



Solidarity

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AGROPROCESSING OPPORTUNITIES FOR AFRICA

G20 INITIATIVE ON BIOECONOMY

WORKSTREAM NAME: Bioeconomy

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24 February 2025

TRANSFORMING AFRICA'S AGRICULTURE

BACKGROUND

- Africa's agriculture – major and integral part of African economies
- 60% of jobs across continent
- Aggregate – Africa about 25% of continent's GDP range:
 - Botswana – 3%
 - South Africa – 2.5%
 - Ghana – 25%
 - Kenya – 33%
 - Chad, Central African Republic & Sierra Leone – 50%
- Many challenges
 - Low yields of cereals and other primary products (compared to other parts of the world, except for South Africa)
 - Post-harvest losses (on and off– farm)
 - Infrastructure (road, rail, electricity, dry and cold storage)
 - Manufacturing capability low at large scale
 - Agribusiness (excluding farming) Global avg 75% total value added – vs 38% avg for Africa
 - Urbanization – demand for high-value food products

WHY INVEST IN AGRO-PROCESSING IN AFRICA

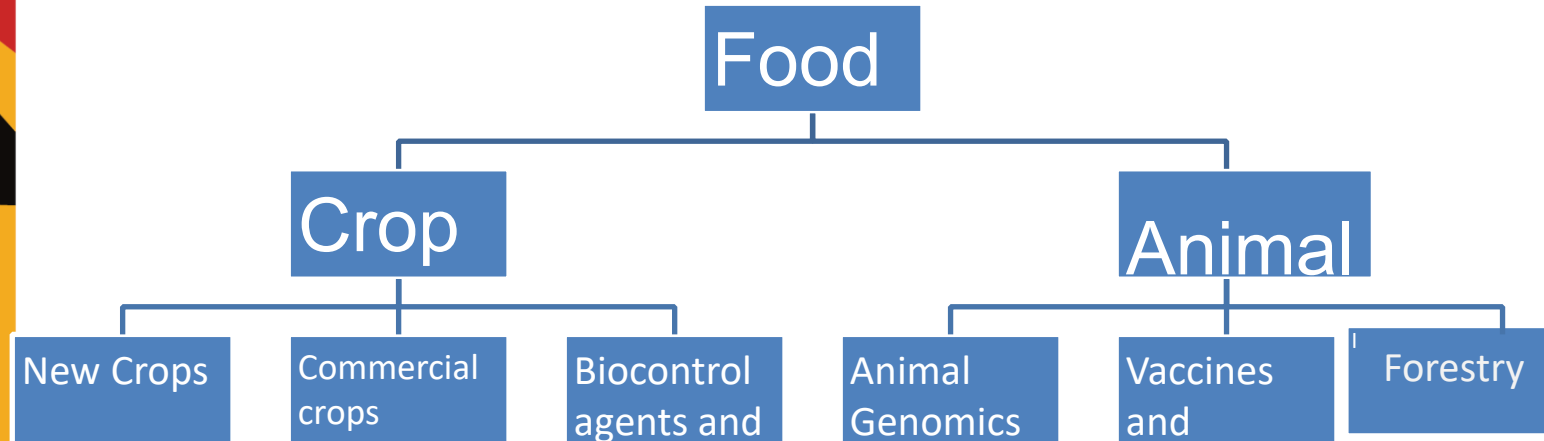
CHALLENGES TO OPPORTUNITIES

- Large & growing food imports – estimate U\$100 bn (source: AfDB 2021)
- Under-utilized agricultural land with low productivity
- Food shortages widening e.g. 2008
- Agriculture susceptible to climate change patterns – risk for yields & productivity
- Security of land tenure & good governance – impact on production
- Lack of agriculture inputs to increase production & productivity (e.g. Ukraine war)
- Urbanization, highly packaged and processed food demands
- **Low investments in technology development and innovation – bio-based economy**

CONDITIONS FOR TRANSFORMATION

- Productivity enhancing technologies with input intensity and capital intensity
- Incentives for increased production
- Investments in **skills** towards **innovation**
- Investments & incentives towards value addition (agro-processing)
- Investments for long-term sustainable agribusiness growth (manufacturing)
- **Agro-processing requires development of bio-based feedstock**

BIO-INNOVATION IN FOOD SYSTEM



Agroprocessing and Agro-engineering

Indigenous African Knowledge based Agriculture

Cross cutting initiatives: Agric biotech skills, academic research capabilities, Tech. Serv. platforms, Biosafety capacity, Public awareness, IT & bio entrepreneurship training, Agro-innovation hubs

FEEDSTOCK FOR AGRO-PROCESSING INTO BIOMASS

- Biomass varieties are hybrids derived from *Saccharum officinarum* x *Saccharum spontaneum* (F1) crosses,
 - Male or Female parent depends on objectives,
- *Saccharum officinarum*
 - Source of sugar, low fibre, smut resistance
 - Narrow adaptability, poor ratooning, sensitive to drought
 - Thick stalks, low stalk population
- *Saccharum spontaneum*
 - High biomass, broad adaptability, high ratooning ability,
 - Drought tolerance, high fibre, tolerant to eldana, pest and diseases
 - Thin stalks, high stalk population
 - Susceptibility to smut

SUGARCANE VARIETIES FOR BIOMASS

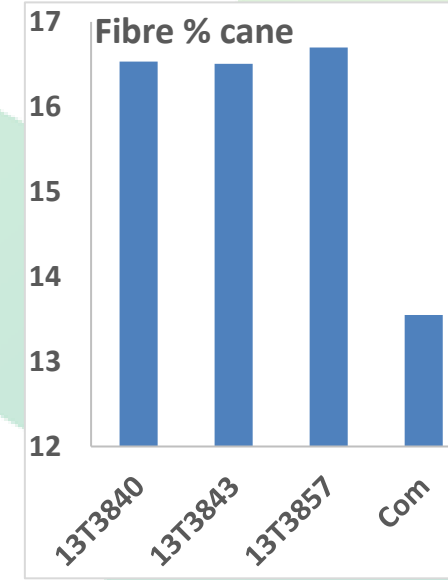
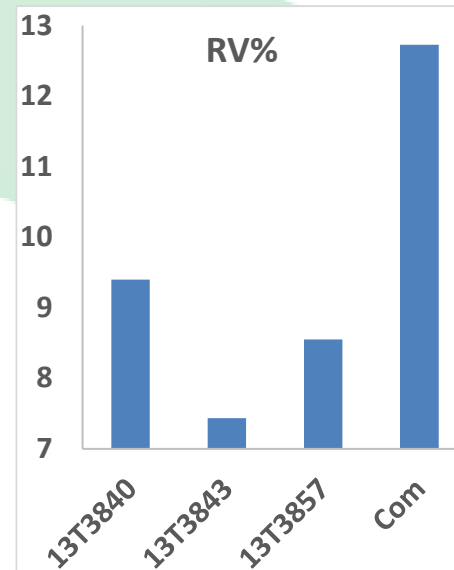
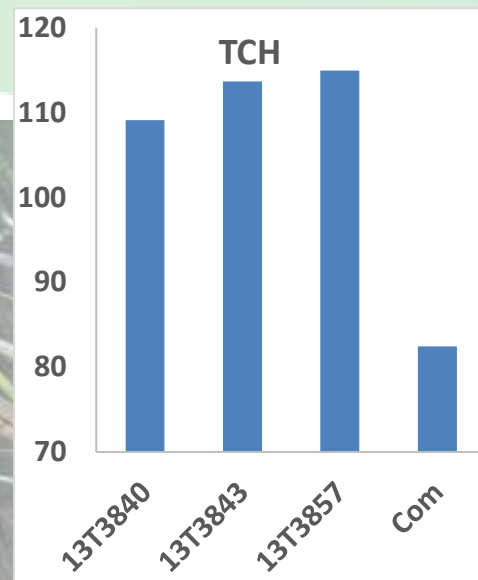
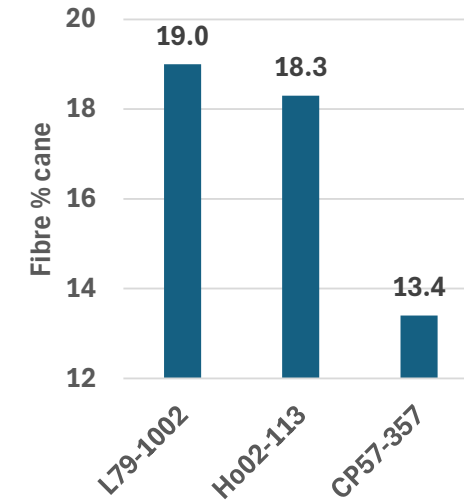
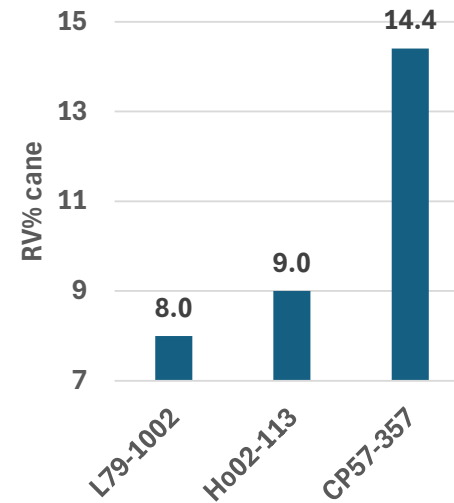
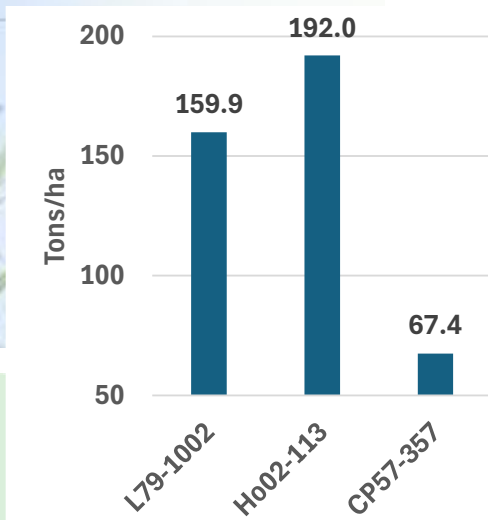


Spontaneum clones at SASRI,
Thin stalks,
High stalk population,
In concrete drums - can grow wild like
invasive species,
Excellent ratooning



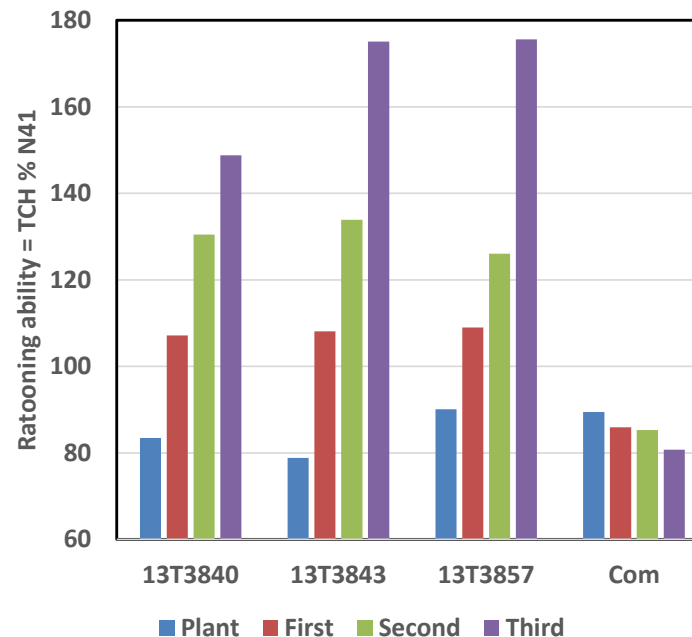
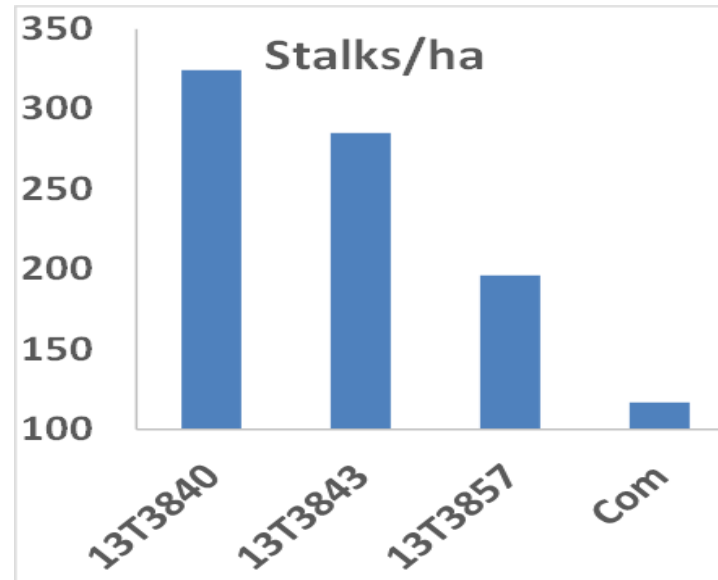
F1 hybrids = biomass varieties,
Vigorous growth, thick canopy
= smother weeds

Louisiana Biomass Varieties – Bischoff et al. 2008, Hale et al. 2013



SASRI Biomass Varieties in advanced testing trials

SUITABILITY OF FEEDSTOCK FOR PROCESSING



- Biomass (F1 *S. spontaneum* x *S. officinarum*) varieties produce high TCH, low RV%, high Fibre % cane, high stalk population,
- Broad adaptability, ratooning ability and tolerance to abiotic stress – can be grown in marginal areas = expanding the area under sugarcane,
- Potential for use in electricity co-generation, second generation ethanol production, paper production and other products.

AGRO-PROCESSING OPPORTUNITIES



Palm oil, sunflower oil, and soybean oil are key areas for investment. Africa's palm oil production is set to grow, with **Nigeria** and **Ghana** leading the charge, and its by-products include palm kernel cake, which can be used in animal feed.



Growing cotton in **Benin** and **Malawi**, an opportunity for advanced processing facilities. Cottonseed oil and cottonseed meal are also valuable by-products that can be used in the food and animal feed industries. Investing in cotton processing can thus produce textiles for both local and international markets.

SUSTAINABLE AGRO-PROCESSING FOR A BIO-BASED ECONOMY

CASE STUDY 1: FISH – UGANDA

- Employment 32 000 people directly and more indirectly
- Export revenue U\$116 million
- 17 Fish processing & exporting plants in clusters along Lake Victoria
- Perishable – cold chain key & employee training
- key elements:
 - Skilled workers in processing facilities
 - Improvements in processing facilities through government and donor agencies
 - Subjected to EU export requirements – stringent barriers to market access
- Challenges
 - Uncoordinated marketing – no institutional support
 - No link to research institutions to foster innovations and improve productivity
 - Institutional technology transfer gap
 - Processing & Storage facilities

SUSTAINABLE AGRO-PROCESSING FOR A BIO-BASED ECONOMY

CASE STUDY 2: WINE – SOUTH AFRICA

- Employment 270 000 people directly and more indirectly
- Export growth from 177 million litres in 2002 to 320 million litres in 2020
- 4000 growers on 110 000 hectares of land
- key elements:
 - Well established farmers + new entrants
 - Cooperative producers
 - wholesalers
- Enablers
 - Marketing institutional support (e.g. WoSA)
 - Technical support – Agricultural Research Council – variety development, pest & disease expertise, soil health, post-harvest practices & technology transfer
 - Elsenburg Agriculture College and University training – viticulture & oenology
 - Good road infrastructure
 - Processing & Storage facilities

RECOMMENDATIONS FOR SUSTAINABLE AGRO-PROCESSING IN A BIO-BASED ECONOMY

GOVERNMENT

- Regulatory System
- Infrastructure (roads, electricity, water etc)
- Policy support

RESEARCH & TRAINING INSTITUTIONS

- Research services, technology development, technology transfer
- Education and training
- Scientific and market advice

PRIVATE SECTOR

- Investments & trade
- Production and quality assurance
- Product marketing and sales

FINANCING

- Investments to facilitate entrepreneurship
- Finance and transactional services

MARKET ACCESS

- Coordinated facilitation of market access by key stakeholders
- Product education



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Thank you