



National sorghum prospectus workshop

Breakout sessions

Feb 3, 2023



Ethiopian  **ATI**
Agricultural Transformation Institute
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Group breakouts

Processed food

Flour and Pasta

Infant foods

Snacks

Beverage

Processed feed

National sorghum prospectus workshop | Flour and Pasta

1 Have you ever used sorghum for any of your products before? How was the acceptance of the sorghum-based product in the market?

At industrial level, no but for home consumption

- Injera solely or mixed with teff
- Home made drinks-Tella, Cheka, Borde
- Areke
- Kinche
- Pop sorghum
- Kurkufa
- Couscous
- Fosesie

2 Where do you source sorghum from?

The sources are,

- Local traders
- Local millers
- Farmers producing their own supply of grain
- Food aid

National sorghum prospectus workshop | Flour and Pasta

3 What are the current & potential hindrances in sourcing and processing sorghum?

Current & potential hindrances in sourcing and processing sorghum are,

- Lack of Market oriented products
- Poor research and promotion of new food products
- Lack of industrial grade sorghum grain
 - Poor quality grains because of storage and post harvest management
 - Lack of processing machines such as de-hullers
- Lack of Sufficient amount grain supply
- Lack of standards
- Sorghum production is focused on domestic production, not market-oriented
 - Limited access to improved varieties
- Sorghum not included in the ECX
- Lack of awareness for industrial use of sorghum
- Stigma associated with using teff in injera especially in urban area and restaurants
- Inherent nature of the grain in terms of processing

4 What measures need to be taken to improve the industrial use of sorghum? Immediate and long-term solutions

Immediate solutions

- Advocacy for policy support
- Absence of Regulatory agency
- Standard
- Create awareness about sorghum products (*to increase demand*)
- Small-scale mechanization technologies (thresher, de-huller, miller, etc.)
- Linking research with the food industry
- Technology accessibility and awareness enhancement (*supply-side*)

Long-term solutions

- Research on new end-user products
- Genetic improvement for industrial use
- Quality improvement to meet standards for industrial use

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5 Considering these interventions will be implemented, with what capacity can you produce sorghum-based product?

Sorghum-based product type	Unit	Value
Flour	Qt/year	250,000-300,000

6 How much sorghum (grain) do you need to produce the product?

Sorghum variety type	Unit	Value
Melkam	Qt/year	180,000-220,000

Agenda

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National sorghum prospectus workshop | Infant food

1 Have you ever used sorghum for any of your products before? How was the acceptance of the sorghum-based product in the market?

What is baby food?

- ✓ The product should fulfill the standard of baby food.

- Yes there is a practices
- Azi Shalom PLC
- Three sorghum based food products were produced
 - ✓ **Baby food**
 - ✓ Cookies
 - ✓ Bread
 - ✓ Injera

- The acceptance and demand is increasing.

2 Where do you source sorghum from?

- ❖ Local market/ retailer

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3 What are the current & potential hindrances in sourcing and processing sorghum?

- ❖ Less supply (white variety)
- ❖ Lack of awareness on the benefits this product by users/consumers
- ✓ Less involvement of private sectors
 - ✓ It is not well known previously
 - ✓ Due to less demand of sorghum based
- ✓ Financial and working area problem

4 What measures need to be taken to improve the industrial use of sorghum? Immediate and long-term solutions

- ❖ **Immediate**
 - ✓ Promoting research outputs from university and research centers
 - ✓ Creating linkage of researchers, food Industry, and producers
 - ✓ Market promotion through a different approach
 - ✓ Encourage private sectors to involve
- ❖ **Long term**
 - ✓ Special support from government and non-government (financial and other facilities (nearby working area))
 - ✓ Strengthening the Incubation Hub (practices

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5 Considering these interventions will be implemented, with what capacity can you produce sorghum-based product?

Sorghum-based product type	Unit	Value
Baby food	Qt/year	48

❖ Currently Azi Shalom is producing 1o Qt/year based on the demand

6 How much sorghum (grain) do you need to produce the product?

Sorghum variety type	Unit	Value
Red	Qt/year	7
White	Qt/year	7

❖ Currently Azi Shalom is 2 and 1 Qt/year red and white respectively

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National sorghum prospectus workshop | **Snack**

1 Have you ever used sorghum for any of your products before? How was the acceptance of the sorghum-based product in the market?

- **Yes (cake, cookies, bread, injera with sweet potato, teff, barely, maize, oats)**
- **Yes (gluten free snacks, cookies) with enset**
- **Yes (popes, cuscus, kinche) sorghum alone**

2 Where do you source sorghum from?

- **From research center (known varieties: Melkam, Merera, Waxy)**
- **Local market (varieties unknown)**

National sorghum prospectus workshop | **Snack**

3 What are the current & potential hindrances in sourcing and processing sorghum?

- **Lack of seed source in bulk and production in scale**
- **Lack of suitable varieties and product**
- **Untraceability of seed sources/grains**
- **Poor market linkage**
- **Lack of complete value chain integration from research to market**

4 What measures need to be taken to improve the industrial use of sorghum? Immediate and long-term solutions

Immediate solutions

- **promote sorghum production (seed and grain) via**
 - Cluster-based production
 - Supplementary irrigation
- **Product development and aggressive promotion**
- **Focus on private sector development (enterprises)**
- **Screen existing varieties for various sorghum-based products**
- **Complete commodity value chain integration**

National sorghum prospectus workshop | **Snack**

4 What measures need to be taken to improve the industrial use of sorghum? Immediate and long-term solutions

Long-term solutions

- Product targeted variety development
- Complete commodity value chain
- Professional association (Grain crops)
- Research on Nutrition and product development
- Who is responsible to link all the actors in the value chain?
(draw lessons from beer factories – barley growers, durum wheat, soybean and use for sorghum complete value chain development)

4 What measures need to be taken to improve the industrial use of sorghum? Immediate and long-term solutions

- Let ATI play a leading role in initiation and development of complete sorghum value chain development
- Adapt experiences from West Africa

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5 Considering these interventions will be implemented, with what capacity can you produce sorghum-based product?

Sorghum-based product type	Unit	Value
Sorghum based snacks, cookies – small enterorises industries	Qt/year	188, 500
Sorghum (kuskus /kinche)	Qt/year	1000
Sorghum (popes)	Qt/year	55
Sorghum composite sorghum	Qt/year	5,400,000

6 How much sorghum (grain) do you need to produce the product?

Sorghum variety type	Unit	Value
Merera, Melkam	Qt/year	
Merera, Melkam, Wax	Qt/year	
Merera, Melkam, Wax	Qt/year	

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National sorghum prospectus workshop | Beverage

1 Have you ever used sorghum for any of your products before? How was the acceptance of the sorghum-based product in the market?

- **In case of Heinken - alternative raw materials were in need and sorghum was one of the options – local sourcing of raw materials.**
 - Options in brewery – Blending, Full production, 20% of sorghum
- **Raya Beer**
- **Azmera Beer – sorghum quality and availability was a challenge and forced them to stop production using sorghum. Has been on the market for 3 years.**
 - Used through blending with barely – the market acceptance has also been an issue.
 - Research findings – 30% of sorghum malt can be added and in its natural form it can be added up to 15%.
- **Acceptance of the product was good from the consumer's side but the supply bottleneck of sorghum (Debir variety) and partly the management change forced the production to stop Azmera Beer.**
- **It was not branded as a sorghum beer**

2 Where do you source sorghum from?

- **In country production**
 - Small scale farmers
 - Contractual farming
 - Cooperative unions

National sorghum prospectus workshop | Beverage

3 What are the current & potential hindrances in sourcing and processing sorghum?

- **Lack of awareness creation – consumers' perception and taste**
 - Lack of transparency of the breweries on their use of sorghum even if in low percentage
- **Supply bottleneck and inconsistency in quantity and quality of the sorghum (Lack of traceability)**
- **Only one selected sorghum variety (Debir)**
 - Resulting in **high logistics cost** for most of the beer factories in terms of location proximity of production and breweries' location
- **In the existence of a sorghum malting factory – the engineering of the sorghum malting process is different and it could be a challenge to shift the already existing barely infrastructure/equipment in the industry**

4 What measures need to be taken to improve the industrial use of sorghum? Immediate and long-term solutions

- **Identifying additional potential variety of sorghum suitable for brewery**
- **Sorghum Malting factory needs to be in place in the sorghum belt areas. Below breweries might consider malting**
 - Raya Brewery
 - Harer Brewery
- **Transparency of breweries should be considered in terms of their use of Sorghum**
- **Advocacy for the full sorghum beer production and its popularization.**
- **Research on sorghum potential and use needs to be done in the context of Ethiopia. Also work on the research development and innovation.**
- **Target the private sector to attract more direct investment in the production.**
- **Enabling policy environment**
- **Adopt sorghum development corridors**

National sorghum prospectus workshop | Beverage

5 Considering these interventions will be implemented, with what capacity can you produce sorghum-based product?

Sorghum-based product type	Unit	Value
	Qt/year	
	Qt/year	

- The sorghum beer will be acceptable by the market
- Export value of sorghum beer will be higher compared to barley if the Africa market is targeted
- Comparatively high potential research and development capacity, and agro ecology is present in Ethiopia
- Its more profitable than the barely beer production
- Fermentable

6 How much sorghum (grain) do you need to produce the product?

Sorghum variety type	Unit	Value
	Qt/year	
	Qt/year	

- The amount will depend on the percentage of the sorghum the breweries plan to add to the beer production as well as the sorghum production capacity in the country
- 1.5X barley benefit can be obtained from sorghum
- Filtration
- High versatility
- Cheaper option with no import and foreign currency requirement

Agenda

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Processed feed

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1 Have you ever used sorghum for any of your products before? How was the acceptance of the sorghum-based product in the market?

Three categories of raw products can be used

Grain; Forage (biomass); Byproducts (agroindustrial byproducts and agricultural byproducts at the farm level including crop residues)

Friendship Agroindustry - animal food processing for small ruminants and poultry using sorghum grains (in a ratio of 50/50 with maize) but just for a short period.

Using appropriate formulations, the nutritional value remains the same and so far, no complaints from the clients.

Ethiopian Feed Industry Association (EFIA) 50 to 60 processors

Gumero Animal feed processing – currently they are not using because the price is higher, not more than 24% in 1 quintal for cattle feed but for poultry less than 24% Sorghum is low energy

Albar Feed Processing – no use because low energy compared to maize and the current price is high

Wiha Feed processing – no use

Adama Feed processing – 8% used for poultry and for cattle up to 12%

Dina Feed processing – no use of sorghum (just maize and soybean)

2 Where do you source sorghum from?

Friendship Agroindustry – wholesalers, traders, markets

Gumero Animal Feed Processing: Usually second grade

Adama Feed Processing: sourcing from traders and farmers but in remote areas

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3 What are the current & potential hindrances in sourcing and processing sorghum?

- **Availability and price**

Friendship agroindustry – seasonal availability, low nutrient content. Sorghum grain is small and coarse which results in a thicker texture.

Gumero Animal feed processing Price and availability even though protein is low, not equal to maize inclusion is low

Dina Feed Processing: unavailability and low energy

Positive points for sorghum

Friendship agroindustry: sometimes sorghum grain price is lower

Adama Feed Processing: Preferred in Giga area because when they use maize they fattened but with sorghum they have less fat (optimum body performance) and lay eggs continuously

4 What measures need to be taken to improve the industrial use of sorghum? Immediate and long-term solutions

Friendship agroindustry – further assessment of the use of sorghum in animal feed especially sourcing issues. Need to consider farmer aggregation, contractual farming, and short distribution chains to get a lower price, etc.

Consider hybrids to increase productivity and nutritional value and work on the grain milling system.

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5 Considering these interventions will be implemented, with what capacity can you produce sorghum-based product?

Sorghum-based product type	Unit	Value
	Qt/year	
	Qt/year	
	Qt/year	
	Qt/year	

Friendship agroindustry : For 1 Quintal of concentrate, use 15 to 25% sorghum but willing to increase up to 35% if sorghum is available.

15 qt of sorghum used x 24 days per month

Gumero Animal feed processing: they use the big size grain, when weevils attack maize

Adama Feed processing: Preferred white and big grains otherwise the grains go through the sieve

6 How much sorghum (grain) do you need to produce the product?

Sorghum variety type	Unit	Value
All (bulk)	Qt/year	4,320
	Qt/year	
	Qt/year	
	Qt/year	

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Tech Generation

- Forage (biomass)
- byproducts: agro-industrial byproducts and agricultural products farmer level including crop residues
- Because of the shortage of feed materials, people are reverting to sorghum

- **Tech multiplication**
- **Tech dissemination**
- **Tech processing**

- Need to improve the nutritional value of sorghum-based feed.
- Some studies in the literature have shown that if no tannin varieties are used, the nutritional value may be up to 98% for poultry
- Sorghum is not the first choice. To compensate the shortage of maize or high price (seasonal), they use sorghum.
- Difficult to precisely measure the inclusion rate because they adjust depending on the type of sorghum they get.
- None of the private sector representatives have used forage or byproducts although there are good opportunities – dual purpose varieties, varieties with highly digestible fodder, etc.



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