girinka only (N=71)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk is boiled before use</td>
<td>84.4%</td>
<td>85.9%</td>
</tr>
<tr>
<td>Milk is stored at room temperature in a plastic container</td>
<td>95.3%</td>
<td>93.0%</td>
</tr>
<tr>
<td>Milk is kept for more than two hours before it is used</td>
<td>57.8%</td>
<td>50.7%</td>
</tr>
</tbody>
</table>
Used formative research and Rwandan expertise to contextualize SBCC messages for the CHW curriculum and materials of counselling cards, brochures and poster

Gained approval of materials with collaboration for implementation from RBC & NECDP

Through support from NECDP, gained district level buy-in for adoption of intervention into Annual Action Plan and monthly supervision support for intervention

Contributed ASF counselling National SBCC strategy for Integrated ECD, Nutrition, and WASH
SBCC CHANNELS

Interpersonal communication
One to-one communication at household level and small group discussions such as the community savings and lending groups & cooperatives with CHWs

Community mobilization
Public meetings through existing community channels such as the weekly parent evening meetings, community cooking demonstration sessions, public works days and international and national days of recognition

Print Media
Printed materials of counselling cards, brochures and posters
CHW training curriculum

Advocacy
Collaborate with Districts, NECDP, RBC and key stakeholders working in food and nutrition sector through the National technical and sub technical working groups
CHW TRAINING STRATEGY

A Cascade Model implemented to provide training to ToTs and delivered in three levels. ToTs chosen as CHW supervisors from Health Centers; CHWs chosen as the 4th newly elected CHW at village level responsible for Nutrition and ECD.

- **Training CHWs**

- **National Level Training of Trainers (4 TSI Staff & RBC ToTs)**
  - 2 staff TSI
  - 2 staff RBC/NECDP

- **District Level ToTs (29)**
  - Nyabihu ToTs (14)
  - Ruhango ToTs (15)

- **Cell Level CHWs (166)**
  - 85 CHWs
  - 81 CHWs
The SBCC Messages were developed for the following 6 key elements:

• Importance and **benefits** of cow’s milk and ASF consumption for PLW and young children

• Appropriate daily **quantities** of ASFs and cow’s milk for PLW and young children

• Appropriate **time to introduce** ASFs and cow’s milk for PLW and young children

• Importance of **male engagement** for maternal and child nutrition and increase of cow’s milk and ASF consumption

• Importance of identifying symptoms of **milk allergy** and intolerance and the actions to take

• Importance of **hygiene and safe handling & storage** of fresh milk
EXAMPLE OF CHW COUNSELLING CARDS

Importance and **benefits** of ASFs and milk consumption for Pregnant and Lactating Women and children 1 - 3½ years old.
EXAMPLE OF CHW COUNSELLING CARDS

1

Importance and benefits of ASFs and milk consumption for Pregnant and Lactating Women and children 1 - 3 ½ years old

- Drinking at least one cup of cow’s milk and eating a variety of foods during lactation and pregnancy helps to meet the protein and micronutrient needs for mom and baby.
- Pregnant and lactating women and children 6 months and older need to eat at least one type of animal source food daily, such as fish, eggs or meat to meet their daily nutrient requirements.
- Milk is rich in calcium needed for bone formation and has fat and proteins needed for children to grow well.
- Cow’s milk is a good source of calcium and important during pregnancy because they help your unborn baby’s developing bones form properly.
- ASFs provide multiple micronutrients simultaneously. For example, foods such as liver contain iron and vitamin A.

NOTE

If adults in the household choose not to consume ASFs and cow’s milk due to religious or cultural beliefs, the benefits and importance of cow’s milk consumption for PLW and young children should be encouraged and supported by community and religious leaders.

Cow’s milk is very good for the mothers during pregnancy and lactation as it is rich in protein (body-building), minerals (preventing disease) and other important nutrients needed to support nutrition and health of both the mother and the baby during pregnancy or when lactating.
Monitoring of monthly SBCC activities will ensure that they are implemented as planned. Progress will be measured through the list of indicators monitored monthly via a supervision checklist (to measure practice and attitude indicators):

- Number of indicators relating to milk and ASF consumption included into district action plans by July 2019 (or Dec/Jan Budget revision)
- Number of community activities conducted
- Number of households reached with SBCC messages
- Men’s involvement in training at cell and village levels
- Men’s involvement in community and household training sessions delivered by CHWs during cooking demonstration, household visits, etc.
MONTHLY SUPPORTIVE SUPERVISION

Three Stones Field Coordinators provide the following support:
• Monthly check-in sessions with Sector ToTs
• Observe selected monthly household visits and community activities
• Facilitate peer-learning in each District
• Facilitate supervision and lesson-learning events in each District

CHW TOTs on a monthly basis:
• Support village CHWs with any training updates required
• Observe 2-3 activities per month
• Report attendance, supervision observations and feedback to TSI coordinators

Village CHWs on a monthly basis:
• Conduct at least 2 Gabura Amata Mubyeyi activities in their village including HH visits, Cooperative meetings, Parents Evenings, GMP, Community Dialogue, etc.
OBJECTIVE 2

• To assess and enhance performance and capacity of dairy cooperatives to improve market access for smallholder milk producers

OVERALL ACCOMPLISHMENTS:

• Conducted AgPOSA assessments of 30 dairy cooperatives to assess performance and capacity gaps
• Selected 4 dairy cooperatives for intensive trainings and mentorship and 16 dairy cooperatives for the market facilitation intervention (“light intervention”)
• Developed the intervention plan and training materials
• Began implementing the dairy cooperatives capacity development interventions
The AgPOSA assessment conducted to gauge the performance of POs

Intensive capacity building intervention for 4 POs

As a result POs will be able to effectively grow and develop their capabilities

Market system facilitation approach for 16 POs (light touch intervention)
Increased dairy income and supply of quality milk by participating POs

More women and youth interested to join POs and take leadership roles

More farmers sell through POs

Improved governance and PO operations

POs become more attractive to farmers than alternative market channels

Improved ability to negotiate with buyers and access markets

Improved ability to acquire services and inputs

Improved ability to produce quality milk

Capacity Building Interventions
## CAPACITY DEVELOPMENT GAPS

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>CATEGORY</th>
<th>STATUS</th>
<th>RESOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial health</td>
<td>Business process</td>
<td>Poor financial reporting</td>
<td>Build the capacity of BOD and staff on financial management and use of ICT for data management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Poor record keeping</td>
<td></td>
</tr>
<tr>
<td>Effective and transparent PO leadership and management</td>
<td>Change management</td>
<td>Low PO supervision and control</td>
<td>Build the capacity of BOD and management on leadership and governance, strategic management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Poor governance structures</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low representation of women and youth</td>
<td></td>
</tr>
<tr>
<td>Access to dairy inputs and services</td>
<td>Business process</td>
<td>Lack or ineffective BDS services vis-à-vis hub model approach</td>
<td>In-house or outsourced service providers to be sought after a business case and due diligence conducted</td>
</tr>
</tbody>
</table>
## Improved Financial Management

<table>
<thead>
<tr>
<th>Intended Intervention</th>
<th>Action</th>
<th>Emerging outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved financial management</td>
<td>Desktop computers for data capture and analysis</td>
<td>4 POs started to use computers for data capture, manipulation and management. Financial decisions are taken based on data and not intuition.</td>
</tr>
<tr>
<td></td>
<td>Business performance management tool to enter and analyze financial data</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strategy development on how to reduce costs and increase milk supply</td>
<td>Business performance reviews conducted for 4 PO BODs for the FY 2018, drivers for profitability were discussed about and how to attain them</td>
</tr>
</tbody>
</table>
## Improved Financial Management Cont’d

### Milk Sales (Frw)

<table>
<thead>
<tr>
<th></th>
<th>Jan-Mar</th>
<th>Apr-Jun</th>
<th>Jul-Sep</th>
<th>Oct-Dec</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEMO</td>
<td>36,235,540</td>
<td>42,131,420</td>
<td>30,223,200</td>
<td>31,657,260</td>
<td>140,247,420</td>
</tr>
<tr>
<td>CEZONYI</td>
<td>57,536,700</td>
<td>65,419,100</td>
<td>50,715,150</td>
<td>60,973,494</td>
<td>234,644,444</td>
</tr>
<tr>
<td>COOPEKA Kayenzi</td>
<td>38,639,650</td>
<td>48,952,188</td>
<td>40,799,000</td>
<td>33,270,565</td>
<td>161,661,403</td>
</tr>
<tr>
<td>Koperative Amizero</td>
<td>33,735,035</td>
<td>42,068,300</td>
<td>41,533,200</td>
<td>41,026,255</td>
<td>158,362,790</td>
</tr>
</tbody>
</table>

### Milk Sales (Frw)

- 50,000,000
- 100,000,000
- 150,000,000
- 200,000,000
- 250,000,000
## Learning and knowledge sharing

<table>
<thead>
<tr>
<th>Intended Intervention</th>
<th>Action</th>
<th>Emerging outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning and Knowledge Sharing of PO BODs, management and role model farmers</td>
<td>Exposure visits to best performing POs</td>
<td>Visits are mutual beneficial since they involve sharing of knowledge, experiences and idea.</td>
</tr>
<tr>
<td></td>
<td>Peer to peer visits among the 4 POs undergoing the intensive capacity building intervention</td>
<td>Resulting to improved governance and management as well as efficient PO operations.</td>
</tr>
</tbody>
</table>
## BDS Services

<table>
<thead>
<tr>
<th>Intended Intervention</th>
<th>Action</th>
<th>Emerging outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linkages with business development services</td>
<td>Linkage and training of 4 POs with RTN SP for the GoR portal</td>
<td>Increased ownership of members as well as non-members who seek the Irembo services at the POs.</td>
</tr>
<tr>
<td></td>
<td>Irembo for POs to become telecenter agents.</td>
<td>Revenues generated to the POs through the use of the platform.</td>
</tr>
<tr>
<td></td>
<td>Formalization of relationships between POs and Coopers Ltd.</td>
<td>Agrovet and training services increase revenues generated at the PO level and productivity of farmers.</td>
</tr>
</tbody>
</table>
Business Development Services
NEXT STEPS

• Interventions continue
• PhD student to defend PhD proposal and collect data. Objectives include:
  – Estimation of costs and benefits to farmers of supplying milk that meets the dairy best practices
  – Identification of farmer constraints to supplying that meets quality standards
  – Assessment of consumer demand for quality milk
• Feedback to the Rwanda National Development Services on the results of the System Dynamics modelling on the cost and benefits to different value chain actors
• Microbiological analysis of milk – different milk outlets (coliforms, *Staphylococcus aureus*, *Listeria monocytogenes* and *Salmonella* spp.)