



## **STANDING COMMITTEE ON ECONOMIC AFFAIRS**

### **Consolidated Review Report of the Sugar Research Institute of Fiji 2016, 2017, 2018, 2019, 2020 and 2021 Annual Reports**

#### **Annexures**

## 7.0 Annexure



# Sugar Research Institute of Fiji

*Advancing and innovating Sugarcane Research in Fiji*

Annual Reports Analysis 2016-2021 and Contributions to SDGs  
12<sup>th</sup> June 2024  
Suva Fiji

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Sugar Research Institute of Fiji

Strategic Partners



Sugar Research Institute of Fiji was established in 2006 as a principal research institution dedicated to sugarcane research, development, and technology transfer to support the Fijian sugar industry

- Our current focus areas :
  - Sugarcane conventional breeding
  - Soil and leaf analytical services
  - Cane analysis for research and investigation purposes
  - Pests and diseases screenings
  - Crop diversification
  - Management of estate commercial farms
  - Effective land utilization
  - Production of disease free seedcane
  - Seedcane certification
  - Scientific expertise to our strategic partners, aiding them in making informed policy decisions
  - Conduct donor financed projects for the benefit of the farmers

# Highlights Trends & Analysis

2016 – 2021 Annual Report

## 2016

### Highlights



Category 5 cyclone  
Winston



Cane deterioration  
studies



Fertilizer  
recommendation



Research trials



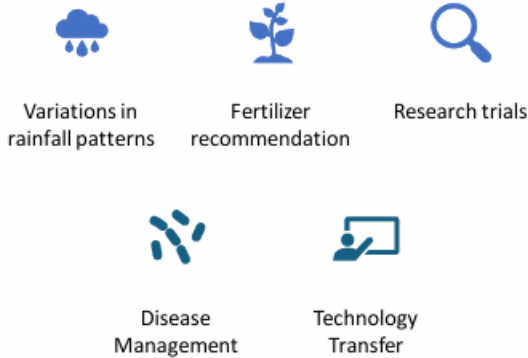
Technology Transfer

### Trends & Analysis

- Category 5 cyclone and dry conditions contributed to a 24.8% decrease in total production from 2015. Cane deterioration was at 0.2% POC decrease for everyday delay in harvest.
- 2378 soil samples analyzed
- Mucuna Pruriens cover crop trial increased pH: 5.0 – 6.1; phosphorous: 40mg/kg to 61.8mg/kg
- 2809 farms inspected for disease; 1156 infected stools removed.
- 8 demonstration trials, 2 major field days & 8 information days with a total of 339 farmers in attendance

# 2017

## Highlights



## Trends & Analysis

- Increase rainfall boosted crop recovery from the effects of Cyclone Winston of 2016, increasing total production by 17.6%
- 2075 soil samples analyzed
- 4000 new clones produced for testing
- 2075 soil samples analyzed
- 2813 farms inspected for disease; 747 infected stools removed
- Total of 30 grower meetings, 17 demonstration plots, 17 information day and 1 major field day with a total of 120 farmers in attendance

# 2018

## Highlights



## Trends & Analysis

- Cyclone recovery efforts were rewarded with a 4% increase in crop production
- 1,076 soil samples analyzed
- 2,750 new clones produced for testing
- N-fixing bacteria successfully isolated, mass produced to be inoculated with black gram seeds for green manure projects.
- Revival of the Tissue Culture lab for seedcane propagation
- 1,606 farms inspected for disease; 1524 infected stools removed
- 24 demo plots, 20 field days, 6 grower meetings & total of 508 farmers in attendance

# 2019

## Highlights



2 tropical  
cyclones



Fertilizer  
recommendation



Research trials



Disease  
Management



Technology  
Transfer

## Trends & Analysis

- Despite the 2 cyclones there was a 6.4% increase in crop production
- 1,517 soil samples analyzed
- 4,200 new clones produced for testing
- Seed propagation of LF11-233 promising variety.
- N-fixing bacteria trial did not produce significant yield increase in the trials.
- 120 farmers surveyed for AST infestation, only 17% was infested.
- 1,959 farms inspected for disease; 3112 infected stools removed
- Average yield from demo plots practicing best management practice was 104tph

# 2020

## Highlights



1 Cat 5 Cyclone -  
Labasa



Moderate La  
Niña event



Fertilizer  
recommendation



Research trials



Disease  
Management



Technology  
Transfer

## Trends & Analysis

- Sever weather condition; cyclone, rainfall and flooding affected production with a decline of 4.3% observed in 2020 compared to 2019
- 2,057 soil samples analyzed
- 8,372 new clones produced for testing
- 12% extraneous matter (EM) increase in harvested cane reduces %POC by 1 unit.
- 1,997 farms inspected for disease; 4,056 infected stools removed
- 11 demo plots, 7 ha of seed plot, 5 lime trials, 10 field days and 67 farms under green manure
- Average of 120tph achieved from rehabilitated sugarcane farm in Tunalia

# 2021

## Highlights



2 Tropical  
Cyclones



Fertilizer  
recommendation



Research trials



Disease  
Management



Technology  
Transfer

## Trends & Analysis

- Production decline of up to 18% observed for 2021 compared to 2020 due to the impact of 2 tropical cyclones
- 2,159 soil samples analyzed
- 8,027 new clones produced for testing
- 8,160 seedling produced by TC lab
- 2,312 farms inspected for disease; 3,547 infected stools removed
- 26 demo plots, 16 field days, 30.3 ha of seed plot and combined total of 151 farmers attended all field days.

## Challenges (2016-2021)

- **Declining Cane Production:** The area under sugarcane cultivation has been steadily declining, leading to a significant drop in production. This is attributed to various factors, including:
  - **Land Use Changes:** Land is being converted for other purposes, such as housing, industrial development, etc.
  - **Land tenureship – expiring land leases**
  - **Aging Cane Varieties and aged ratoon:** The industry relies heavily on older varieties that are less productive and susceptible to diseases. Ratoons are more than 15-20 years
  - Soil Health – poor soil management
  - Lack of adoptability of proven and best practices
  - High cost of agro inputs
- **Low Cane Prices:** Unfavorable prices for cane have discouraged farmers from continuing in the industry.
- **Weather Extremes:** The industry is increasingly vulnerable to extreme weather events, such as cyclones and droughts, which can severely damage crops and disrupt production.
- **Disease and Pest Pressure:** Sugarcane diseases and pests continue to pose a significant threat to production, requiring ongoing research and control measures. Increase population of noxious & invasive weeds/ limited use of IMP & IDM
- **Aging Farmers/limited new & young farmers**
- **Labor Shortages:** the industry is facing a shortage of skilled labor, particularly in the harvesting, planting and husbandry sectors.
- **COVID-19 Pandemic:** The pandemic disrupted research trials and SRIF's outreach programme for farmer training and education.



## Future Outlook:

- SRIF is committed to staying at the forefront of industry trends and emerging technologies.
  - **Cutting-edge Research:** Tailored studies and innovative solutions to address industry challenges.
  - **Technical Expertise:** Access to a team of skilled scientists and researchers dedicated to the sugar sector.
  - **Sustainable Practices:** Promoting environmentally friendly and socially responsible approaches for long-term viability.
  - **Training and Development:** Empowering industry professionals with knowledge and skills through workshops and seminars.
  - **Collaboration Opportunities:** Partnering with stakeholders to foster innovation and drive collective success.

## Immediate intervention by SRIF

- Made available around 600 tons of seedcane across milling areas including TC and HT seeds
  - Seedcane promotion – above 4tons we will provide 2tons FOC
- Changed the turn around time for soil tests to 14days



## Cont'd

- All SRIF estate fallow land are under cultivation and many are now planting with varieties that we intend to reintroduce such as Beqa (high sugar >25% Brix) & Galoa (saline soil & salt intrusion)
- SRIF is also aligning its planting for large mill test



## Cont'd

- Amid mill date announcement we have deployed team to start Brix testing
- Resources are prioritized to analyse POC's trends to identify defaulting parameters / work with FSC to improve this season





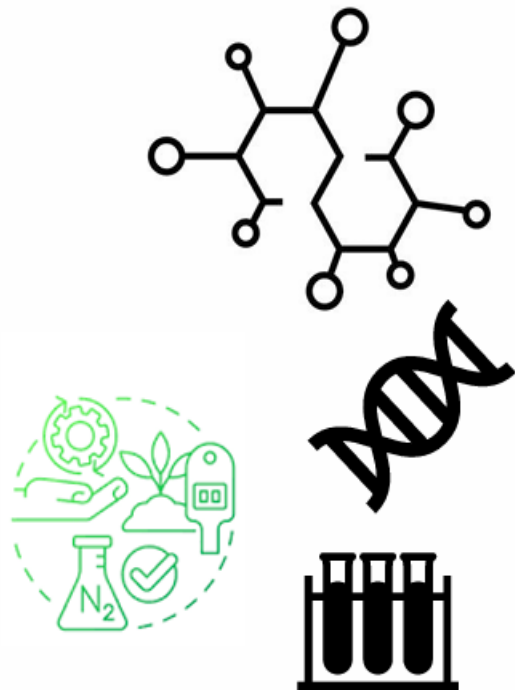
## Cont'd

- Established a Pest and Disease Screening station at Wairuku
- Reorganized the only cane breeding station in Fiji



## Cont'd

- Re-opening of the Molecular Lab to build capacity in assisting with unapproved variety identification through DNA.
- Procurement of Nitrogen Analyzer



## Collaboration with Ministry of Agriculture – food and income security, sustainable practices for soil health and environmental sustainability



## Investing into rain harvesting and water resources management





## Mid-term

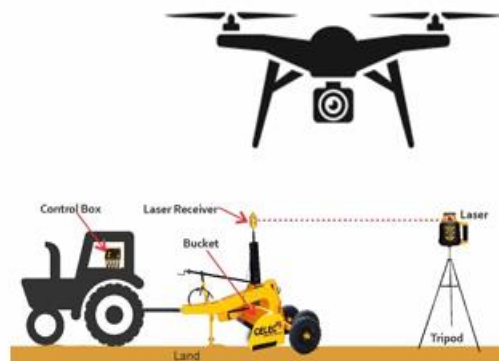
- SRIF is working on a new project – ‘subtle interventions, good impact’
  - Its not about increasing size of land but increasing productivity where we want to hold hands of 40 identified farmers and take them through the recommended package of practice
  - We are anticipating an increase of production by 5 to 8% for the first year



## Cont'd Mid term

### Innovative Farming Practices

- Implementing Precision Agriculture Techniques
  - Drones
  - Laser-guided Leveler
  - GIS
- Utilization of Advanced Machinery for Efficiency
  - Partnership with suppliers to lease machinery for demonstration & awareness



## Long-term – establishment of business arm of SIRF

- Service provider for proven technology / practices including land prep, planting , fertilizer and weedicide application
- Commercial Estate management services



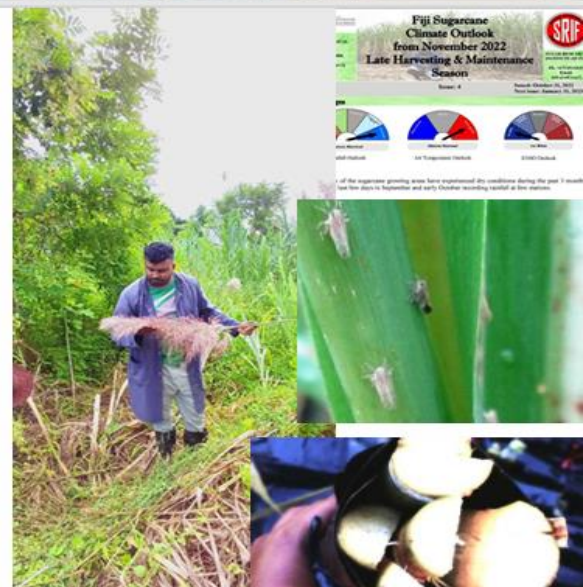
## SDG Analysis

- Contributions to Sustainable Development Goals (SDGs):
  - SDG 1: No Poverty - Resilience building
    - Capacity-building workshops for farmers & stakeholders.
  - SDG 9: Industry, Innovation and Infrastructure – advancement in research
    - Establishment of advanced research facilities and development of high yielding, high sugar and resilient sugarcane varieties.



## SDG Analysis Cont'd

- Cont'd:
  - SDG 13: Climate Action - Climate-smart practices and data monitoring
    - Application of climate and weather products from Fiji Meteorological services as guidelines to crop husbandry.
    - Breeding for climate resilient sugarcane varieties such as Galoa for coastline saline soils & Mana for drought tolerance.
  - SDG 15: Life on Land - Biodiversity and pest management
    - Conservation of local biodiversity through sustainable farming practices and pest monitoring and control.



1 of the sugarcane growing areas have experienced the conditions during the past 3 months (see flow chart in September and early October according to rainfall at this station).



## SDG Analysis Cont'd

- Cont'd:
  - SDG 17: Partnerships for the Goals - Stakeholder collaboration
    - Partnerships with academic institutions and international bodies to advance agricultural research.



## SDGs from 2022 onwards

- Contribution to sustainable development goals:
  - **SDG 2: Zero Hunger – sustainable agriculture**
    - supporting subsistence farming and promoting crop diversification through intercropping sugarcane with legumes
    - improving household food security, promoting sustainable agricultural practices, and generating additional income for smallholder farmers
  - **SDG 4: Quality Education – training**
    - Provide quality training and technical support to Sugarcane farmers for free
    - Provide industrial attachment for interns from FNU, USP and UoF to train future workforce.

## SDGs from 2022 onwards Cont'd

- 
- Contribution to sustainable development goals:
    - **SDG 5:** Gender Equality – women farmer training
      - Provide quality training for women farmers.
      - Establish demonstration plots and farmer field schools for leader women farmer in different sectors of the sugarcane belt.
      - Equal opportunity employment for women at SRIF
    - **SDG 7:** Affordable & Clean Energy– ethanol production
      - Gearing towards ethanol production for clean energy.
    - **SDG 8:** Decent Work and Economic Growth -
      - Capacity building and training for stakeholders to improve productivity
      - Improve resource efficiency through recommended fertilizer usage based on soil tests.

## SDGs from 2022 onwards Cont'd

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- Contribution to sustainable development goals:
    - **SDG 10:** Reduce inequalities – inclusive of all
      - Equal opportunities for all in training, employment, support and technical advice irrespective of gender, disability, race, ethnicity, origin, religion or economic or other status
    - **SDG 12:** Responsible Consumption and Production – recommended usage
      - Soil testing and recommending of optimal mineral fertilizer amount for sugarcane farming.
      - Recommended and approved dosage of globally approved weedicide with very minimal environmental .

# SUGARCANE BREEDING PROCESS IN DOBULEVU – ONGOING NOW!!!



## Conclusion

- Summary of key points:
  - Significant progress made in resilience, productivity, and sustainability
  - Ongoing challenges addressed through innovative practices
- Future directions and goals:
  - Continued focus on SDGs
  - Enhancing partnerships and stakeholder engagement



