

# CONSERVATION AGRICULTURE NEWSLETTER



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## Methods for Farmer- Managed Seed Production

**Neil Rowe Miller, Agriculture and  
Livelihoods Technical Advisor  
for Eastern Africa**

*This article is a follow-up to an article  
titled "Strategies for Improved Seed  
Production" in our [December, 2021  
newsletter](#).*

Throughout sub-Saharan Africa,  
small-scale farmers save and  
replant most of the seed they use  
each season. The quality of this  
seed varies widely, but in many

cases a few small steps can make a big difference in the genetic purity and the production potential of such seed.

### SEPARATE SEED PRODUCTION FROM OTHER FIELDS

Plants which will be kept for seed must be isolated from other fields of the same species to prevent cross pollination. Some crops, like beans and wheat, are mostly self-pollinated (see side box) and only need to be separated by a few meters. If farmers follow good production and selection practices (see below), they can keep and replant seed of self-pollinated crops for many seasons without losing significant yield potential or seed quality.

Others crops, like maize, squash and sunflower, are mostly pollinated by crossing with other plants, and thus need much larger isolation distances to produce genetically pure seed (see table). For these crops it is very difficult to maintain genetic purity in a small-farm setting with nearby neighbors growing the same crops. Seed of



**Maintaining isolation between fields of cross-pollinated crops is difficult in a small-farm setting with closely-spaced fields.**

cross-pollinated crops is best obtained from reliable seed producers. If commercial seed is not available or accessible, one strategy for seed production of these crops is to enable a few local farmers to produce Quality Declared Seed (see our [December, 2021 newsletter](#) for more details).

Isolation Distances for Seed Production of Various Crops	
Crop	Isolation Distance (meters)
Groundnut	5
Pigeon pea	200
Cowpea	5
Beans	5
Maize	200
Pearl millet	200
Sorghum	350
Rice	5
Squash	200
Sunflower	1500

From: FAO. 2018. [Seed production and handling manual for community-based seed producers and inspectors](#)

### SELECT PLANTS FOR SEED DURING THE GROWING SEASON BASED ON THE PERFORMANCE OF THE ENTIRE PLANT.

Select and mark plants based on their overall health, vigor and productivity. Diseased plants should be avoided. Harvest those plants intended for seed first, before bulking the rest of the field for food grain. Many farmers just select the biggest ears or the nicest seed *after* their grain is harvested and bulked. This practice may result in selecting seed from plants which carry disease or which produce large seeds, but have low overall yields.

### DRY SEED THOROUGHLY

Seed should be dried to a lower moisture than that used for food grain. A rule of thumb is to dry seed 1-2 percentage points lower than that recommended for commercial grain. As long as seed is dried without heat, there is little risk of over drying.

### STORE IN HERMETIC BAGS

A common misconception is that air-tight storage will reduce seed germination. However, if seed is thoroughly dried and kept in a cool

place, hermetic storage will maintain its quality and viability for a long time. In fact, gene banks often use hermetic storage for long-term banking of seed. Farmers can maintain quality seed by storing in PICS bags, sealed drums, or even multiple layers of plastic bags.

### TEST GERMINATION BEFORE USE

Farmers can and should test the germination rate of their seed prior to planting. A simple germination test, as well as more information on seed saving and seed systems can be found in our [Technical Guidance Note on Sustainable Seed Systems](#).

## KEY TERMS USED IN SEED SYSTEMS

- Self-pollinated/cross-pollinated crops: Self-pollinated crop species; including most legumes, rice, wheat, and tomatoes; can produce seed without receiving pollen from another plant.** They therefore reproduce “true to type” through many generations. Cross-pollinated crops, like maize, millet and sunflower, mostly reproduce using pollen from other plants, transported by wind or insects. Unless they are grown in isolation (either physically or by planting at a different time) they will not breed true from generation to generation. Other crops; like melons, pumpkins, cotton and pigeon peas; reproduce through both self- and cross-pollination. How a crop is pollinated determines how much it needs to be isolated to produce pure seed.



Selecting seed after harvest makes it difficult to know the health and characteristics of the plants which produced the seed

2. **Open pollinated varieties (OPVs) are varieties which produce seed that is genetically similar to the parent.** If the crop is cross-pollinated, the OPV will need to be isolated to produce pure seed.
3. **Hybrid seed is created by cross-pollinating different lines for seed production.** Hybrids generally produce plants with greater vigour and uniformity than OPVs. When grain from hybrid seed is replanted for a second generation, the offspring will not be true copies of the original hybrid, and they will lose much of their vigor and yield potential. So farmers using hybrids should buy new seed each season. Maize is the most widely utilized hybrid seed.
4. **Certified Seed is inspected and tested by a government agency for genetic purity, germination, and freedom from disease and weed seed.** Only varieties registered by a government agency can be certified.
5. **Quality declared seed (QDS) is produced and sold by farmers or community-based organizations who are not registered seed dealers.** QDS seed is planted from the same stock as Certified Seed, and can be equally high quality. Both modern varieties and landraces (traditional varieties) can be included. Government authorities identify which varieties are eligible and must inspect at least 10% of QDS fields.

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## Youth in Agriculture and Livelihoods Programming

*John Kimathi Mbae, Agriculture and Livelihoods Technical Advisor for Eastern Africa*

Agriculture is perceived as unattractive to millions of youth across Africa, a situation that could threaten food security. This issue should worry governments and communities as young people between 15 to 35 years of age currently account for 55% of Africa's labor force. At the same time, unemployment and rapid population growth pose a major threat to food security. Youth view agriculture as inefficient, socially immobile and technically uninteresting. Feed the [Future's Youth-Inclusive Project Design Guide](#) argues that by making farming more profitable and less arduous it will become more appealing to youth.

### REASONS FOR A NEGATIVE PERCEPTION OF AGRICULTURE

- **Media misinformation** - Radio and television entertainment portray cities as offering better opportunities than rural areas.
- **Peer pressure** - As more and more youth migrate to cities after primary and high school, they create the impression that a "good life" lies clearly away from the countryside.
- **Disconnect between formal schooling and rural needs** - School curricula focus on academic knowledge rather than practical skills. As they take on this value system, African youth avoid doing agricultural-related courses at college and university level.
- **Denigration of agrarian culture** - When I attended primary and high school, farming activities were used as a form of punishment! Misbehaving students were told to "go home and come back with a jembe (hoe) or panga (machete) to work out your punishment." Because of this, my peers and I never wanted to be associated with farming, leave alone to become a farmer!
- **Drudgery** - Farming in Africa is mostly unmechanized, and youth tend to avoid heavily labour-intensive activities.
- **Lack of resources** - Access to land excludes certain youth, as rules of inheritance leave them landless. This limitation is worst for young women who are left out of land inheritance in many cultures.

## LESSONS FROM THE SCALING UP CONSERVATION AGRICULTURE (SUCA) PROJECT

Although the median age in Africa is 19 years old, the average age of Africa's farmers is 60! In contrast, the midterm evaluation of the Foodgrains Bank SUCA project found that farmer-participants averaged 46.7 years old in Tanzania, 52.4 in Kenya and 41.5 in Ethiopia. Early in the project, the average age of participating farmers was higher, but partners changed the participant demographic by purposely engaging youth. Strategies used in SUCA included:

- **Gender and age-sensitive training materials – [the Foodgrains Bank Conservation Agriculture \(CA\) training modules](#)** reinforce that farming is not just for a specific group. Adaptive training materials allowed Partners to customize pictures and training messages to whichever gender and age group was being prioritized.
- **Targeting existing youth groups (18-35 yrs.)** – By working with self-help group registration agencies, Partners could purposely seek out and reach youth groups.
- **Peer-to-peer mentoring** - Some Partners recruited youth leaders who recruited, trained, mentored, and served as models for other youth.
- **CA for horticultural crops** - Whereas in the past, most partners promoted CA for cereal and subsistence crops, youth prefer growing high value crops to maximize profits. Partners adapted their training to include CA for horticulture crops under irrigation (tomatoes, french beans, fruit, kale, cabbage, etc.)
- **Adding marketing to core CA programing** – Aggregated marketing increases profit margins, and thereby attracts youth involvement. The SUCA strategy addressed food security, but also market-based farming by forming aggregation groups.
- **Service provision** - Partners engaged and trained service providers to deliver income-generating services to other farmers (land preparation, planting, pest management, harvesting, threshing, transportation, etc.) This entrepreneurial approach enticed youth once they realized there was profit potential in the value-chain.
- **Use of E-extension** - Some partners used WhatsApp to deliver extension messages and respond to questions from farmers.
- **Linkages to other available services** - Partners linked farmers to other agencies and programs that could enhance farmer profitability. For example, in Kenya, groups were connected to a government-managed Youth Fund where they could get low-interest loans.



Joel Mutua, a young farmer trainee, training CA farmers in Kenya



Service provider training and opportunities, such as this maresha direct planter can attract youth to agriculture.

## OTHER STRATEGIES TO INCREASE YOUTH INVOLVEMENT IN AGRICULTURE

- **Advocacy for pro-youth policies** - African governments need to institute rural development policies and programs which revitalize the engine of agricultural growth. As rural opportunities increase, the attitude of youth towards agriculture, and their perception of the desirability of a rural way of life will change (see side bar). NGOs should advocate for such policies and look for existing opportunities in their countries.
- **Youth-focused projects** - Projects should include youth input from the beginning to the end (situation assessment through implementation and final evaluation). Youth participation in the planning stages will identify initiatives that attract youth and build their interest in agriculture.
- **Education and training** - We must engage with government to adopt curricula that favor the needs and skills of rural youth and reverse the pro-urban mindset. Colleges and universities should be challenged and equipped to deliver high quality agricultural programs which attract students. For example, the African Conservation Tillage Network and FAO prepared and disseminated a Conservation Agriculture curriculum for African Universities in 2019-2021.

### Youth-Friendly Policies in Kenya

Revival of 4K Clubs – In Kiswahili, *Kuungana, Kufanya, Kusaidia Kenya* means to come together, to act, to help Kenya. In 2021, the government of Kenya revived this programme to create awareness, inculcate a positive mindset towards agriculture among school-going children, and build skills.

County Devolution - In 2013, government resources and decision making was shifted to the county level following adoption of a new Constitution. This has led to growth of rural towns and increased the demand for agricultural produce in county centres.

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## Partner Profile: Brethren in Christ Compassionate and Development Services

**Lilian Zheke, Agriculture and Livelihoods Technical Advisor for Southern Africa**

Brethren in Christ Compassionate and Development Services (BIC–CDS) is the relief, development and peace programming arm of the Brethren in Christ Church of Zimbabwe, established in 2012. BIC–CDS’s mission is to respond to humanitarian crises and development challenges as part of their Christian witness.



Farmers preparing and drying fodder crops for hay bale making

BIC-CDS is a partner of Canadian Foodgrains Bank through Mennonite Central Committee (MCC) beginning with their Conservation Farming for Food Security Project in 2013-2016. Since its inception, BIC-CDS has been promoting conservation agriculture (CA), and a fodder production component was incorporated into CA in an effort to minimize CA-livestock competition. BIC-CDS has also been working to facilitate improved access to

water, and to date four community dams have been rehabilitated and one new dam has been constructed in their area of operation.

BIC-CDS is began implementing the Gwanda Gender Sensitive Food Security Program in 2019 in six wards of Gwanda District. The project's thrust is sustainable, gender-sensitive crop and livestock production. A total of 1500 farmers (930F/570M) are involved in CA, production of fodder crops, and vegetable production with solar-powered irrigation. Food security has improved with participating households now producing nine months of food needs compared to 3-4 months at baseline.

Increased fodder production has improved access to feed, mitigated livestock stresses during frequent droughts, reduced CA-livestock competition, and improved livestock condition and health. Farmers intercrop fodder crops (mainly lablab and velvet bean) with food crops and also use marginal land to produce fodder. Farmers now produce enough fodder (hay bales in particular) to feed their livestock and sell excess to neighboring farmers. On average, farmers sell 25 to 50 bales at approximately US \$2.50 each, although some farmers have sold over 100 bales.



Promoting improved food security and women's income generation through solar powered gardens

The project deliberately focuses on supporting women through provision of solar powered water pumps which were installed in group gardens where more than 75% of the members are women. Labor-intensive bucket irrigation has been abandoned as members can now access water by simply turning on taps. Productivity in these gardens has improved such that the gardens not only improve dietary diversity but also generate income. With this independent income source, women have reported increased participation in household decision making and more time for other activities.

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## Discussions from the Network:

**John Kimathi Kirima:** You can't believe you are in Mukothima in Tharaka Niithi county. Great work NCK AND FARMERS. Thanks for hosting us during the Kenya country workshop. Farmers in other semi-arid areas need to copy Tharaka Niithi farmers by adopting the right crop for their respective region. Why grow maize while you can do green grams, cowpeas, pigeon peas, pearl millet, finger millet, sorghum, cassava, among others?

**Fidelia Munyoki:** Thanks a lot John. We were glad to host the the Foodgrains Bank Kenya Country partners for the field visit. And hopefully participants learnt and took home something good. Farmers have embraced diversification of crops with appropriate varieties. This is a CA plus practice worthy of adoption by every farmer.

**Mary Kyalo:** Keep up the good work! God bless you

**Norah Naitore:** Good work Fidelia and team. Your hard work is paying off.

**Fidelia Munyoki:** Thanks. We can only attribute this to the God's grace which has enabled NCKK CA project staff and the farmers to do commendable job 🙌

**Aregehegn Petros:** Wow! thanks for sharing with us!

**Salilew Netu:** Very impressive!

*The CA Technical Officers manage a Facebook Discussion Group from which the above conversations were copied. If you'd like to join the discussion, sign up at [www.facebook.com/groups/CAinAfrica](https://www.facebook.com/groups/CAinAfrica).*



Workshop participants visit a Tharaka Nithi sorghum field

# ALTA TRAVEL SCHEDULES

## *Lilian Zheke*

**April, 2022**

***Binga, Zimbabwe***

KMTC-MCC project visit and training

**May, 2022**

***Southern Malawi***

BICC-CODES and AG Care Partner visit and training

**June, 2022**

***Mwandi, Zambia***

UCZ -WR project visit

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## *JEAN TWILINGIYUMUKIZA*

**31 March-02 April, 2022**

***Musanze, Rwanda***

Country-Level Workshop

**20-30 April, 2022**

***Freetown, Sierra Leone***

Situation assessment training for EFSL

**30 May-3 June, 2022**

***Abalak, Niger***

SPN Project visit and team building

## *JOHN KIMATHI MBAE*

**April, 2022**

***Embu, Kenya***

ACC&S training and partner Visit

**April, 2022**

***Nakuru & Muranga, Kenya***

ADSCR & ADSMK- FAW follow-up

**May, 2022**

***Soroti, Uganda***

COU-TEDDO- partner visit and training

**May, 2022**

***Nakuru & Muranga, Kenya***

ADSCR & ADSMK- FAW follow-up

**June, 2022**

***Marsabit, Kenya***

CITAM & SMM Partner visit- support

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## *NEIL ROWE MILLER*

**April, 2022**

***Kasulu, Tanzania***

CWS Partner visit

**May, 2022**

***Kampala, Uganda***

PAG start-up and situation assessment training

**June, 2022**

***Southern Ethiopia***

EKHC and EGCDWO project visits