



**MINISTRY OF  
FOREIGN AFFAIRS  
OF DENMARK**



**ROYAL DANISH  
EMBASSY**

**Danida  
Alumni  
Network**



*A part of Danida Fellowship Centre*

## **"THE RISE OF SUNFLOWER OIL: A RELIABLE COOKING OIL IN TANZANIA"**

### **FINAL REPORT**



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## **1. Introduction**

### **1.1 Description of activity**

Activity "The rise of sunflower oil: a reliable cooking oil in Tanzania" intended to create awareness to value chain actors in Iramba district, Singida region on use of improved sunflower seed varieties and how they affect the production of quality sunflower oil. This is because sunflower oil is one of the reliable sources of cooking oil in Tanzania. It is also considered a potential source to meet the increasing demands of cooking oil and seedcakes for both local and foreign markets. This activity contribute to the Sustainable Development Goals (SDGs) of SDG 2 (zero hunger) as the obtained knowledge will facilitate adoption of the new varieties necessary for ensuring food security as a result of increasing productivity, quality oilseeds and sunflower oil and sunflower seed cakes for livestock. Also, the activity contributes to SDG 9 (industry innovation and infrastructure) & SDG 12 (Responsible consumption and production), and further improve both farmers' and processors' income resulting from high volumes and quality of oilseeds and sunflower oil respectively hence contribute to SDG 1 (no poverty).

Besides, the contributions to SDGs the activity helped in strengthening the local alumni network through fully participation of Danida alumni from planning up to the implementation of the activity. The local alumni were motivated and encouraged to participate in the activity physically and virtually through Facebook, LinkedIn and Danida alumni WhatsApp group. Also, the activity has provided knowledge to the local alumni who can share it to their local community considering the health advantages of quality sunflower oil as consumers rather than producers of such oil. Furthermore, the activity contributes to promoting knowledge into action initiatives targeting and benefitting the general public, special interest groups, or local communities. This is through provision of practical knowledge particularly in identifying both the quality sunflower seeds/ varieties to sow and quality sunflower oil to process, use and market by stakeholders in sunflower sub-sectors (e.g., sunflower farmers, sunflower processors, extension officers and consumers of sunflower oil). These stakeholders have opportunity to share and practice this knowledge in different places which produce process and market sunflower in Tanzania. Moreover, the activity contributes to promoting knowledge sharing, networking, and collaboration within or across sectors/disciplines through training of trainers i.e., the stakeholders from sunflower sub-sector in Tanzania. The stakeholders include sunflower farmers, sunflower processors, and district extension officers, Ministry of agriculture, improved sunflower seeds expert, and Tanzania-Danida Alumni.<sup>1</sup>

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<sup>1</sup> it has also encouraged some of the alumni members to think of investing in the sector.

## 1.2 Motivation of the activity

Use of quality sunflower varieties/seeds is widely promoted in Tanzania to improve quality of sunflower oil to meet large demands in local and foreign market, and household welfare. Singida is a popular region in growing sunflower largely for oil crushing. Other regions includes Dodoma, Manyara, Arusha, Tabora, Iringa, Njombe, Rukwa , Mbeya, Morogoro , Ruvuma, Kigoma and Katavi. Also, several improved sunflower varieties (See Table 1) have been developed, certified, and distributed in different regions in Tanzania including Singida region.

**Table 1: Improved Sunflower Varieties in Tanzania**

Variety	Type	Year	Company	Yields (t/ha)
RECORD	OPV	1950	ARI-Ilonga	1 – 2
CRN 1435	Hybrid	1999	Monsanto South Africa	2 - 2.5
PAN 7352	Hybrid	2002	Panna Seed Co.	1.5 - 2.5
KENYA FEDHA	OPV	2006	Kenya seed co. Ltd	3 - 3.5
NSFH 36	Hybrid	2016	Sunflower development co.	3.4
NSFH 145	Hybrid	2016	Sunflower development co.	3.6
AGUARA 4	Hybrid	2016	Advanta seed co. Ltd	2 - 2.5
HYSUN 33	Hybrid	2016	UPL-INDIA	2 – 4
ANCILLA	Hybrid	2019	East African Seeds (T) Company Limited	2.5
MICHEL	Hybrid	2019	East African Seeds (T) Company Limited	2.5
SOLEADO	Hybrid	2019	East African Seeds (T) Company Limited	2.5
ARCHEO	Hybrid	2019	East African Seeds (T) Company Limited	2
SUPERSUN64	Hybrid	2019	Silverlands Ndolela Ltd	2 – 3
SUPERSUN66	Hybrid	2019	Silverlands Ndolela Ltd	2 – 3
NALSUN 1- 2018	OPV	2020	Tanzania Agriculture Research Institute (TARI)	1.5 – 2
NALSUN 2- 2018	OPV	2020	Tanzania Agriculture Research Institute (TARI)	1.5 – 2
AGUARA 6	Hybrid	2020	Advanta seed co. Ltd	1.5 – 2

Note: OPV = open-pollinated variety

Source: Tanzania Official Seed Certification Institute (2017, 2020)

However, majority of sunflower farmers do not use quality sunflower varieties. For example, about 88.5 percent of sunflower farmers in Singida Region including Iramba and Mkalama districts are using traditional or recycled sunflower seeds (Tibamanya *et al.*, 2021). Fostering their use of these varieties for producing both quality oil-seeds and oil to adjust the mismatch between supply and demand in both local and foreign markets, requires creation of awareness to sunflower stakeholders. For example, ways of creating awareness or providing information such as extension services by training revealed to have positive association with use of improved sunflower varieties (Tibamanya *et al.*, 2021). Thus, the training aimed at creating awareness to sunflower stakeholders include farmers, processors and extension officers around Iramba district, Singida region dealing with sunflower farming and processing on the importance of using quality/improved sunflower varieties which can later on applied in production of quality sunflower oil and its by-products like sunflower seedcakes.

## **2. Main body of the report**

### **2.1 Methodology**

Prior to training the activity was communicated to the local alumni through WhatsApp group and emails requiring their suggestions regarding the content of proposed activity. Secondly, the suggestions of local alumni were taken on board in finalizing draft of the activity for submission to DANIDA Fellowship Centre (DFC) Thirdly, the grant award decision was shared to the Danish embassy in Tanzania through email, Tanzania DANIDA alumni in WhatsApp group and emails, and through letters to Ministry of agriculture, agricultural extension officers and Zamseed Company Limited/Silverlands Ndole Ltd. To ensure that participation of the members to the event the announcement was shared frequently on social media to keep them reminded. Fourthly, the agricultural extension officers were informed to notify the selected sunflower farmers and processors about the activity and the proposed date (7<sup>th</sup> November 2021) of activity. Fifthly, the preparation of event materials and other logistics started immediately after feedback fromDFC. Finally, the activity was done on the 7<sup>th</sup> November 2021 following the prepared activity programme (See the attached activity programme).

The training on sunflower, planned to have 45 participants include 32 representative sunflower farmers (who will acquire knowledge and skills on use of quality or improved sunflower varieties, and later on train the fellow farmers), 2 representative ward extension officers (who will be future trainers of farmers), 1 officer from ministry of agriculture and 1 sunflower expert from Zamseed Company Limited/ Silverlands Ndole Ltd., 5 Danida alumni, 4 sunflower processors (who guarantee to offer improved sunflower varieties to sunflower farmers through contract farming).

Thus, the activity managed to have total of 45 as planned with 36 physical participants include 27 representative sunflower farmers, 2 representatives ward extension officers and 2 sunflower processors, 3 Danida alumni, 1 officer from ministry of agriculture plus 1 participant from Zamseed Company Limited/ Silverlands Ndolela Limited (See attached registration form). While, about 9 Danida alumni participated virtually (See Table 2). Those participated virtually is through zoom meeting using the link <https://us05web.zoom.us/j/85213099575?pwd=dDJqMzhGaFF1eko5RjFiVIRrZ28rUT09> with details topic: “the rise of sunflower oil: a reliable cooking oil in Tanzania” Zoom Meeting, Time: Nov 27, 2021 10:00 am Nairobi, Meeting ID: 852 1309 9575, Passcode: M1X00Q). The training followed the training of trainers (TOT) approach i.e., the participants particularly sunflower farmers and wards extension officers are expected to train the non-trained sunflower farmers. The TOT involved the use of methods such as lectures and all participants’ discussions with questions, answers and suggestions.

**Table 2: List of Virtual participants**

S.N	Name of participant	Sex
1	Sylvester Muhoja	Male
2	Mboka Mwanitu	Female
3	Mponda Malozo	Male
4	Fadhili Mbilinyi	Male
5	Rose Kiabo	Female
6	John Peter Hewa Kinyage	Male
7	Aida Kiangi	Female
8	Walter Nyoni	Male
9	James Robert	Male

## **2.2 Quality/improved sunflower seeds/varieties and their Effects**

Participants have learned various aspects concerning quality/improved sunflower seeds/varieties and their effects in production of quality sunflower oil as explained in this section.

### **The meaning of improved sunflower seed/ variety**

The improved seeds are defined based on their types such as hybrid seed and normal (Open-pollinated variety) seed. An hybrid seed sunflower seed is the seed which have been produced by crossing male and female sunflower aiming to produce a sunflower with desired characteristics like high production, oil content, resistance to disease and environmental stress. Examples are Supersun66, Supersun64, Hysun33, Aguara4, Aguara6, NSFH 36, NSFH 145, Ancila, Mitchel, Soleado, Archeo. A normal sunflower seed is the one which originally grow and have natural features; these features may be

desirable by customers or sometimes not desirable. Examples are RECORD, Jupiter, Kenya fedha, Zebra, TARI-ILO 2019, TARI-NA 2019, CRN 1435, PAN 7352, NALSUN 1-2018, and NALSUN 2-2018.



### Why there is need to cultivate sunflower using improved sunflower varieties?

- ❑ The high demand of quality sunflower oilseeds, quality sunflower oil and sunflower seedcakes in local and foreign market. For stance, higher demand than the supply in our country (supply is only 40%) with the growing population of 2.9%, sunflower production need to be more 3 times as of now.
- ❑ Costs of producing sunflower are relatively lower than cost of producing other oilseeds crops such sesame and palm oil for example in Singida sunflower production does not require the use of inorganic fertilizer which has high cost in the market. Some areas require low use of fertilizer which means low cost of fertilizer.
- ❑ High demand of sunflower in industries which produces human skin oil, soaps and bee keeping industries.
- ❑ Improving soil health status in a rotational cropping as it has long roots which improves aeration, water circulation, soil structure and texture hence make living in a soil worth life
- ❑ Sunflower produce flowers which attract insect especially bee which makes honey, wax and in turn enhances life ecosystem

#### 2.2.1 Performance of improved sunflower seeds and varieties

The performance of OPVs and hybrid seeds/ varieties are different based on several traits including uniformity , resistance to diseases, heads, productivity, days of maturity etc. as indicated on Table 3.

**Table 3: Performance of improved sunflower seeds**

Item	Hybrid	OPV
<b>Uniformity</b>	Very uniform in height and size	Variable
<b>Resistance to diseases</b>	Improved to resist many diseases	Not improved – just natural
<b>Adaptability to weather</b>	Strong in adapt excessive rain and drought	Weak on adaptation
<b>Days to maturity</b>	Very determined	Continuation
<b>Head</b>	Single head	Always multiple head
<b>Seedless</b>	Seed fill up to the middle of head	In the middle of head you find a lot of seedless
<b>Productivity</b>	High Production average 8 to 12 bags of 65kgs	Low production always average 4 to 7 bags under similar treatment as hybrid
<b>Oil Content</b>	High oil content 25 to 30litres per 65kg bas	17 to 21litres of oil per 65kg bag
<b>Oil Composition</b>	Composed with more of desired nutrients like oleic acid	Less desired nutrients
<b>Seedcake</b>	Soft and tender, easy to crush	Hard to crush
<b>Market</b>	Highly Demanded current price 1450	Low demand price 1250
<b>Economic gain</b>	Despite high price of seed still a farmer can get 1.8times cash under similar treatment	

Table 4 indicates the performance of some improved sunflower varieties according to their yields (harvests of sunflower) per 1 bag, their duration of maturity and the sunflower oil content that can be processed from yields of each variety per 1 bag. Furthermore, Table 4 shows the supplier or distributor of each variety and the contact of a person in case a farmer or a processor wants to purchase improved sunflower varieties in Tanzania.

**Table 4: Performance of some improved sunflower varieties**

Seed name	Type	Main Features	Supplier
<b>Record</b>	OPV	7 to 12 bags of 56kgs Maturity 110 days Oil content 18 to 21 litres	ARI-Ilonga-Agriculture Seed Agency; contact. 0755 921 492), Meru Agro-Tours and Consultants, Advanta, n.
<b>Hysun 33</b>	Hybrid	10 to 15 bags of 65kgs Maturity 95 to 110 days Height 175cm Oil Content 27 to 30litres	Bytrade and Advanta seed co. Ltd - Mr Yamagaji, Bytrade (0685 272 676) - Mr. Sharan, Advanta (0686 109 226)
<b>Aguara 4</b>	Hybrid	10 to 18 bags of 65kgs Maturity 109 to 126 days Height 170 to 210 cm Oil content 27 to 34litres	Bytrade and Advanta seed co. Ltd - Mr Yamagaji, Bytrade (0685 272 676) - Mr. Sharan, Advanta (0686 109 226)
<b>Aguara 6</b>	Hybrid	10 to 18 bags of 65kgs Maturity 95 to 110 days Height 175 to 190 cm Oil content 24 to 30litres	Bytrade and Advanta seed co. Ltd - Mr Yamagaji, Bytrade (0685 272 676) - Mr. Sharan, Advanta (0686 109 226)
<b>Supersun66</b>	Hybrid	10 to 18 bags of 65kgs Maturity 85 to 100 days Height 175 to 190 cm Oil content 27 to 31 liters of 65kgs bag Resistance to powdery mildew many diseases, and field stress	Zamseed Company Limited/ Silverlands Ndolela Ltd Mr. Ombeni (0769 401 559) Mr Amir (0769 313 095)
<b>Supersun64</b>	Hybrid	10 to 18 bags of 65kgs Maturity 90 to 110 days Height 175 to 190 cm Oil content 24 to 30 liters of 65kgs bag Resistance to powdery mildew, and field stress	Zamseed Company Limited/ Silverlands Ndolela Ltd Mr. Ombeni (0769 401 559) Mr Amir (0769 313 095)
<b>Kenya Fedha</b>	OPV	Oil 18 to 21 Litres per 65kgs bag	Kibo Seeds Company Limited Mr Kimweli (0784 606 718)
<b>Swath</b>	Hybrid	10 to 18 bags of 65kgs Maturity 90 days Oil content 27 to 31litres	Seed Development Company (SDC) – Mr Solomon (0787 751 133) Mr. Omary (0689 281 112)
<b>Ancilla</b>	Hybrid	High Oleic content 86% Maturity 84 to 90 days Height 127 cm Oil content 42litres per 100kgs bag	East African Seeds (T) Company Limited Mr. Shuhudia (0719 880 458)

<b>Michel</b>	Hybrid	High Oleic content 86% Maturity 84 to 90 days Height 127 cm Oil content 42litres per 100kgs bag	East African Seeds (T) Company Limited Mr. Shuhudia (0719 880 458)
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### 2.3 Quality of a good sunflower seed

- They are certified by the government regulatory authorities
- Germination % should be more than 85%
- They are the improved seed (resistance, good harvest, oil etc.)
- They have no admixtures, sand, stones, weeds, no broken, or crakes, not eaten by pests, no any foreign matters etc.
- They are biologically improved for good harvest, resistance to environmental stress and diseases, oil content etc.
- They are uniform in growing, have single head, less seedless seed.
- Soft and tender seedcakes

### 2.4 Benefits of using improved sunflower varieties/ seeds

- *Harvest:* A farmer using improved sunflower seed/variety has a great chance of harvesting 2 times than the farmer using not improved sunflower varieties (one head need to have well developed 2,000seed)
- *Oil:* from the improved sunflower variety a farmer can get 1.5 more volume of oil compared to a farmer not used improved sunflower variety.
- *Nutritional Value:* Oil from the improved sunflower seed contains more nutritive value than oil from not improved seed (stimulate skin and hair growth, maintain bone health, regulate metabolism, ant oxidant, free radicals and maintain the reproductive system)
- *Resistance:* Improved sunflower can resist environmental stress and field diseases more than un improved
- *Market:* Harvest from improved sunflower is more demanded in the market than unimproved ones which impart higher selling price.
- *Seedcakes:* improved sunflower have soft and tender cakes than that of un improved one

### 2.5 Tips for a profitable sunflower farming

- ❑ **Field:** Chose the area with deep soil (Sunflower roots can go up to 1m depth), Ph ranges 6.0 to 7.5, rich nutrients soil, well-drained soil, good for no sunflower last season.



- ❑ Seed: Choose seed with better results (stress resistant, high harvest, rich in oil content)
- ❑ Planting: Right population 22,000 to 23,000 plants per acre.



- ❑ Crop management: No weed, no pest and diseases (control bird), keep bees



- ❑ Harvest: Harvest when flower petals dry out and fall off back of head turns from green to brown. Too early you will find partial established crop and too late/dry seed will fall.



- Post-Harvest: Avoid loss throughout the process of harvest, removing seed from the head, shifting, drying, winnowing, cleaning and storage

## 2.6. Physical properties of good oilseed after farmer harvest (for storage)

- Should be harvested when well mature i.e. , head color changes to Brown- starts to dry.
- Well dried (moisture between 8% and 10%)
- Not broken or with cracks
- Not changes its original color
- Not shrink, nor seedless
- Not eaten by pest or diseases
- Should not have contamination of other seed, weeds, dust, stones and other foreign matters.

## 2.7 Things to consider during storage after harvesting.

Sunflower oilseeds can last for about 3 months at normal room “Singida temperature” after dormancy period of 65 to 90 days from harvest. Sunflower harvests can be stored in the following tools as shown by pictures below:



- ❑ Seed should be stored in a temperature between 1 to 8 centigrade (viable for a year)
- ❑ A room moisture content needs to range 7.5 to 9%, this helps to maintain seed oil quality and reduce risk of fungal development and pest attack.
- ❑ Oil should be cold press and stored in a temperature between 10 and 20Centrigrade. When oil exposed into heat it loses some of nutrients and may create other products. (rancidity)
- ❑ Refined sunflower oil help to filter moisture, dust, color, metal particles from crushing machine etc.

### 3. Meaning and features of quality sunflower oil

- ❑ Quality sunflower oil is the ones which on its extraction process considers features that will maintain the following
- ❑ Cleanness: Unimproved sunflower oil in most cases it is not clean because sunflower is always crushed while contain dusty, head remaining's, moisture, sandy, kept in a dirty containers and poor storage and a very hot press up to 100 degree centigrade. Improved sunflower oil does not fall in this delinquent.
- ❑ Potential nutrients; sunflower oil is naturally high in healthy mono- and polyunsaturated fatty acids and is a direct source of vitamin E and Omega 6 and small amount of vitamin K.
- ❑ Odor; Improved sunflower oil has its natural smell always not noticed when cooked unlike un improved one
- ❑ Color: Improved sunflower oil have pale yellow to golden color

#### 3.1 Tips to identify good sunflower oil

- ❑ Check the labels for ingredients, manufacturing date, expiry date, additional antioxidant, cholesterol level etc.
- ❑ Check color; Natural sunflower oil is translucent and clear, light/pale yellow in color, It should neither be thick or cloudy.
- ❑ Smell; It has a light consistency and neutral odor. If it smell differently then it is possible not good edible oil



### 3.2 Challenges and solutions in sunflower farming in Tanzania

Table 5 shows the challenges that sunflower farmers are facing in their farming which makes them not to achieve agricultural and farm households goals and suggested solution in addressing them by the responsible sunflower stakeholder.

**Table 5: Challenges and solutions in sunflower farming**

Challenge	Solution
Seed Availability	Government intervention
High cost of inputs	Should know what input to apply
Diseases	Choose disease free seed, practice rotation farming, remove disease hosts and carrier
Weather	Be attentive with weather forecast--- planting window, weeding time, predictive of the harvesting time. Choose seed with qualities of resistance to water lodging, drought and wind
Bird	Put bird scaring/threatening materials, remove bird hosts things, in extreme cases government should intervene
Bees	The use of poisonous chemicals kills bees which are important for pollination
Market fluctuation	Prices of sunflower seed after harvest, oil and even seedcakes are always fluctuating (timing is needed)
Government policy	Unstable policy create worry for traders and farmers as when prices rise the government import to balance supply and demand
Farmers and traders' deception	Seed admixture, sand, moisture, broken, dead seed are always done by farmers while in some cases traders may mix sunflower oil with other oil like palm oil to maximize profit

### 3.3. Did you know!!!

- Why sunflower head face east?
- Answer: it is because; when the sun starts moving from east to west in the sky, the east side of the stem of a sunflower plant grows MORE rapidly than the west side. Due to this unequal growth on either side, the flower tends to bend in the direction of the sun.

- How many seed per sunflower head?
- Answer: Around 2,000 seeds.
  
- How long is the sunflower root?
- Answer: Sunflower root can grow to 2 metres.
  
- What causes Multiple head in Sunflower
- Answer: 1) Genetic characteristics, 2) overfertilization 3) male species 4) Environmental adaptation 5) over spacing.
  
- Does the colour of seed impact oil content?
- Answer: No there is no relationship between seed colour and oil content only genetic characteristics.
  
- Is there any sunflower which is not eaten by bird?
- Answer: All sunflowers grown in Tanzania are eaten by bird especially during milky stage.

### **3.4. Important issues emanated from discussions by all participants**

All participants' discussion was led by Michael R. Baha and Felister Y. Tibamanya. The important issues captured from the all participants discussion included mainly suggestions to the government and private investors i.e., processors in sunflower sub-sector.

#### **3.4.1 Suggestions to the government**

- Provision of improved farm inputs on credit to severely liquidity constrained sunflower farmers
- Support the extension services agents in effectively and efficiently provision of extension services to sunflower farmers.
- Establishing the sunflower crop insurances to mitigate the production risks and risk aversion behavior among sunflower farmers especially on the use of improved sunflower varieties.

#### **3.4.2 Suggestions to private sectors / sunflower processors or /Companies in sunflower sub-sector**

- Provision of improved sunflower varieties to sunflower farmers on credit particularly those attended this training at prices lower than the market price.

- ❑ Establishing the enforceable contract farming arrangements with sunflower farmers in all villages in Iramba district.

### 3.4.3 Selection of local leaders for the second training of non-trained farmers - sunflower farmers

Considering the fact that the activity used TOT approach the further training of non-trained sunflower farmers is required. Thus, about nine (9) local leaders include chairs and secretaries among the sunflower farmers were selected during the training to lead their fellow trained sunflowers in further training of non-trained farmers in their respective villages or wards (See Table 6).

**Table 6: Names of selected local leaders**

S.N	Name of leader	Village	Phone Number
1	Shabani Shila Nduka	Mukulu/Motomoto	+255758390897
2	Medson Jonatha Mbea	Kisana	+255758498352
3	Daniel S. Aweda	Misigiri	+255784479345
4	Emmanuel Edward Kitila	Galangala	+255683825581
5	Israel Kalomba Lyanga	Misigiri	+255742995581
6	Emmanuel Yonah Nogigwa	Old Kiomboi	+255754306287
7	Daudi Simon Ktundu	Tutu	+255764615553
8	Susan Loth Anton	Mampanta	+255755402735
9	Yohana Daudi Lyanga	New Kiomboi	+255786357472

### 3.5 The activity Grant

The grant for the activity of about 8900 DKK was disbursed by Danida Fellowship Centre (DFC) as DANIDA ALUMNI ACTIVITY GRANT 2021FELISTER on 9<sup>th</sup> November 2021 in CRDB account 01J2082647400 with the name FELISTER YAKOBO TIBAMANYA. We are appreciating and acknowledge DANIDA under the Ministry of Foreign Affairs of Denmark, Danish Royal Embassy in Tanzania and Danida Fellowship Centre in Denmark. The use of grant was according to the requirements proposed in the breakdown of the budget of the activity (See the attached budget and receipts for the retirement).

### 3.6 Partners in the activity

The partners of the activity included Ministry of Agriculture using the Iramba District Agriculture, Irrigation and Cooperative (DAICO) office which provided formal arrangements to do the activity and mobilize sunflower farmers to participate in the activity and Zamseed Company Limited/ Silverlands Ndolela Limited in Tanzania which contributed one expert in provision of training about the activity. and some

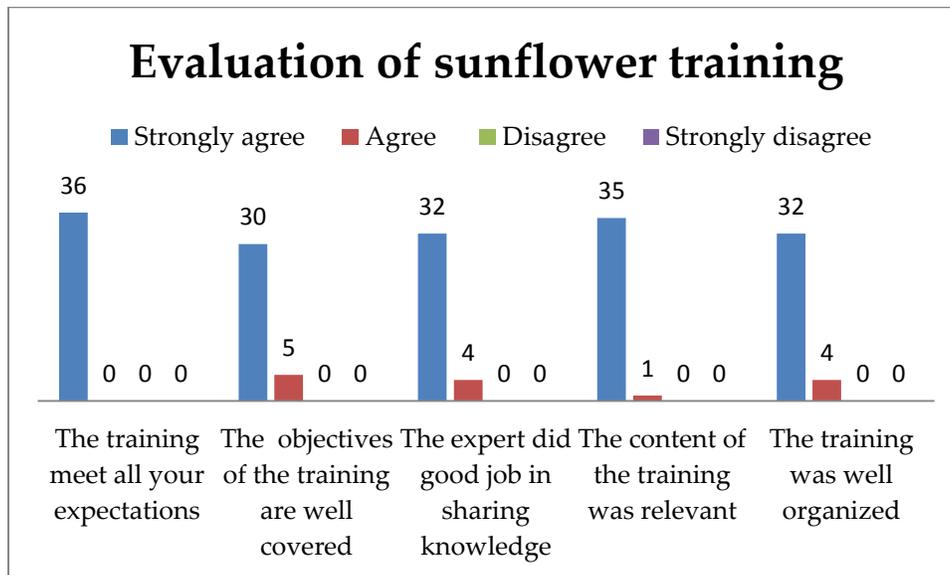
learning materials. We acknowledge the partner for their great support and contribution.



Ministry of Agriculture Tanzania,

### 3.7 Training Evaluation targeted participants

The Danida alumni (Felister Y. Tibamanya) collected feedback of the training from the physical participants concerning their expected outcomes and objectives of the activity, and its relevance, experts' knowledge and effectiveness, facilities provided and overall thoughts of the participants. The Table below summarizes their feedbacks:



### 4. Conclusion

It is important for the sunflower farmers to use improved sunflower varieties in order to improve their productivity, income and household welfare. The harvests of sunflower i.e., oilseeds are needed in production of quality sunflower oil both crude and refined, and quality sunflower seedcakes to meet the demands in local and foreign markets. After the training, the farmers suggested a farming plan for this farming season 2021/2022 which requires each farmer to cultivate sunflower using improved

sunflower varieties with expectation of achieving 8 bags sunflower harvests per acre<sup>2</sup> considering the use of good agronomical practices (GAP) obtained from extension services. Farmers not only acknowledge the benefits of training they have received but also suggest more practical training in their farm fields/plots by extension agents with support of improved sunflower varieties at cheap price or credit by sunflower seed/varieties producers or suppliers/contractors in contract farming arrangements.

The trainings to farmers on the use of improved sunflower varieties are suggested by sunflower stakeholders to be a continuous activity. Also, numerous training of trainers (TOT) are further suggested in fostering awareness to many sunflower farmers in order to increase the quality and quantity of sunflower oilseeds produced in Tanzania. Thus, the sustainable market and business opportunities of quality sunflower oil and its by-products requires sustainable sunflower farming among the actors in sunflower value chains (e.g., sunflower contract farming).

Output: Sunflower sub-sector stakeholders after being trained claim to have a common understanding on the use of improved/quality sunflower varieties and how to maintain this quality in order for sunflower processors to use their harvests in production of high quality sunflower oil and sunflower seedcakes. The trained stakeholders are ready to share the received knowledge to their fellow non-trained.

Results: Two (2) awareness activities on use of quality sunflower seeds in production of quality sunflower oilseeds by farmers which will be used in production of quality oil and sunflower seedcakes by sunflower processors are organized at the level of district/villages. The first awareness activity is the training reported in this document. The second awareness activity will be led by selected leaders among trained farmers in collaboration with their extension officers to train non-trained farmers with follow-up by organizing team of the activity (Tanzania-Danida Alumni). Thus, second awareness activity will involve knowledge sharing and putting the knowledge into actions among the local communities.

Outcome: the productivity of sunflower among trained farmers is expected to be improved, and the production of both sunflower oil and sunflower seedcakes increased in both quantity and quality thus, the welfare of both the sunflower farmers and sunflower processors is improved in sunflower producing regions in Tanzania.

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<sup>2</sup> Previously they were using poor GAP which resulted into sunflower yields of 2 bags per acre.

## References

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## Appendix



The group photo of sunflower training participants in Kiomboi, Singida, 27<sup>th</sup> November 2021