

# Ukama Ustawi ShareFair Event



INITIATIVE ON  
Diversification in East  
and Southern Africa

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# Abbreviations and Acronyms

<b>ABC</b>	Alliance Bioversity International and CIAT
<b>ACASA</b>	Accelerating the Impacts of CGIAR Climate Research in Africa
<b>ACC</b>	Agricultural Commercialization Cluster
<b>BMGF</b>	Bill and Melinda Gates Foundation
<b>BSF</b>	Black Soldier Fly
<b>CA</b>	Conservation Agriculture
<b>CCARDESA</b>	The Centre for Coordination of Agricultural Research and Development for Southern Africa
<b>CIAT</b>	International Center for Tropical Agriculture
<b>CIMMYT</b>	International Maize and Wheat Improvement Center
<b>CoS</b>	Community of Spirit
<b>CSA</b>	Climate Smart Agriculture
<b>EAC</b>	East African Community
<b>EOIO</b>	End of Initiative Outcome
<b>ESA</b>	East and Southern Africa
<b>ESG</b>	Environmental Social Governance
<b>GESI</b>	Geographic Information System
<b>IITA</b>	International Institute of Tropical Agriculture
<b>IORI</b>	International Livestock Research Institute
<b>IWMI</b>	International Water Management Institute
<b>ILRI</b>	International Livestock Research Institute
<b>IPM</b>	Integrated Pest Management
<b>KALRO Kenya</b>	Agricultural and Livestock Research Organization
<b>MMO</b>	Munda Makeover
<b>MoA</b>	Ministry of Agriculture
<b>NARS</b>	National Agricultural Research System
<b>PABRA</b>	Pan-Africa Bean Research Alliance
<b>PCO</b>	Professional Conference Organizer
<b>RIIs</b>	Regional Integrated Initiatives
<b>SDGs</b>	Sustainable Development Goals
<b>SME</b>	Small and Medium Enterprise
<b>USAID</b>	United States Agency for International Development
<b>UU</b>	Ukama Ustawi research initiative
<b>WFP</b>	World Food Program
<b>WPs</b>	Work Packages

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## **Disclaimer**

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# 1. Introduction

## BACKGROUND

East and Southern Africa is a climate hotspot, with more than US\$45 billion in agricultural production at risk from higher temperatures, shorter growing seasons and more extreme droughts and floods. Maize, a staple crop covering up to 75% of cropland in parts of the region, is particularly vulnerable and is projected to face yield declines of 15%, among other climate impacts. Many of the affected areas already have serious levels of hunger and malnutrition, with the highest burden experienced by women and youth from marginalized and vulnerable communities. A diversified and climate-smart agrifood system could stabilize the regional and global agrifood systems and socioeconomic dynamics.

The next decade will be critical for strengthening food, land, and water systems in East and Southern Africa. The region's agribusiness ecosystem has been identified as a critical engine for agricultural and economic development, climate change adaptation, as well as gender and youth empowerment. Investment in innovation, capabilities and supportive environments are essential for driving sustainable growth that benefits all.

In response to these challenges, [Ukama Ustawi](#), or in short UU (a blending respectively of Southern Africa's Shona word for "partnership" with East Africa's Swahili word for "well-being"), the CGIAR Research Initiative for Diversification in East and Southern Africa, has been working on maize-based systems in the region since 2021.

Part of this effort was the groundbreaking Ukama Ustawi ShareFair, a multi-stakeholder forum which brought together farmers, extension workers, agripreneurs and some CGIAR scientists from East and Southern Africa in March 2024. This "unconference" aimed to enhance practical farming experiences through peer-learning through addressing critical issues, such as climate change adaptation using Conservation Agriculture (CA), farm mechanization advancements (including irrigation), business planning, and promoting gender and social inclusion within the agricultural sector.

The event also acted as a feedback mechanism to inform the UU team to adjust its co-creative spaces and learning agenda on how best to impact its next- and end-users. In particular, UU has adapted its budget to include more irrigation sites and focus on areas most affected by El Niño.

The ShareFair was intentionally held in rural Zimbabwe (Masvingo) to set the tone of the event to be farmer-focused, within a rural community, and in a drought-affected area. The event also turned the usual conference assumptions on its head; it kicked off with the field trip, and PowerPoint presentations were not part of the program, instead there were practical demonstrations of co-creation workshops. The event embodied the true spirit of UU, viz; ASSESS by integrating ground-truthing through farm-level assessments and visits, APPLY by promoting the sharing of sound business models, innovations and farm management practices and SCALE by promoting people-centred, fit-for-purpose technologies across ESA and beyond. The event also served as a catalyst and blueprint for future UU ShareFair events.

As one participant pointed out, "Ukama Ustawi is diverse in all aspects, including the type of events held".

## OBJECTIVES:

- Strengthen relationships and networks among farmers in East and Southern Africa for South-South learning exchanges.
- Capture and disseminate lessons learned, case studies, and good practices in East and Southern Africa.
- Design and facilitate better meetings and workshops for farmers and extension workers.

## 2. DAY 1: A VISIT TO THE FARMERS' DEMO-FIELDS

The UU ShareFair started off with a field-visit in Ward 17, Masvingo, Zimbabwe. There were two sites which were visited by the attendees – an irrigation site led by IWMI and an expo and Conservation Agriculture (CA) mother-baby trial led by CIMMYT. The aim was to turn the usual flow of research conferences around. Starting in the field puts practice first, followed by discussions in a conference room which are guided by experiences. This also served to cement the farmers and extension workers' experience as the center and focus of the conference, not researchers.

### Site A: Small-scale Irrigation

Dr. Tinashe Dirwai (IWMI) and Dr. Dennis Choruma (IWMI) provided technical presentations on the site selection process, emphasizing factors such as topography, water yield potential, and suitability for large-scale implementation. The IWMI researchers also presented the chameleon sensor (Figure 1). The farmer on whose land the site was, also presented his first-hand experience with the equipment and farmer.

The reactions from the farmers were highly involved and showed great interest by asking questions about the equipment and the use of the sensor. They also shared their experiences on climate challenges, particularly drought, and how irrigation technology represents a transformative solution for their agricultural practices.

The key takeaways from the event included:

- **Prioritization of irrigation equipment deployment:** The El Nino drought conditions necessitate an expedited deployment of irrigation equipment to address the immediate needs of the community.
- **Access to information:** IWMI must make information and knowledge available in a simplified and accessible manner (i.e. many languages) to scale and assist farmers across the region.
- **Resource mobilization initiative:** A call-to-action was discussed on how to mobilize resources and facilitate the scaling up of the irrigation project to encompass the communities surrounding the demonstration site.



*Figure 13: IWMI researcher demonstrating and explaining Chameleon sensors to the participants.*

## Site B: Conservation Agriculture

This site had two aspects, one expo with three sites and one Conservation Agriculture (CA) demo farm tour led by the CIMMYT team (Figure 2ab). The expo stands demonstrated CA, small-scale machinery, and facilitated a gender discussion. Participants freely shared their experiences with CA, small-scale mechanization, and the gender issues they face.

**Conservation Agriculture (CA) Demo Farm:** Attendees observed a maize-mixed cropping system and a rotation plot. Notably, sections with mulch and lablab displayed greener biomass and healthier, taller maize compared to non-CA areas. The rotation plot with lablab for animal feed also showed improved health. Notably, the maize was about half of its usual, seasonal height due to the lack of rainfall.

**Small-Scale Machinery:** Demonstrations showcased affordable machinery packages available for purchase on credit. Importantly, the equipment was designed for ease of use, with women demonstrating their ability to operate tractors, including self-starting models that reduced manual effort.

**Gender Inclusiveness:** Notably, the event featured a women-led machinery purchase organization offering credit and promoting gender inclusivity. In the discussions, some gender nuances such as access to and control of land and income from agricultural produce and maize-variety preferences came out strong as issues that need capacity strengthening and gender mainstreaming by CGAIR scientists.

The key takeaways included:

- **Field-Based Learning for CA Adoption:** On-farm demonstrations (field days) of Conservation Agriculture practices serve as valuable interactive learning experiences for farmers. These events successfully integrate information sharing with practical demonstrations, fostering a gender-inclusive approach to agricultural development.
- **Promoting Gender Equality in Farm Operations:** While the cost of large-scale farm machinery can be a barrier, there are potential solutions. Investing in the development and deployment of smaller, user-friendly farm equipment specifically designed for women can address manual labor shortages and significantly contribute to increased farm productivity and gender equality in agriculture.



Figure 14: a) Farm with CA practices e.g., mulching, maize-lablab intercrop and b) small-scale machinery.

# 3. DAY 2: CELEBRATING FARMERS: SHARING AND LEARNING

## Session I: Inauguration and Welcome Remarks

The day featured opening remarks, presentations, group break-out sessions and a field-lab experiment with soils to demonstrate CA. The event commenced with opening remarks delivered by Dr. Inga Jacobs-Mata (IWMI), the UU Lead. She positioned the event as a forum to celebrate the achievements of farmers participating in the UU initiative, stating that it provided a platform for these farmers to share their best practices, lived experiences, and the challenges they face under climate-change (Figure 3). This two-day gathering embodied the core tenet of the UU initiative: fostering a collaborative environment that facilitates the dissemination of impactful solutions for climate-smart agriculture at scale. Representatives from Malawi, Zambia, Ethiopia, Kenya, Zimbabwe, Mozambique, and South Africa were acknowledged and subsequently offered greetings.



Figure 15: Dr Inga Jacobs-Mata

Dr. Jacobs-Mata further outlaid the guiding principles for the event that:

- **Everyone has something to offer:** Orientation towards active participation.
- **Connections make a difference:** Networking and participatory exercises to foster collaboration and team bonding.
- **Movement is good:** Activities that promote healthy living rather than sitting.
- **Stake and Responsibility:** Making the ShareFair a success including suggesting areas of improvement.

Dr. Isaiah Nyagumbo (CIMMYT, CGIAR Country Convener for Zimbabwe) inaugurated the workshop. He underscored the significance of CGIAR centers within the Zimbabwean context, emphasizing their extensive portfolio of over five initiatives addressing critical areas like climate change, food security, environmental sustainability, and gender equality. These initiatives solidify CGIAR's position as a global leader in improving livelihoods. Dr. Nyagumbo extended a warm welcome to all participants, especially smallholder farmers, acknowledging the challenges they face, including prolonged droughts, and their commitment to attend despite these hardships. He concluded by encouraging everyone to actively listen to the farmers and the challenges they encounter.

In his opening remarks, Dr. Christian Thierfelder (CIMMYT), scientist and UU WorkPackage (WP) 1 Lead, highlighted the Zimbabwean drought and its effect on farming as well as the coping strategies for such events. He underscored climate change as the driving force behind a "new normal" characterized by decreased and erratic rainfall patterns, shortened growing seasons, and intensified heat stress. The urgent need for practical solutions to address these challenges and use of Conservation Agriculture (CA) practices, especially minimum tillage and crop diversification, were seen as critical strategies for building resilience. These techniques, he argued, are fundamental components of achieving climate-smart agriculture (CSA), a concept aimed at increasing agricultural productivity while mitigating climate change effects. He commended the farmers' openness to adopting innovative technologies and encouraged them to actively share their experiences and build upon collective knowledge, citing his nearly two decades of collaborative work with Malawian and Zambian farmers, such as Getrude Banda, as a testament to the power of such partnerships. The success story of Banda serves as a powerful illustration of how even small-scale farmers can leverage these methods to achieve prosperity.

#### **Session icebreaker:**

- a. Video highlighting the journey to Masvingo to the farmer's field.
- b. Introduction and knowing something fun from the partner and further sharing from:
  - i. Government/Extension officers: reducing use of chemicals.
  - ii. Private sector/Small and Medium Enterprise (SME) owners: Kenya, Ethiopia, Zambia
  - iii. Research - IWMI, Alliance, CIMMYT, ILRI, CIP, National Agricultural Research System (NARS) - supporting farmers with research-based solutions.
- c. Sharing expectations for the workshop
  - i. **Chameleon sensor training:** Farmers sought hands-on training to operate this irrigation system.
  - ii. **CA implementation:** Practical workshops on reduced tillage and cover-crops were desired.
  - iii. **Climate change solutions:** Farmers requested concrete strategies to combat climate change's impact.
  - iv. **Scaling-up CA:** Collaboration with government to expand Conservation Agriculture was a focus.
  - v. **Technology and efficiency:** Farmers expressed interest in using technology and mechanization to reduce labor and costs.
  - vi. **Certificate of participation:** Participants expressed the desire to be recognised for their participation.

#### **Masvingo District leader Mr. Kenneth:**

The leader welcomed participants to Masvingo, one of the ancient cities and home to the Great Zimbabwe ruins. He highlighted the event as one that brings together farmers across Africa because the challenges they face in farming are similar, and called for resilience to achieve the Sustainable Development Goals (SDGs). He expressed thanks for the visit to the field, for personal experiences shared in the farmer fields, the leadership in support of such initiatives, and the partners working to make farmers lives better. He concluded his speech by welcoming everyone present to Zimbabwe, which is open for business and that it is "enemy to none and friend to all".

## Session II: Talk-show panel and break-out sessions

Facilitators: **Ms. Tsehay Gashaw (ILRI)** and **Dr. Ojongetakah Enokenwa Baa (IWMI)**

Ms. Gashaw began by highlighting learnings from the field gathered by the Learning Alliance under UU WP4 (Policy and Learning). She emphasized that this event was designed for knowledge exchange. To facilitate this, she asked farmers to identify a single key tool, experience, or lesson learned that they could share with their communities upon returning home. She then outlined some key messages likely to emerge from the discussions, focusing on topics relevant to CA practices:

- Combining CA with irrigation and mechanization, particularly the use of small tractors and improved machinery sharing practices (horsepower sharing).
- Expanding legume value chains for intercropping.
- Utilizing sweet potatoes within CA systems.
- Implementing thick enough mulch to enhance water retention.

These specific areas were identified as valuable takeaways for the participants.

### Dr. Enokenwa Baa: Panel of farmers on Climate Change

To open the session, a video set the scene about the three principles of CA. This video was intentionally simple to translate the concepts across different languages and without requiring translation (infographics). This was followed by a farmer panel discussion (Figure 4) on how climate change affects farmers and impacts activities, and what has changed since UU started working with farmers:



*Figure 16: Farmers on the panel, flanked by their translators*

- **Zimbabwe:** Elphas Chinyanga, a seasoned farmer with 19 years of CA experience observed increasingly erratic and shorter rainfall patterns. He currently employs mulching, a cornerstone CA practice, to conserve soil moisture. Additionally, he utilizes diverse harvesting techniques to prevent overgrazing. His eagerness to learn from colleagues in other countries exemplified the collaborative spirit fostered by the network.
- **Malawi:** Langton Kachenjere, a Malawian farmer, expressed appreciation for the established network (UU). He acknowledged the disruptive nature of climate change but emphasized the benefits of CA in

mitigating its effects. He advocated for the retention of crop residue, a core CA principle, to enhance soil fertility and moisture retention, and actively shared this knowledge with fellow farmers.

- **Kenya:** Pauline Mugambi, a Kenyan farmer with 30 years of CA experience, demonstrated the potential of CA to address social issues beyond agricultural production. She adopted CA to overcome marital challenges within her household. The increased profitability from CA has fostered greater family support. Furthermore, Pauline highlighted the importance of gender action learning methods introduced by UU, which promoted shared understanding of roles within her family. Beyond gender roles, she emphasized the importance of planting both early- and late- maturing crops to manage climate risks – a testament to her innovative approach. Pauline’s demonstration plot serves as a valuable learning resource for other farmers in the community.
- **Zambia:** Getrude Banda, a Zambian farmer who began practicing CA in 2011, exemplifies the transformative power of CA. Relating challenges she experienced such as struggling financially, lacking support from her husband, and relying on manual irrigation, Getrude’s perseverance paid off. In 2016, her husband became her biggest supporter, and Getrude received an award for being the best female farmer. Today, she empowers others by providing tractor services to fellow farmers, promoting a multiplier effect of CA adoption.
- **Ethiopia:** Gebre Besmeno, an Ethiopian farmer, underscored the importance of crop rotation in improving yields and crop-livestock farming (bee-keeping).

### Session III Group Breakout Sessions:

Climate-smart agriculture implementation in the respective countries. In this session (Figure 5) participants were divided into groups by their country of origin to make communication and information gathering more coherent since CSA is highly contextual.

#### A. Kenya

The group discussed the other best practices they employed, which included timely planting, setting of farrows, ridges, terraces and border cropping, and integrating livestock into the cropping system including crop/livestock diversification, planting of trees, worm composting/ vermin, use of biopesticides/ IPM and trip cropping – crop combinations.

It also emerged that to scale these best practices, there is need for more baby trial sites/ change baby trials to mother demos, the need to use farmer groups, innovative training approaches, and informal farmer-farmer learning or keeping record of farmers learning from others’ sites.

The main partners needed to scale best practices, included country government departments of agriculture, private service provider to leveraging successful business cases on mechanization and linking value chains to businesses, farmer organizations, NGOs and universities.

#### B. Zambia and Malawi

The UU project in Malawi focuses on promoting climate-smart agricultural practices that enhance the resilience and productivity of Malawian agriculture. Core activities, areas outside the current scope, and potential collaborators for project success are outlined below:

##### Current focus

- **Conservation Agriculture:** UU actively advocates for the adoption of CA principles, a resource-conserving approach that minimizes soil disturbance and maximizes residue cover. This technique promotes soil health, water retention, and ultimately, improved crop yields.
- **Crop associations and alley cropping:** UU encourages the use of intercropping techniques like crop associations (growing multiple crops together) and alley cropping (integrating legumes into tree alleys) to improve soil health, nutrient cycling, and overall yield diversification. These practices enhance ecological sustainability and provide additional dietary benefits.
- **Evidence-based advocacy:** UU conducts rigorous research to generate robust data demonstrating the tangible benefits of CA compared to conventional tillage practices. This data will be instrumental in convincing farmers to adopt these new methods and promoting their wider dissemination.

- **Crop diversification (maize and legumes):** we promote the diversification of cropping systems, with a particular focus on integrating maize with legumes. Legumes offer numerous benefits, including nitrogen fixation for improved soil fertility and increased protein sources in the diet.
- **Maize variety optimization:** we conduct evaluations of different maize varieties to identify cultivars best suited to local conditions. This includes a focus on drought-tolerant varieties to enhance resilience in the face of changing weather patterns and climate variability.
- **Strip cropping systems:** we explore the potential of strip cropping systems as a method for further diversifying crops and optimizing land use efficiency. This technique holds promise for improved resource utilization and increased overall agricultural productivity.

#### Areas for future exploration:

- **Mechanized conservation agriculture:** while mechanization can play a role in CA, this work package does not currently address this aspect. Future endeavors may explore the integration of appropriate mechanization technologies.
- **Livestock diversification:** the integration of livestock is not a primary focus within this work package. However, future collaborations may explore the potential synergies between livestock and sustainable cropping systems.

#### Potential partners:

To maximize the project's impact and achieve its goals, we are actively seeking collaboration with the following organizations:

- Government: Ministry of Agriculture (Malawi)
- Non-profit: Total Landcare Malawi
- International Research Institutes:
  - CIMMYT
  - CIAT
  - IWMI
  - CIP Malawi

By working alongside these key stakeholders, the UU project in Malawi aims to empower Malawian farmers with sustainable and productive cropping practices, leading to a more resilient and food-secure future.



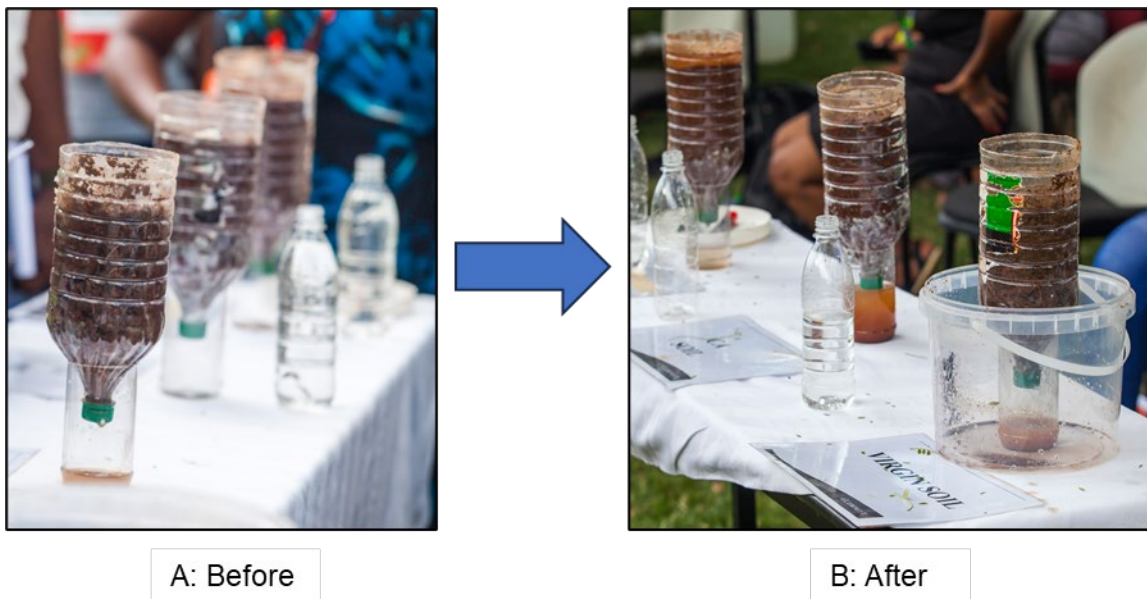
**Figure 17:** Group in breakout discussion

## Session IV: Field Lab

This was the first of the field labs during the course of the ShareFair. These labs were spread throughout the event to bring research into the event and create constant links to farming practice. There were also capacity building activities. The first field lab was set up to demonstrate the effect of CA on soil structure and composition using various approaches as shown below.

### Experiment A: Aggregate Stability

The experiment investigated the aggregate stability of various soil types through submerged dispersion testing. Three treatments were evaluated: virgin soil, CA soil, and conventionally tilled soil (Figure 6). Virgin soil exhibited superior resistance to breakdown, with minimal dispersion due to its intact soil structure and strong interparticle forces. Conversely, conventional tillage resulted in accelerated dispersion, signifying structural degradation. This highlights the positive impact of CA practices on soil health. By promoting the re-establishment of natural aggregation processes, CA fosters a more resilient soil structure, ultimately benefiting agricultural productivity.



*Figure 6 Aggregate stability*

### Experiment B: Water Infiltration

The experiment investigated water infiltration, particularly focusing on the vertical movement of water (percolation) through the soil profile to replenish aquifers accessible to plant roots. Conventional tillage practices are observed to induce soil compaction, resulting in impeded infiltration due to degradation of soil structure. This negative impact manifests as a surface seal, rendering the soil highly susceptible to erosion. Conversely, both undisturbed (virgin) and conservation agriculture (CA) soils promote water percolation, facilitating efficient drainage and downward water movement (Figure 7).



**Figure 7** Water infiltration A: Before

B: After

### Experiment C: Run-off Trial

This investigation examines the susceptibility of three soil types to surface runoff: virgin soil, conventionally tilled soil, and soil under a CA regime. Two experiments were conducted. The first evaluated bare soil from each treatment, assessing the impact of rain on runoff and erosion. The second experiment employed a mulching treatment on all three soil types (Figure 8). The experiments are considered complementary. The first isolates the effects of raindrop impact on bare soil, influencing surface runoff and erosion. Observations from the first experiment revealed that runoff from virgin soil displayed minimal turbidity, whereas runoff from conventionally tilled soil exhibited high sediment load. Runoff from CA soil displayed a moderate level of turbidity. The second experiment, incorporating mulch across all treatments, demonstrated a further reduction in turbidity of runoff from virgin soil. This finding highlights the effectiveness of mulch in mitigating soil erosion by attenuating the impact of raindrops on loose soil surfaces. Collectively, these experiments illustrate the efficacy of CA practices, such as mulching, in minimizing soil erosion.



**Figure 18** Run-off Trial

## Afternoon Sessions

### Session I: Diversification, Integrated Pest Management (IPM), Minimum tillage and Soil Fertility

The session was facilitated by Dr. Blessing Mhlanga (CIMMYT) who built on the morning sessions, but delved deeper into the practical application of CA and its three core principles: minimal soil disturbance, permanent soil cover, and diversified crop rotations. How these principles work together to enhance farm's health and productivity was discussed with challenges and how to overcome them.

- **Transition to no-till:** Shifting from traditional tillage practices to no-till can initially lead to increased weed pressure. However, this can be effectively managed through proper training in weed identification, suppression techniques, and the use of cover crops. Cover crops act as living mulches, smothering weeds and reducing their germination rates. Herbicides can also be employed strategically, but with a focus on minimizing their impact on soil health.
- **Market diversification for new crops:** Integrating new crops into your rotation can be an excellent strategy for improving soil health and pest control. However, it is crucial to consider market realities. Before committing to a new crop, research high-value options with established local markets. This ensures you'll have buyers for your harvest, maximizing the profitability of your diversification efforts.
- **Livestock integration with residue retention:** CA emphasizes maintaining crop residue on the soil surface. However, this can pose a challenge for farmers who rely on livestock grazing. Here, solutions like rotational grazing systems or designated feeding areas can be implemented. This allows livestock to graze on specific areas while preserving crop residue on the rest of the field, maintaining soil cover and its associated benefits.

By proactively addressing these challenges, one can successfully implement CA and unlock its full potential. A well-managed CA system fosters improved soil health, increased water retention, and enhanced overall farm resilience – all factors that contribute to a more productive and sustainable agricultural future.

### Session II: Group breakout sessions

#### 1.1.1. Group 1: Diversification crop rotation facilitated by Dr. Christian Thierfelder

This session explored diversification strategies within CA practices across various ESA countries, highlighting both the agronomic benefits and implementation challenges encountered.

#### Diversification Strategies: Intercropping vs. Rotation

Choosing the optimal approach:

The selection between intercropping (planting multiple crops concurrently) and rotation (sequentially planting different crops on the same land) hinges on land availability:

- **Smaller landholdings (e.g., Kenya, Malawi):** Due to limited space, intercropping is the more practical approach. Examples include maize intercropped with pumpkins, groundnuts, pigeon peas, or cowpeas (Malawi) or maize and beans (Kenya, Malawi).
- **Larger landholdings (e.g., Zambia):** Rotation is recommended to maximize long-term soil health and fertility. Common rotations include soybean, cowpea, and groundnut.
- **Ethiopia:** Employs intercropping of maize with beans and practices rotation with vegetables or sorghum and beans.
- **Zimbabwe:** Utilizes rotation with soybeans, maize, and cowpeas.

#### Financial Considerations for CA Diversification:

- **Market access:** Limited market availability for certain crops, like pigeon peas in Malawi, can result in lower prices for farmers.
- **Seed quality:** Ensuring access to improved/certified seeds can be an issue in Kenya, Ethiopia, and Malawi, with the risk of encountering counterfeit seeds.
- **Input availability:** Farmers might face difficulties procuring specific inputs or chemicals required for certain crops.
- **Labor requirements:** Intercropping in Kenya can be more labor-intensive compared to monoculture.
- **Formal market integration:** Formal markets might be unavailable, leaving farmers reliant on informal channels with lower prices.

## Gender dynamics and crop control:

- **Women and intercropping:** Intercropping holds greater significance for women in Ethiopia and Malawi, where they often cultivate legumes alongside other crops. This ensures household access to nutritious food. Additionally, some crops traditionally considered "women's crops" might have lower market value but offer higher nutritional benefits.
- **Cash crops and gender:** Soybean, a valuable cash crop, is often prioritized by men.
- **Land ownership and control:** Land ownership and control over crops vary. In Malawi, for instance, groundnut and soybean might be considered "men's crops" in large-scale farming but become "women's crops" in smaller plots.

**Key Takeaway:** Promoting CA diversification strategies should encourage growing crops that empower both men and women to generate income equally, transcending traditional gender barriers. This ensures equitable participation and benefits for all stakeholders within the agricultural system.

### 1.1.2. Group 2: Pests and weed management facilitated by Dr. Boaz Waswa (The Alliance and CIAT)

**Significant Pest Pressures:** Agricultural production faces a multitude of destructive pest threats, including:

- Insect Pests: Fall armyworm, beetles, aphids, maize stalk borer, cutworms, termites, and crickets.
- Avian Pests: Quelea birds pose a significant threat to crops.

**Prevalent Crop Diseases:** Legume Diseases such as root rot in legumes, maize lethal necrosis and cowpea rust.

#### Solutions:

**Integrated Pest Management (IPM):** A holistic approach promoting long-term control and minimizing reliance on singular methods is crucial.

**Chemical application:** While effective, chemicals like Emanectin and Benzoates should be used strategically to mitigate resistance development and environmental impact.

#### Environmentally friendly Strategies:

- Biopesticides derived from natural materials like chili offer a sustainable alternative.
- Push-pull technology utilizes companion planting to disrupt pest life cycles.
- Implementing strategic crop rotations disrupts pest lifecycles, reducing populations.
- Physical deterrents such as scarecrows can be employed for avian pest control.

#### Disease management strategies:

**Resistant seed selection:** Utilizing certified seeds with inherent resistance is a critical preventative measure.

**Seed treatments:** Chemical or biological seed dressings/coats, such as those containing Trichoderma fungus, can protect seedlings from diseases.

**Soil fertility optimization:** Maintaining optimal soil health promotes plant vigor and disease resistance.

By adopting a comprehensive IPM approach that combines these strategies, farmers can effectively manage pests and diseases, ensuring agricultural sustainability and safeguarding their livelihoods.

#### Financing:

- Government programs e.g., *Pfumuudza*.
- Self-financing.
- Awareness on chemical use.
- Encourage use of biopesticides for healthy crops.

#### Gender:

Varying, but men play a bigger role on purchasing, and women on application (health implications).

### 1.1.3. Group 3: Crop residue and minimum tillage facilitated by Dr Blessing Mhlanga

This session explored the practical considerations for farmers transitioning to minimum tillage and crop residue management practices. It highlighted the challenges encountered, their potential financial implications, and how these issues can vary depending on social factors.

#### Challenges and Solutions:

##### a. Equipment costs:

**Challenge:** Rippers and jab planters can be expensive (around \$25 for a ripper).

### Solutions:

- **Cooperatives:** Sharing equipment costs through group ownership.
- **Subsidies:** Government or NGO programs offering financial assistance.
- **Service Providers:** Hiring services for ripping and planting.
- **Mechanization:** Investing in combined ripper-planter tools or two-wheel tractors for ripping.
- **Permanent Raised Beds:** Reduces the need for repeated basin formation.
- **Labor and Precision:** Investing in mechanization will free up time laboring and is much more precise.

### Challenges:

- Basin formation can be labor-intensive.
- Dibble sticks can be easily disturbed by animals.
- Achieving consistent depth and spacing with manual tools can be difficult.

### Solutions:

- **Mechanization:** Utilizing basin diggers, permanent raised bed planters, or combined ripper-planter tools can improve efficiency and precision.

#### b. Weed Management:

**Challenge:** Minimum tillage can initially lead to increased weed pressure.

#### Solutions:

- **Herbicides:** Selective herbicides can be used for weed control.
- **Cover crops:** Legumes like lablab or Mucuna can suppress weeds while adding nutrients to the soil. Cover crops can be planted as off-season options.
- **Push-Pull technology:** Interplanting specific companion plants can attract beneficial insects that prey on pests or repel them.

#### c. Time to results and nutrient management:

**Challenge:** It may take time to see the full benefits of minimum tillage practices.

- Additionally, decomposing crop residues can temporarily tie up nutrients.

#### Solutions:

- **Clear business case:** Educating farmers on the long-term economic benefits of increased soil health and reduced erosion.
- **Fertilizer management:** Strategic use of fertilizers to address any temporary nutrient deficiencies.
- **Ripper cutters:** Adding a cutting attachment to the ripper can prevent residue from accumulating and hindering operation.

### Are these challenges similar depending on different groups (social status, gender, age)?

**Women, Elderly, and Youth:** Access to equipment and potential dangers associated with machinery use might be a barrier to women. Exploring alternative solutions like hand tools specifically designed for minimum tillage, or offering training on safe operation of machinery, can be beneficial.

#### 1.1.4. Group 4: Soil fertility, facilitated by Dr. Isaiah Nyagumbo (CIMMYT)

The group discussed numerous challenges that hinder effective soil management practices, their financial implications, and potential solutions, with a particular focus on gender dynamics and social disparities.

#### Challenges:

- **Suboptimal fertilizer use:** The widespread practice of applying fertilizers without prior soil testing leads to inefficiencies. Farmers may over or under-apply nutrients, resulting in economic losses and potential environmental damage.
- **Soil erosion:** Unsustainable land management practices such as deforestation and overgrazing exacerbate soil erosion, a significant threat to soil fertility and long-term productivity.
- **Fertilizer availability and affordability:** Fluctuating fertilizer prices, coupled with limited access for resource-constrained farmers, can hinder adoption of best practices. Additionally, the effectiveness of fertilizer subsidies may be hampered by logistical issues.
- **Manure management:** While manure offers a cost-effective alternative to fertilizer, its utilization is often limited by labor-intensive collection, storage, and application, especially on smaller farms.

#### Gendered implications:

- **Decision-making disparity:** Traditional gender roles often assign men primary decision-making authority regarding manure use and soil management practices, potentially limiting women's influence on these crucial aspects of agricultural sustainability.

- **Training imbalance:** Training programs focused on soil fertility management may disproportionately target women, who may lack the decision-making power to implement the learned techniques.
- **Cash crop control:** In some contexts, men may have primary control over cash crop decisions, potentially leading to imbalanced soil management strategies that prioritize short-term cash crop yields over long-term soil health.

#### Financial considerations:

- **Labor costs vs. benefits:** Manure application, while cost-effective in terms of materials, requires significant labor, impacting its overall cost-efficiency.
- **Composting variability:** Implementing and maintaining composting systems can be labour-intensive, with the quality of the final product varying depending on the materials used, potentially affecting its effectiveness as a soil amendment.

### Session III: Mechanization, irrigation, and gender inclusion facilitated by Dr. Abdul Matin (CIMMYT)

The session focused on optimizing agricultural practices through appropriate mechanization and irrigation, considering gender and social factors. The session opened with a video case study. This technology introduction will likely discuss its adaptability to various farm sizes and resource limitations.

#### Content Breakdown:

- **Overcoming obstacles:** Addressing challenges faced in implementing mechanization, such as potential barriers for different demographics (gender, age) and exploring solutions for equitable access.
- **Smarter irrigation:** Showcasing irrigation methods that enhance harvest yields and improve water management.
- **Lightening the load:** Demonstrating how mechanization can reduce manual labor requirements, potentially improving worker productivity and well-being.
- **Cost considerations:** Analyzing the cost implications of adopting mechanization, possibly including financing options or economic impact assessments.

### Breakout Session

#### 1.1.5. Group 1: Small-scale irrigation, facilitated by Desalegne Tegegne (IWMI)

- **Water source:** Surface water e.g., river /springs and appropriate technologies e.g., solar pump or ground water and water harvesting from rain.
- **Water abstraction:** Technologies for lifting water e.g., solar/manual pump.
- **Water application technologies:** Sprinklers, drip, flood, microjet, rain hose.

#### Challenges:

- Maintenance of equipment.
- Drip systems often block.
- Initial capital investment/costs
- Lack of technical knowledge to operate the equipment.
- Water quality for irrigation.
- Lack of extension service providers.
- Lack of permanent water sources (both dams and boreholes).
- Lack of accessibility or prohibitive costs for drilling machines for water holes/drilling rigs.
- Type of soil and land topography - seepage.
- Perception/awareness creation - e.g., perception on costs.

#### Solutions:

- Use of filters and chemicals to reduce salt - avoid blockage.
- Dam lining.
- Capacity building - training, water user associations/community-of-practice for sustainability.
- Cooperatives to pull together to reduce costs.
- By-laws - legislature, policies that encourage small-scale purchases by governments.
- Financial literacy - educate on planning to purchase smaller irrigation equipment.
- Storage facilities - to last long and fencing to keep off intruders.

#### Gender issues:

- Managing bulky irrigation may be easier for men because it involves some initial hard labor.
- Women may face financial challenges.
- Manual technologies are a challenge for women.

### 1.1.6. **Group 2: Mechanization, facilitated by Dr. Abdul Matin (CIMMYT)**

This session identified key impediments hindering the widespread adoption of small-scale farm mechanization technologies.

- **Financial barriers:** High initial equipment costs pose a significant challenge for many resource-constrained farmers.
- **Knowledge and awareness gaps:** A lack of awareness regarding available technologies and their potential benefits hinders adoption rates. Farmers may not be fully informed about the positive impact mechanization can have on their efficiency and productivity.
- **Efficiency concerns:** Existing equipment may not adequately address critical issues such as inefficient seeding practices or high labor requirements.
- **Skill shortfall:** A shortage of skilled labor can limit the effective operation and maintenance of machinery, hindering its full potential. Farmers may lack the necessary technical knowledge and practical skills to utilize the equipment effectively.
- **Gender bias:** Certain equipment designs may be considered too cumbersome or technically complex for women to operate comfortably, creating an unintentional gender gap in technology adoption.
- **Uneven terrain:** Uneven field conditions can pose operational challenges for some types of machinery, limiting their suitability for certain farms.
- **Adaptation needs:** "Off-the-shelf" solutions may not be universally applicable and require local adaptation to ensure optimal performance on diverse farms.
- **Land size constraints:** The effectiveness and practicality of some machinery can be limited on farms with small landholdings.
- **Infrastructure limitations:** The lack of dedicated storage and maintenance facilities can be a logistical hurdle for some farmers considering mechanization.

#### **Proposed solutions for wider adoption:**

The session also explored promising solutions to overcome these identified challenges:

- **Financing mechanisms:** Implementing group purchasing schemes and establishing financial support programs can make equipment more accessible and affordable for a wider range of farmers.
- **Local production and subsidies:** Encouraging local manufacturing with targeted subsidies can improve affordability and increase equipment availability.
- **Awareness campaigns:** Utilizing mass media platforms like television programs featuring industry leaders can raise public awareness and generate interest in the benefits of small-scale mechanization.
- **Tailored financial products:** Developing financial products specifically designed for mechanization purchases through banks, cooperatives, and NGOs can provide much-needed financial support for farmers.
- **Knowledge transfer and skill development:** Providing comprehensive training programs on operating and maintaining equipment, including precision agriculture (pa) tools like GPS and localized preventive maintenance practices, can empower farmers and enhance their technical capabilities.
- **Capacity building initiatives:** Offering training programs that address both the technical aspects of using the equipment and the business management skills necessary for successful implementation can equip farmers for long-term success.
- **Addressing terrain challenges:** Land leveling initiatives or the development of locally adapted equipment designs can address the challenges posed by uneven terrain.
- **Spare parts and support systems:** Ensuring easy access to spare parts, providing comprehensive follow-up guides from suppliers, and fostering local manufacturing capabilities for spare parts can significantly improve equipment maintenance and lifespan.

#### **Promoting gender inclusion**

The session also emphasized the importance of promoting gender inclusion in the adoption of small-scale mechanization:

- **Ergonomic design considerations:** Developing equipment with ergonomic features and providing appropriate clothing options for women farmers can create a more inclusive environment.
- **Addressing weight and complexity:** Designing machinery with reduced weight and complexity can improve accessibility for women and older farmers, expanding the user base.
- **Shared ownership models:** Exploring strategies like shared ownership or cooperative models for equipment can help bridge the gender gap in machinery ownership.

### 1.1.7. **Group 3: Gender and Social Inclusion facilitated by Dr. Ojongetakah Enokenwa Baa (IWMI)**

This section highlights the specific challenges women face in adopting and utilizing small-scale farm mechanization technologies, promoting gender equity in this critical agricultural development area.

#### **Gender bias in machine design:**

- **Overlooking ergonomics:** Current designs often fail to consider the physical limitations and anthropometrics of women farmers. For example, the cranking mechanism on two-wheel tractors can be difficult for women to operate due to limited upper body strength.
- **Weight and usability issues:** Heavy equipment like basin drillers can be physically demanding and impractical for women to use safely and effectively. Additionally, tractor seating may not be designed to accommodate women's body shapes, leading to discomfort and potential safety hazards.
- **Information barriers:** Inaccessible operational manuals written in complex language exclude women who may have lower literacy levels, hindering their ability to learn how to operate and maintain the machinery.

#### **Financial and ownership limitations:**

- **Unequal access to capital:** Women farmers often face greater difficulty securing financing due to limited land ownership or discriminatory lending practices, further restricting their ability to purchase equipment.
- **Gender gap in equipment ownership:** Traditional ownership patterns may favor men, making it challenging for women to gain access to machinery, even within family units.

#### **Environmental and topographic challenges:**

- **Uneven terrain and slippery conditions:** Difficult terrain and slippery areas, as seen in some regions like Malawi, can pose safety risks and operational limitations for women using machinery.

#### **Proposed solutions to promote gender inclusion:**

- **User-centered design:** Developing machinery with ergonomic principles in mind, incorporating features like easy-to-use starters on two-wheel tractors instead of manual cranking mechanisms, will make equipment more accessible and user-friendly for women.
- **Integrated machine design:** Designing equipment with integrated working positions, such as seats on planters for two-wheel tractors, can reduce fatigue and improve working conditions for women farmers.
- **Participatory design approach:** Encouraging engineers and designers to collaborate directly with women farmers during the design and development process will ensure their specific needs and challenges are addressed.
- **Automation for accessibility:** Exploring automation options for specific tasks can make certain equipment more accessible for women with disabilities or physical limitations.
- **Group ownership models:** Promoting community-based ownership or cooperative purchasing models can provide greater access to machinery for women farmers who may lack the individual resources for outright purchase.
- **Financial support mechanisms:** Implementing targeted subsidy programs for women-led organizations or female farmers can help overcome financial barriers to acquiring essential equipment.

#### **Building capacity for all:**

- **Comprehensive training programs:** Providing gender-inclusive training programs that address both operation and maintenance of machinery, empowering women with the technical skills and knowledge required for successful implementation.
- **Policy advocacy:** Lobbying for government policies that promote equal access to mechanization resources and financing for women farmers, creating a more equitable environment for agricultural development.

By addressing these gender-specific challenges and implementing the proposed solutions, stakeholders can ensure that the benefits of small-scale farm mechanization are accessible to all, fostering a more inclusive and productive agricultural sector.

**Additionally, the section acknowledges the importance of youth inclusion in agricultural mechanization:**

- **Capacity building for young farmers:** Providing training programs specifically designed for young people, equipping them with the technical skills necessary to operate and maintain machinery.
- **Awareness campaigns:** Educating young people about the evolving technologies in agriculture, such as the shift from animal-drawn equipment to mechanized solutions, can help them adapt and prepare for future advancements.
- **Addressing land access:** Exploring solutions to the challenge of limited land access for young farmers, such as land inheritance reforms or alternative land use models, can create opportunities for their participation in mechanized agriculture.
- **Incentives for youth participation:** Developing programs or incentives that encourage young people to enter the agricultural sector can ensure a future generation of skilled and engaged farmers who can leverage the benefits of mechanization.

# 4. DAY 3: AGRIBUSINESS AND IMPACT STORIES

## Session I: Recap by Ms. Nohayi, Ngowenani (IWMI) and Dr. Nicoletta Buono (ILRI)

This session focused on gleaning valuable insights from the events of Day 1, specifically the demonstrations and talks led by various participating groups. Utilizing post-it notes, the session aimed to capture key takeaways and aspirations for the future of UU.

### Motivations and inspirations:

The session explored what initially inspired UU members to participate in the ShareFair event. The session also delved into what aspects of the ShareFair event resonated most with Ukama Ustawi members. This included specific demonstrations, talks, or networking opportunities. Conversely, the session may also reveal aspects that were deemed less valuable or perhaps required improvement.

### Key Takeaways:

- **Soil health:** the importance of cover crops and mulching for healthy soil was identified as a valuable takeaway. This knowledge can be instrumental in promoting sustainable practices within Ukama Ustawi.
- **Global perspective:** The site visit, designed to showcase the impact of climate change on agriculture across different countries, was recognized as a powerful tool for fostering a global understanding of the challenges faced by farmers worldwide. This broader perspective can inform Ukama Ustawi's approach to local agricultural development.
- **Bridging the generational gap:** The session acknowledged the potential challenges associated with generational differences in the adoption of new farming technologies. UU can leverage this insight to develop strategies that bridge the gap and encourage knowledge transfer between generations.
- **CA:** The experimentation with CA principles, particularly the implementation of its three core tenets, was identified as a valuable learning experience. This practical application can serve as a foundation for UU's exploration and promotion of CA practices.
- **Mechanization in CA:** The session specifically highlighted the discussions surrounding the mechanization of CA techniques. This suggests an interest in exploring the potential benefits and challenges of integrating machinery into UU's vision of sustainable agriculture.

## Session II - Agri-Entrepreneurs Panel

In the session, agri-entrepreneurs discussed their motivation, the challenges, their journey and future of their businesses. The point was to bring entrepreneurs who are farmers themselves to inspire, share and open the horizon of the farmers in the room as to the possibilities of their activities beyond subsistence farming as they know it. These companies are supported by UU WP4 (accelerator) or are implementation partners of UU.

### 1.1.8. LERSHA, Ethiopia

Lersha is an Ethiopian agricultural technology company designed to empower smallholder and commercial farmers. Founded by a university lecturer to address underutilized farmland, it began by providing mechanization services and has since transformed into a one-stop digital platform offering various agricultural resources.

Lersha collaborates with implementation alliances, including NGOs like CIMMYT and Alliance, to provide a comprehensive suite of services:

- **Mechanization:** access to machinery and equipment rental.
- **Access to finance:** facilitation of digital credit for farmers.
- **Agro-climate advisory and fertilizer recommendation:** science-based guidance on crop management practices tailored to local weather conditions.
- **Market linkage and facilitation:** Connecting farmers with buyers and streamlining the aggregation process.

Lersha's field support network leverages a mobile app and call center staffed by extension agents, many of whom are fresh graduates. This combined approach ensures farmers receive both digital tools and on-the-ground assistance.

#### 1.1.9. **Insectary Black Soldier Fly (BSF), Kenya**

Recognizing the environmental limitations of traditional waste disposal methods, Insectary BSF, a Kenyan company, sought innovative solutions. A field trip to Ugandan pig farms employing Black Soldier Fly (BSF) larvae for waste management sparked the potential for this technology. Partnering with the International Centre of Insect Physiology and Ecology (ICIPE), Insectary BSF conducted trials utilizing BSF larvae to convert potato peels and pig manure. Leveraging BSF technology, Insectary BSF offers a sustainable approach to managing various organic waste streams, including animal manure and food waste.

**Value Proposition:** This innovative process generates two key products:

- **High-Quality Protein Source:** Nutrient-rich BSF larvae are offered as a sustainable protein component for animal feed formulations.
- **Organic Fertilizer Production:** The by-product of BSF larvae production, known as frass, is transformed into a premium organic fertilizer, promoting sustainable agricultural practices.

By diverting organic waste from landfills and producing valuable agricultural inputs, Insectary BSF demonstrates a comprehensive and environmentally responsible approach to waste management.

#### 1.1.10. **Batian Nuts, Kenya**

Kenyan company specializing in nut processing, tackles the issue of post-harvest loss by collecting and processing surplus macadamia and groundnut harvests from smallholder farmers in the Meru region. They primarily cater to the international market, exporting high-quality nuts to regions like the United States, Europe, and Asia. Their processing methods rely on traditional techniques, ensuring a focus on quality over large-scale, highly mechanized operations. However, this approach makes them vulnerable to fluctuations in global market prices for these commodities. Additionally, unpredictable weather events and natural disasters can disrupt harvests and impact their supply chain.

#### 1.1.11. **Stable Foods, Kenya**

Stable Foods is a Kenya-based food manufacturing business. The owner identified the need for irrigation because Kenya is semi-arid in some areas. Stable foods provides irrigation through partners by solar irrigation and mobilizes communities. It further provides markets for the produce.

#### 1.1.12. **Organic Farm, Zambia**

A certified organic farmer in Zambia, widely recognized as the best in the country. They began their journey as a vegetarian with a passion for gardening. By utilizing locally sourced resources, they pioneered crop propagation techniques. Their success was further amplified by leveraging social media to generate interest. Now managing a 40-hectare farm, they continue to thrive on readily available resources.

## Breakout Session: The Business Model Canvas facilitated by Nora Hanke-Louw (IWMI)

This session focused on completing a basic business plan. The aim was to facilitate farmers into thinking about their farm as an agribusiness enterprise - in essence all farmers are also businesses. In the session, a business model canvas (Figure 9) was presented with sections that farmers were requested to fill-in/complete.

Business Model Canvas		Designed for:	Designed by:	Date:	Version:
<p><b>8. Key Partners</b> Who are our Key Partners? Who are our key suppliers? Which Key Resources are we acquiring from partners? Which Key Activities do partners perform?</p> <p>Who do you work with?</p>	<p><b>7. Key Activities</b> What Key Activities do our Value Propositions require? Our Distribution Channels? Customer Relationships? Revenue streams?</p> <p>What activities do you do for your business? E.g. farming, sell on a market</p>	<p><b>2. Value Propositions</b> What value do we deliver to the customer? Which one of our customer's problems are we helping to solve? What bundles of products and services are we offering to each Customer Segment? Which customer needs are we satisfying?</p> <p>What do you do differently than others? Do you grow something special? Do you grow in a different way? Is your location better?</p>	<p><b>4. Customer Relationships</b> What type of relationship does each of our Customer Segments expect us to establish and maintain with them? Which ones have we established? How are they integrated with the rest of our business model? How costly are they?</p> <p>How do you maintain relationships? E.g. at the weekly market? Through WhatsApp?</p>	<p><b>1. Customer Segments</b> For whom are we creating value? Who are our most important customers? Is our customer base a Mass Market, Niche Market, Segmented, Diversified, Multi-sided Platform?</p> <p>Who do you sell to? Your neighbours?</p>	
<p><b>6. Key Resources</b> What Key Resources do our Value Propositions require? Our Distribution Channels? Customer Relationships? Revenue Streams?</p> <p>What do you need? E.g. fertilizer, certain machines, how much time?</p>			<p><b>3. Channels</b> Through which Channels do our Customer Segments want to be reached? How are we reaching them now? How are our Channels integrated? Which ones work best? Which ones are most cost-efficient? How are we integrating them with customer routines?</p> <p>How do you transport your goods? By bicycle?</p>		
<p><b>9. Cost Structure</b> What are the most important costs inherent in our business model? Which Key Resources are most expensive? Which Key Activities are most expensive?</p> <p>How is your household/business budget seperated?</p>			<p><b>5. Revenue Streams</b> For what value are our customers really willing to pay? For what do they currently pay? How are they currently paying? How would they prefer to pay? How much does each Revenue Stream contribute to overall revenues?</p> <p>How do you make money?</p>		

Figure 19: Business Model Canvas adjusted for farmers

## Session II: Field Lab

### 1.1.13. Chameleon Sensor Soil Moisture Kit



In the session, Desalegne Tegegne (IWMI) took the farmers through the working mechanism of the Chameleon Soil Moisture Sensor (Figure 10), an instrument which measures water level and moisture content of soil to help farmers to know when to irrigate. The apparatus is designed as a water management technique for smallholder irrigators on their farms. Applications of the Chameleon sensor include providing information on when to irrigate to avoid water stress, how to avoid waterlogging, determining when the soil profile is susceptible to fertilizer leaching, and improving the usefulness of rainfall. This sensor can also help farmers determine where the roots are actively taking up water giving farmers insight on when to irrigate and how much water to apply. The kit includes a field reader, sensor array, connector, and battery charging cable.

Figure 20: Desalegne Tegegne (IWMI) demonstrating the Chameleon Sensor

#### 1.1.14. Livestock Feed Exhibition

This session, facilitated by Thembinkosi Baleni (ILRI) and Godfrey Manyawu (ILRI) addressed the critical challenge of ensuring livestock feed security during drought periods for smallholder farmers. The exhibition (Figure 11) focused on showcasing the benefits of incorporating CSA intercrops, such as lablab, into existing farming practices. Emphasis was placed on equipping farmers with effective feed preservation techniques for both roughage (forage crops) and concentrate feedstuffs. These techniques will enable farmers to maintain a strategic reserve of high-quality feed, even during dry seasons, thus mitigating the negative impacts of drought on animal health and productivity. The session specifically covered various ensiling methodologies, providing farmers with the knowledge and skills required to preserve the nutritional value and palatability of forages after drying.



Figure 21: Livestock Feed Exhibit

#### Afternoon session: Storytelling, facilitated by Phindiwe Nkosi (IWMI) and Shiela Chikulo (CIMMYT)

Story-telling - started with a recap video of events from the last 2 days. Sharing the story with a wider audience. What makes a good story - the UU impact/success stories.

Convincing farmers to use the 3 principles of CA:

- a. Through on-farm demos and field days.
- b. Lead farmers to replicate on large scale to interest the rest.
- c. Working in groups.

Ways of reaching a wider audience:

- a. Clear - clarity in messaging and audience must understand the topic e.g., crop rotation, crop residues.
- b. Concise - straight to the point.
- c. Compelling - to grow the numbers/scale, convince person listening.
- d. Creative - different interesting approaches that captivate the audience.

#### Competition game:

As a highlight of the workshop, participants were invited to showcase their creativity. Divided into six teams, they were tasked with identifying a key CA activity and developing a short video (Figure 12) that depicted its implementation through role-play. Competition ensued, with the most innovative video presentation receiving recognition for its creativity. This resulted in fun and informative videos. Some teams opted for engaging narratives, while others chose a news-style format. Still others crafted compelling video demonstrations that effectively portrayed a problem, the corresponding CA solution, and the subsequent positive impact.



Figure 22: Film crew enacting CA practices

# 5. Summary and Call to Action:

The impactful UU ShareFair underscores its potential to reshape the region's agricultural landscape. There are specific call-to-action informed by the informative sessions that requires partnerships and resources as follows:

- **Promoting widespread CA adoption:** There is a dire need to advocate for policy frameworks that enhance access to gender-sensitive irrigation infrastructure and suitable machinery for smallholder farmers.
- **Empowering women in CA practices:** Prioritize gender equity in agricultural decision-making and resource allocation. Invest in user-friendly, smaller-scale machinery and targeted training programs that empower women farmers to effectively implement CA practices.
- **Integrate climate-smart CA practices:** Encourage widespread adoption of CA principles such as minimum tillage, mulching, and crop diversification. These practices enhance soil health, improve water conservation, and build agricultural resilience against climate change.
- **Disseminate knowledge and best practices:** Facilitate farmer-to-farmer learning exchanges. Utilize online platforms and extension services to share successful CA implementation strategies and inspire broader adoption across ESA.

## Lessons Learned:

- **Engage Local Conference Organizer**

Where possible, collaborate with a local Professional Conference Organizer (PCO) to ensure smooth logistics, cultural appropriateness, effective coordination with local service providers, accountability, and financial savings.

- **Careful Language Planning:**

Language, both spoken and written, requires thoughtful consideration. Ensure materials, communication, and presentations are tailored to the audience's linguistic and cultural context for clarity and inclusivity. The breakaway sessions were planned accordingly and this worked very well. This is also the reason to include infographic type videos instead of PowerPoint presentations.

- **Recognition is Key:**

People value acknowledgment of their participation and efforts. Plan for certificates of participation or achievement, even for capacity-building activities, to boost morale and recognition.

- **Support Farmers with Logistics:**

When involving farmers in events, plan for essential support like securing passports and handling local logistics, such as transportation and accommodation, to ensure their active and hassle-free participation. This requires a lot of lead time and clear guidance.

- **Funding and Site Selection Adjustments:**

Ukama Ustawi adjusted its funding priorities and site selection for 2024 based on participant feedback, particularly considering the impacts of El Niño and the critical need for irrigation infrastructure in affected areas. It is important to be able to respond and adjust based on these events.

- **Expanding ShareFair Opportunities:**

Two additional ShareFair events have been planned to focus on building a learning alliance and promoting agribusiness, responding to the growing demand for knowledge-sharing and cross-sectoral collaboration.

**ANNEXURE: UKAMA USTAWI SHAREFAIR PROGRAM**

TIME	TASK	DESCRIPTION	RESOURCES REQUIRED	SIGN UP HERE  (Write name below and replace red text)
<b>Wednesday, 13 March 2024</b>				
<b>08:45-09:00</b>	<b>Field Visit Brief: Group 1 gathers</b>	Groups are sent with 1 QUESTION for observation purposes and feedback upon return.	Facilitator 1. <b>Picture Story</b> to be put together by the group. Reflections from the group - pictures, videos, draw pictures- bring something back.  2. <b>1 observation question</b> shared with the group prior to departure - verbally and in writing in an envelope.	Facilitators: Blessing, Tinashe Christian
<b>12:45-13:00</b>	<b>Group 2 departs</b>	Same as above	Same as above	Facilitators: Blessing, Tinashe Christian
<b>13:00-17:00</b>	<b>Farmers' Exhibit and visual experiences</b>	<ol style="list-style-type: none"> <li>1. Farmers bring tactile objects, posters etc.</li> <li>2. Video interviews upon arrival from field visit</li> <li>3. Photos that they have taken are sent to a WhatsApp number.</li> <li>4. Visual expressions of experiences via knowledge tree mural</li> <li>5. Sharing experiences through presentations</li> </ol>	<ol style="list-style-type: none"> <li>1. Communication with farmers</li> <li>2. Video interviews</li> <li>3. WhatsApp number</li> <li>4. Mural setup</li> <li>5. Farmers share experiences - to be briefed</li> </ol>	Country liaisons: Zimbabwe Zambia Kenya Ethiopia Malawi  Videographer  +263772214218  Megan/Johnlyn  Country liaisons: Zimbabwe Zambia Kenya
				Ethiopia Malawi
<b>18:30-20:30</b>	Boma Dinner (fireside chats)	One of the organisers to officially, yet informally welcome everyone and invite everyone to reflect on the Field visit during their dinner and drinks.  Invite the group to participate in a group mixer, followed by dinner and chats.	Official yet informal welcome Mixer Dinner  Fireside chat: Reflections of the day, compare country experiences etc.	Facilitator 1: Nora Facilitator 2: Seipati
<b>Thursday, 14 March 2024</b>				
<b>09:00-10:30</b>	Opening session in Plenary  1. Official Welcome and context setting	<ol style="list-style-type: none"> <li>1. The space is opened and the aim of the 2-day gathering is explained. Why is this workshop relevant? How does</li> </ol>	Tinashe and Tsehaye	Facilitator 1: Tinashe Facilitator 2: Tsehaye

	<p>Isaiah Nyagumbo (5 min)</p> <p>Dr Inga Jacobs-Mata (5 min)</p> <p>Dr Christian Thierfelder, (5 min)</p> <p>2. Introductory video (5 min) and introductions</p> <p>3. Group Mixer (10 min)</p> <p>4. Review of UU SHAREFAIR expectations and broad objectives (10 min)</p> <p>5. Overview of agenda (5 min)</p> <p>6. UU SHAREFAIR principles (10 min)</p> <p>7. Field Visit Reflections and Insights:</p> <p>Exercise: Walking Gallery and Photo sharing method</p>	<p>it fit into a larger program or initiative?</p> <p>2. Icebreaker: Celebrity Party</p> <p>3. Expectations and broad objectives written on A6 cards within the group. Then, shared in plenary to create common agreement and expectations.</p> <p>4. It is often useful to remind participants that the agenda is flexible. In other words, it could change depending on any issues that develop or surprises that emerge.</p>		
<b>10:30-11:45</b>	<p><b>SESSION 1: TALK SHOW ON</b></p> <p>NATIONAL EMERGING ISSUES AND DISRUPTIVE TRENDS</p>	<p><b>Talk show-style with a charismatic host:</b></p> <p><b>Host welcomes the guests and audience members to ""Green</b></p>	<p>Host: OJONG</p> <p>5 farmers from 5 regions (host to invite representatives)</p>	<p>Facilitator 1: Ojong</p> <p>*What is your understanding of CA?</p> <p>Zimbabwe</p>
	<p>Welcome by host and introductory video (5 mins)</p> <p>Interview (30min)</p> <p>Story Circle (45 min)</p> <p>Closing of show (10 mins)</p>	<p>Growing: Cultivating Change"</p> <p>Invite farmers from 4-5 regions with a set of 2-3 questions.</p> <p>Invite groups to reflect on the interview and to identify what aspects of the presentations need further clarification.</p> <p>Exercise: Story Circle in small groups. Individuals sitting in a circle and sharing their own experiences focusing on a common theme.</p> <p>Invite the audience to share their stories.</p>	<p>Story circle</p>	<p>Zambia Kenya Ethiopia Malawi</p>
<b>12:05-12:35</b>	<p><b>Nature's Nexus: The Lab</b></p>	<p>Hands-on-Workshop Generational transfer of knowledge</p>	<p>Lab manager</p>	<p>Facilitator 1: Isaiah Nyagumbo</p>

		LAB before the topics - practical (30 min) and select 1 of the following topics:  1. Soil irrigation/health/fertility and how it helps you make decisions, test for soil moisture  2. How mulching is benefiting farmers, solar irrigation		- Soil  - Mulching
<b>13:30-15:00</b>	<b>SESSION 2: CONSERVATION AGRICULTURE AS A PRACTICE THAT DEALS WITH THE IMPACTS OF CLIMATE CHANGE</b>  12:20 Introductory video  12:25 Describe the challenge/issue  12:35 Perspectives in small groups with an expert (on rotational basis):  10 min lightning talks:  Farmer view on that challenge  CGIAR work in this space  Examples from Malawi and/or Kenya and/or Ethiopia and/or Zimbabwe	Groups:  → Best practices, benefits and challenges  → Case studies  → Minimum tillage  → Crop rotation and diversification  → Crop residue management  → Herbicide, pesticides etc.  → Technology performance  → New technologies  Questions: Challenges on the ground in key countries  → What does science tell us concerning the effects of climate change and/or the latest innovation?	Facilitator  Science experts from 5 regions  1. Crop rotation and diversification  2. Pest/weed management  3. Minimum tillage  4. Crop residue management/soil cover  5. Soil fertility/nutrient management - incl. Mulching and fertilizer	CIMMYT Team  1: Christian  2: Boaz  3: Blessing  4: ****  5: Isaiah
	and/or Zambia 13:05 Plenary discussion	→ What challenges have you experienced on the ground?  → Financial implications of sustainability  → Do everyone (women/men and young/old) experience the same challenges equally?		
<b>15:30-16:30</b>	<b>SESSION 3: MECHANIZATION</b>  Intro video  Describe the challenge/issue  Perspectives in small groups (outside):  Farmer view on that challenge	Facilitator to guide the discussions in mixed small groups (ensure inclusion and diversity)	Facilitator  1. Gender sensitive machinery (TBC)  2. Reduction of drudgery  3. Small scale irrigation  4. Financing of mechanization equipment  5. Extension services (TBC)	Abdul Ojong  Abdul Desalegne Martin

	<p>CGIAR work in this space</p> <p>Examples from Malawi and/or Kenya and/or Ethiopia and/or Zimbabwe and/or Zambia</p> <p>Plenary discussion</p>			
	<p>Short Documentary Screening</p> <p>Introduction of documentary (5 min)</p> <p>Screening of Documentary (30 min)</p> <p>Discussion based on documentary (20 min)</p> <p>Closing announcements</p>	<p>A curated documentary which captures the realities and resilience of farmers.</p> <p>Cinema-style refreshments provided at "tea break"</p>	<p>Facilitator to close off the day (TBC)</p>	<p>Link to a short documentary as shared by KG</p>
<b>Friday, 15 March 2024</b>				
<b>08:30-09:00</b>	<p><b>Recap of Day 2</b></p> <p>Reflection on Day 1 - mood check-in</p> <p>Fun energiser: Tagging</p>	<p>Short skits (in country groups) on a day in the life of a __ farmer.</p> <p>Background music typical of the relevant country to be played.</p>	<p>Facilitator</p>	<p>Nina and Nicoletta</p>
<b>09:00-09:30</b>	<p><b>Nature's Nexus: The Lab</b></p>	<p>Hands-on-Workshop Generational transfer of knowledge</p>	<p>Lab managers</p> <p>How to package feeds and store it</p>	<p>Facilitator 1: Godfrey/Thembinkosi</p>
		<p>LAB before the topics - <b>practical (30 min) and select 1 of the following topics:</b></p> <p>Improved seed and seed selection and Livestock care</p> <p>Share or demonstrate their practice or approach</p> <p>Explain how and why it is the best approach.</p>	<p>Crops to feed livestock</p> <p><a href="https://www.youtube.com/watch?v=vpmNQ9rEnh0&amp;list=PL0Hs5QFNy8ybZVRsP-YvZu3jlmI3UGPxP&amp;index=3&amp;pp=iAQB">https://www.youtube.com/watch?v=vpmNQ9rEnh0&amp;list=PL0Hs5QFNy8ybZVRsP-YvZu3jlmI3UGPxP&amp;index=3&amp;pp=iAQB</a></p> <p><a href="https://www.bbcselect.com/select-more/climate-collection/#:~:text=Climate%20Change%3A%20Ade%20on%20the,problems%2C%20whether%20natural%20or%20technological.">https://www.bbcselect.com/select-more/climate-collection/#:~:text=Climate%20Change%3A%20Ade%20on%20the,problems%2C%20whether%20natural%20or%20technological.</a></p>	

<p><b>09:30-11:00</b></p>	<p><b>SESSION 3: AGRIBUSINESS</b></p> <p>Introductory video and the person behind the story (10 min)</p> <p>Business canvas</p> <p>Discussion</p>	<p>1. Thinking Big: Success stories (intro video) or in-person story, centred on <b>how to run a sustainable, viable, and integrated agricultural enterprise.</b></p> <p>Discussion points:</p> <ul style="list-style-type: none"> <li>→ Impacts on agribusiness</li> <li>→ Youth and women</li> <li>→ Accessing finance</li> <li>→ Tactics and innovations</li> <li>→ Cross-border trading (export) and scaling</li> </ul> <p>2. Exercise: Business Canvas (print large)</p>	<p>Facilitators</p> <p>Business owners to share on challenges and successes</p> <p><a href="https://www.youtube.com/watch?v=mxKulH1ToLk&amp;list=PL0Hs5QFNy8ybZVRsP-YvZu3jlmI3UGPxP&amp;index=15&amp;pp=iAQB">https://www.youtube.com/watch?v=mxKulH1ToLk&amp;list=PL0Hs5QFNy8ybZVRsP-YvZu3jlmI3UGPxP&amp;index=15&amp;pp=iAQB</a></p> <p><a href="https://www.youtube.com/watch?v=1ycujlaLhlg&amp;list=PL0Hs5QFNy8ybZVRsP-YvZu3jlmI3UGPxP&amp;index=6&amp;pp=iAQB">https://www.youtube.com/watch?v=1ycujlaLhlg&amp;list=PL0Hs5QFNy8ybZVRsP-YvZu3jlmI3UGPxP&amp;index=6&amp;pp=iAQB</a></p> <p><a href="https://www.youtube.com/watch?v=mta7g6_jly8&amp;list=PL0Hs5QFNy8ybZVRsP-YvZu3jlmI3UGPxP&amp;index=5&amp;pp=iAQB">https://www.youtube.com/watch?v=mta7g6_jly8&amp;list=PL0Hs5QFNy8ybZVRsP-YvZu3jlmI3UGPxP&amp;index=5&amp;pp=iAQB</a></p>	<p>Inga and Nora</p> <p>SMEs:</p> <ol style="list-style-type: none"> <li>1. James Gichanga</li> <li>2. Peter Kirimi</li> <li>3. Roseanne Mwangi</li> <li>4. Fenna Christine Pool</li> </ol>
<p><b>11:30-13:00</b></p>	<p><b>SESSION 4: STORYTELLING, MEDIA AND TECHNOLOGY TREASURE HUNT</b></p> <p>Session overview and introduction to the tools - Plenary (10 mins)</p> <p>Introduction to the treasure hunt &amp; team formation - Plenary (10 mins)</p> <p>Treasure hunt - Teams of 8 (60 mins)</p> <p>Debrief - Plenary (10 mins)</p> <p>Video Storytelling (30 min)</p>	<p>Provide participants with hands-on experience in the use of tools which can be used to capture and share lessons learned, case studies and best practices. These tools will use electronic means to capture text (e.g. in the workshop blog), visuals (e.g. photos) and video/audio (e.g. record of their lesson learned/story).</p> <p>Using video for knowledge sharing.</p> <p><b>See below box for content and process for the Treasure hunt, Video storytelling and the Role play.</b></p>	<p>Communications (Zim and SA)</p>	<p>Facilitator: Phindiwe + Zim counterpart on Communications</p>

## 1. Treasure Hunt

- Which tools worked best for you? Why?
- How do you see these tools being used to capture lessons learned, case studies and best practice in your work?
- What are the perceived limitations? How do you see them being overcome?

You can also mention that the “winner” of the Treasure Hunt will be announced the following day, to allow the “judges” to review the work of each team.

## 2. Video Storytelling for Knowledge sharing:

In plenary, bring a flipchart to the front of the room and start by asking the group:

- “What do you think makes a good story?” or, alternatively, “
- What are the elements of a good story?”.
- Ask people to “shout out” these elements and write them down with bullet points on the flipchart. These may include ideas such as:
  - Captures people’s interest
  - Has a good “twist” in the storyline

Realistic and true

- Is a first-person account and relates a personal experience.

After about 10 min on “What makes a good story?”, tear off the flipchart paper(s) with the bullet points and stick it (them) to a wall so everyone can see them. Then, you can ask the following question, “So what makes a good interview?”. Again, get people to raise the points which you’ll note down on the flipchart.

These may include:

- Comfortable ambiance to put interviewee at ease
- Avoid being biased

Do not interrupt too much when the interviewee is talking: Clear questions, etc.

Finally, after about 10 min tear off the flipchart paper(s) and post them on the wall. Then ask the last question, “how can you best document stories using video?”.

Some of the points might be about breaking up the story in little chunks, or doing the video in an interview format. It could also be about keeping them relatively short so they are easier to watch (and to upload). Once the ideas run out, make sure all flip charts are visible so participants can refer to them in the next round

## 3. Hands-on practice through role play (Groups of 3)

Let the group know how the hands-on practice will unfold i.e. in groups of three, each person will have the opportunity to share a successful approach or method for capturing lessons learned, case studies or good practices. Give them a few minutes to think about an approach or method. If an experience doesn’t come to mind, suggest that they propose an approach they feel would be successful and why

Invite participants to group themselves in threes and identify who will take on which of the three roles:

- i A storyteller
- ii An interviewer
- iii A videographer

Invite the first storyteller to share their successful approach or method to capturing lessons learned, case studies or good practices (up to 5 mins)

Once the story is told, the interviewer asks his/her questions to draw out more details about the approach or method. Why is it so successful? What are the factors that contribute to its success? How can the approach be used in other contexts, if at all? (10 min)

The storyteller gets a chance to ask questions about how the approach or method has been understood.

Together, the three review the couple of segments which hold the richest insight (10 min)

The documenter captures at least one 3 min segment, which could be either a conversation between the storyteller and the interviewee or the storyteller’s private reflection (10 min).

**Content debrief:** Take 5 - 10 minutes to learn what participants took away from the exercise. They could be asked to identify a new or different approach to generating project outputs that they feel might work in their own context? Or, to highlight a key insight or idea that they took away.

### Process debrief:

Take 10 - 15 mins to reflect on the process and in particular the technique of video storytelling-. Questions to initiate the discussion may include:

What was it like playing the role (of storyteller, interviewee, video documenter)? Were some roles easier or harder than others? Why?

What new insights or ideas did you take away about video storytelling as a knowledge sharing method?

What one tip would you offer to others thinking of using video storytelling to capture and disseminate lessons learned, case studies or good practices?

<p><b>14:30-15:00</b></p>	<p><b>Nature's Nexus: The Lab</b></p>	<p>Hands-on-Workshop Generational transfer of knowledge</p> <p><b>Practical (30 min) - rotation testing station.</b></p>	<p>Lab managers</p> <p>Water: storage or soil moisture or quality (TBC)</p> <p>"Virtual irrigation academy tools"</p>	<p>Facilitator 1: Tinashe (TBC) and Inga</p>
<p><b>15:00-16:30</b></p> <p><b>(15:15-15:45 Tea served in the venue)</b></p>	<p><b>SESSION 5: STRENGTHENING RELATIONSHIPS AND NETWORKS</b></p> <p>Overview and introduction to network (10 mins)</p> <p>Network connections - Individual work (20 mins)</p> <p>Share maps - small groups (30 mins)</p> <p>Strengthening networks in Plenary - (20 mins)</p> <p>Debrief in Plenary - (10 mins)</p> <p><b>What NOW and WHAT NEXT?</b></p> <ol style="list-style-type: none"> <li>1. Facilitator summarises the gains made over the last 3 days in the space and provokes the group to participate in crafting new pathways.</li> <li>2. Open up the discussion to the room (first in small groups and then to the larger group)</li> <li>3. Closing and thank you</li> </ol> <p>Announcements</p>	<p><b>Principles/ways of working:</b></p> <ul style="list-style-type: none"> <li>→ In small groups, discuss what we want to change or continue doing.</li> <li>→ How do we build together in this space in a long-term manner?</li> <li>→ What have historically been the challenges to building synergies?</li> <li>→ How can we avoid/address these challenges?</li> </ul> <p>Consolidating next steps: everyone uses a word to describe the past 3 days.</p>	<p>Facilitators (Learning Alliance)</p> <p>Facilitators</p>	<p>Facilitator 1: Nina</p> <p>Facilitator 2: Tsehaye</p> <p>Facilitator 3: Collins</p> <p>Nina, Tsehaye and Collins Ageyo</p>

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INITIATIVE ON

Diversification in East  
and Southern Africa

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