RESEARCH AND DEVELOPMENT

Annual General Meeting
April 2022

OUTLINE

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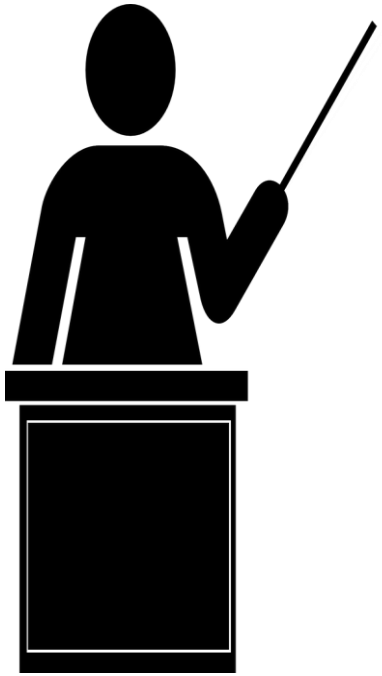
Achievements 02



03 Lessons Learnt

04 Priorities/Plans

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BACKGROUND

01

The Research, Development and Innovation Center provides a space for knowledge generation and transfer in varied thematic areas, including crops and livestock, thereby supporting the MAFSE national programs. At the same time the center provides key services to the agriculture community.

GUIDING STATEMENTS

Vision

To be the research and development center of excellence that is innovative, relevant and responsive to the emerging issues, challenges and opportunities in agriculture.

Mission

To continue conducting relevant adaptive/on-farm research, validating technologies, promoting innovative techniques and methodologies, and providing developmental services that increases the competitiveness of producers while enhancing sustainable agriculture.

Values

Integrity · Hard work · Professionalism · Teamwork · Dedication · Positivity · Equity

SECTIONS AT THE RDIC

Tilapia Hatchery

Provide a steady supply of quality, sex-reversed tilapia fingerlings to aquaculture producers, and to provide technical support through its Extension Service.

Open field and Protected Structure Vegetable

Vegetable crops under Protective Covered Structures and open field conditions. Production of soil amendments and healthy seedlings.

Crops and Fruit Tree

Produce quality germplasm of corn and beans, and fruit trees including hybrid coconut, grafted fruit trees and upkeep of a germplasm bank.

Livestock

Supply of breeding stock for beef cattle, sheep and goat.

Agro-processing

Engaged in product development and evaluation, capacity of building of agro-processors and interested entrepreneurs in agro-processing.

Mechanical and Engineering Support

Tractor services for hire to surrounding farming community, including bush-hogging, plowing, harrowing.

Support Services to MAFSE

Carpentry, masonry, plumbing, welding and landscaping needs to the entire RDIC grounds.

ACHIEVEMENTS

02

EVALUATION OF HYBRIDS & OPEN POLLINATED VARIETIES IN PROTECTED STRUCTURES IN CENTRAL FARM

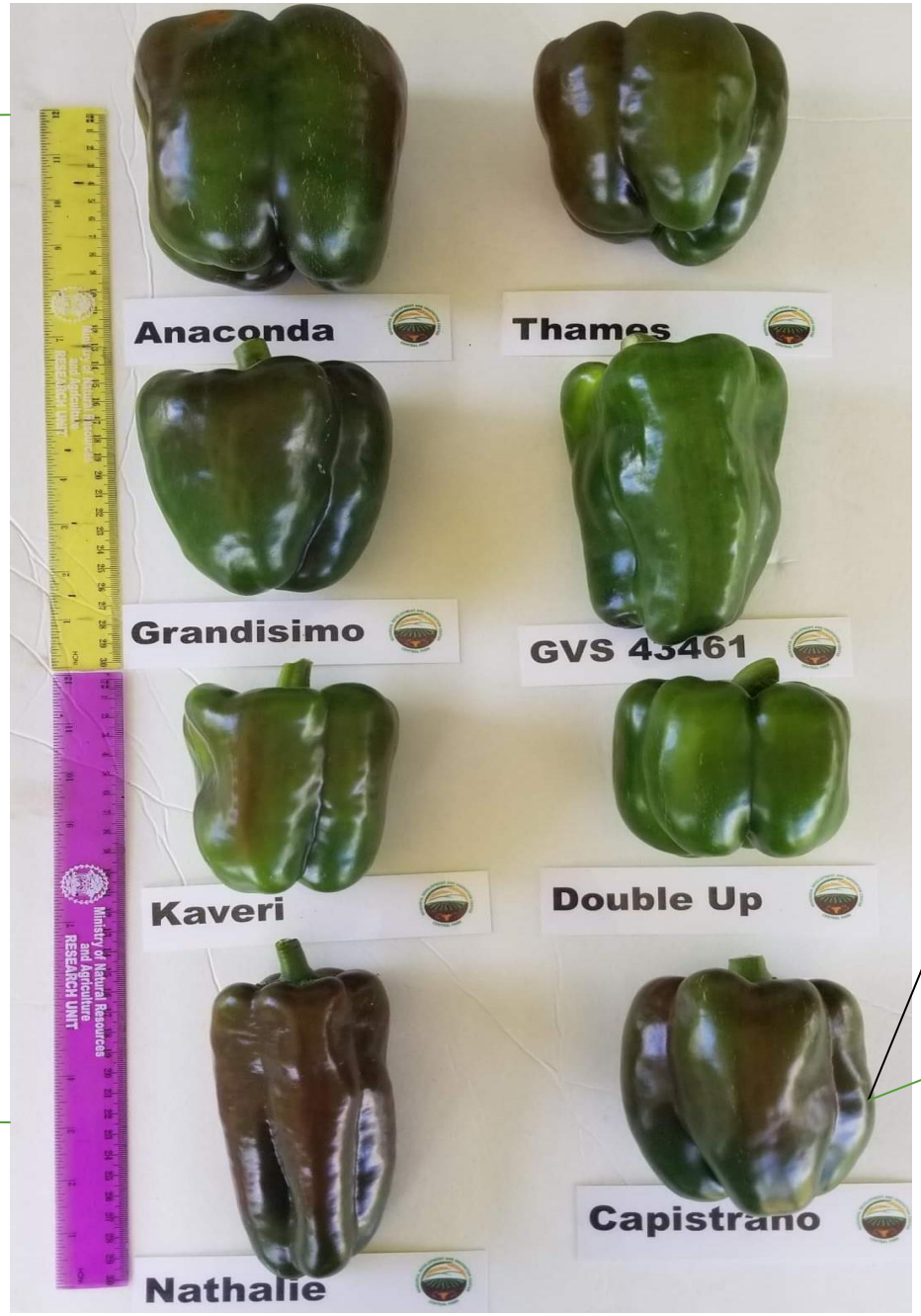
Evaluations were conducted in protected structures to observe the agronomic and yielding performance of hybrid and open pollinated sweet peeper varieties. This activity is still ongoing.

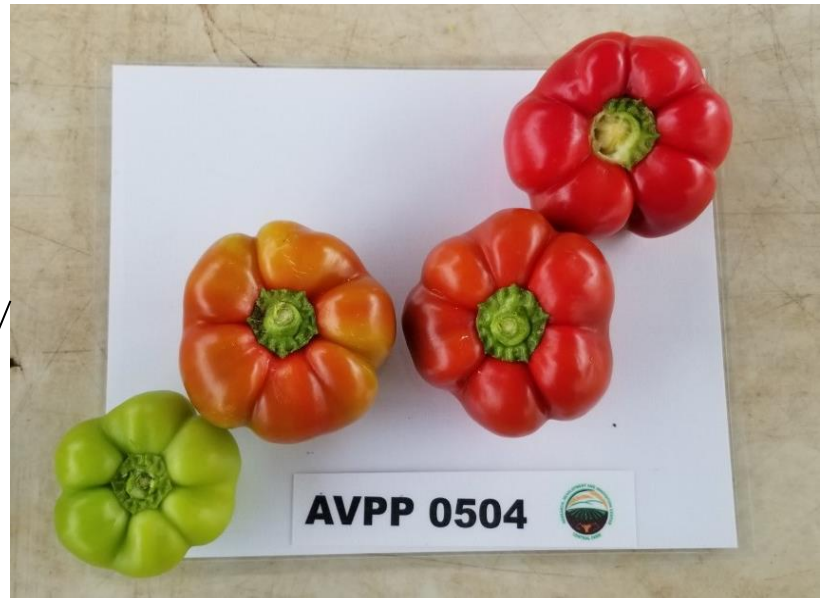
Hybrids: Anaconda, Thomas, Grandismo, GVS4361, Kavari, Double up and Nathalie. **Total *7***

Open pollinated: Capistrano, AVPP 0408, AVPP 0504. **Total 3**

Having an OP variety with performance that is better than or as good as commercial hybrids, this will allow farmers to practice seed saving, thereby reducing costs while still maintaining yield.

Hybrids





Open Pollinated Sweet Pepper Varieties

EVALUATION OF 51 BIO-FORTIFIED BEAN LINES

- Est. December 2021 by CARDI at the Central Farm Station, EO Marvin Blades in Stann Creek and EO Federico Chi in Orange Walk.
- Third Observation Yield Trial established in country and the results of this trial will determine the selection of varieties for a commercial yield trial.
- Only two locations were successful with collection of yield data since the Orange Walk trial was lost due to interference with livestock.

MAFSE – CARDI

BEST PRACTICES IN POTATO PRE-HARVEST

- A field evaluation was done in Barton Creek to observe whether trimming or desiccating with herbicide would result favorable for post harvest quality.

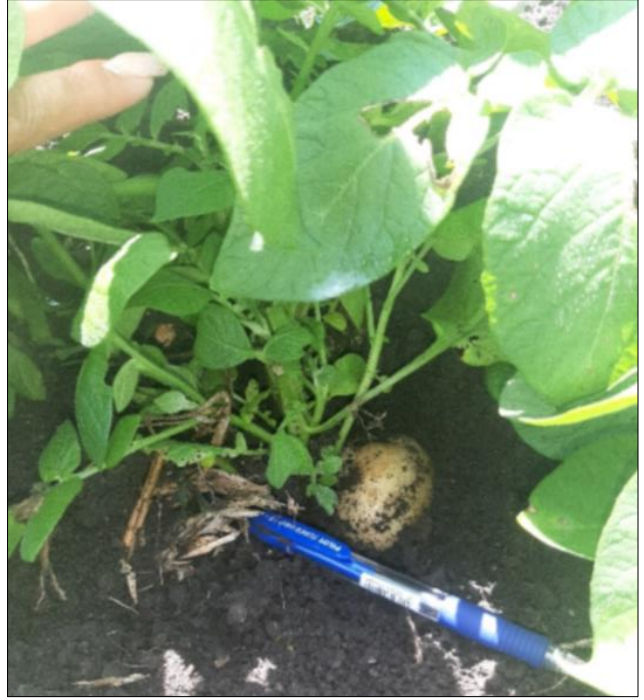
- Harvest data showed no significant difference in total weight (*P=0.0604*).
- Sorting highlighted a high percentage of discarded tubers.

- 73% due to cracking as a result of fluctuations in water availability.

Treatment	Weight loss
Trim	76.7 g
Dessicant	73.3 g
Control	78.3 g

BEST PRACTICES IN POTATO: COLD STORAGE

Three replicates, no significant difference (*P=0.7290*) in weight loss between treatments after storing for 7 weeks at 13°C



OBSERVATION TRIAL OF TWO WHITE POTATO VARIETIES

- Two imported white potato varieties (Gold Rush and Langlade), alongside Red Lasoda, were evaluated in San Carlos in Orange Walk District and Springfield and La Gracia in the Cayo District.

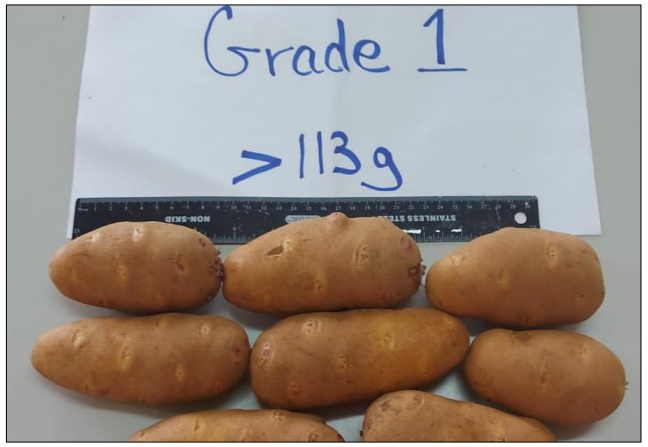
- These trials were farmer led, and the varieties proved adaptable to local growing conditions and practices. The storage potential, under refrigerated temperature, of these varieties is still being evaluated.

OBSERVATION TRIAL OF TWO WHITE POTATO VARIETIES

Variety	Location	No. Tubers plant^{-1}	Weight tuber^{-1}	Yield lbs ac^{-1}
Gold Rush	Orange Walk	4.5	464.04 g	15,449.30 lbs
Gold Rush	Cayo	3.7	493.29 g	22,105.25 lbs
Langlade	Orange Walk	4.0	519.38 g	15,972.00 lbs
Langlade	Cayo	2.9	371.72 g	15,228.58 lbs

- Statistically significant differences (P=0.0003) observed between locations for tuber weight for Langlade variety.
- Statistically significant differences (P=0.0011) observed between varieties in Springfield

OBSERVATION TRIAL OF TWO WHITE POTATO VARIETIES



CAPACITY BUILDING IN THE AREA OF HARVEST AND POST-HARVEST MANAGEMENT FOR ONION AND POTATO

The program supported the JICA cold storage project with planning, preparing of training materials and the delivery of training to onion and potato farmers in Corozal, Orange Walk, Belize and Cayo District.

More than 50 farmers from at least nine cooperatives/associations/informal groups received training on the following:

I. General Agronomic Info on Onion and Potato
II. Integrated Pest Management: Onion and Potato
III. Harvest and Post Harvest Management: Onion and Potato
IV. Cold Storage Management: Onion and Potato

PRESERVATION OF GERMPLASM

The program continued with the preservation and maintenance of germplasm collections of fruit tree (coconut, mango, citrus, pitahaya, musa spp.), root crops (cassava, coco yam, dasheen, turmeric, arrowroot, sweet potato) and traditional crops (Chaya).

This germplasm will supply the necessary propagation material to equip our current nurseries with an assortment of fruit trees. The fresh produce harvested will be used for the elaboration of value-added products conducted by the Agropocessing Unit. Planting material of commercial and local species will be made available to farmers and interested persons upon request.

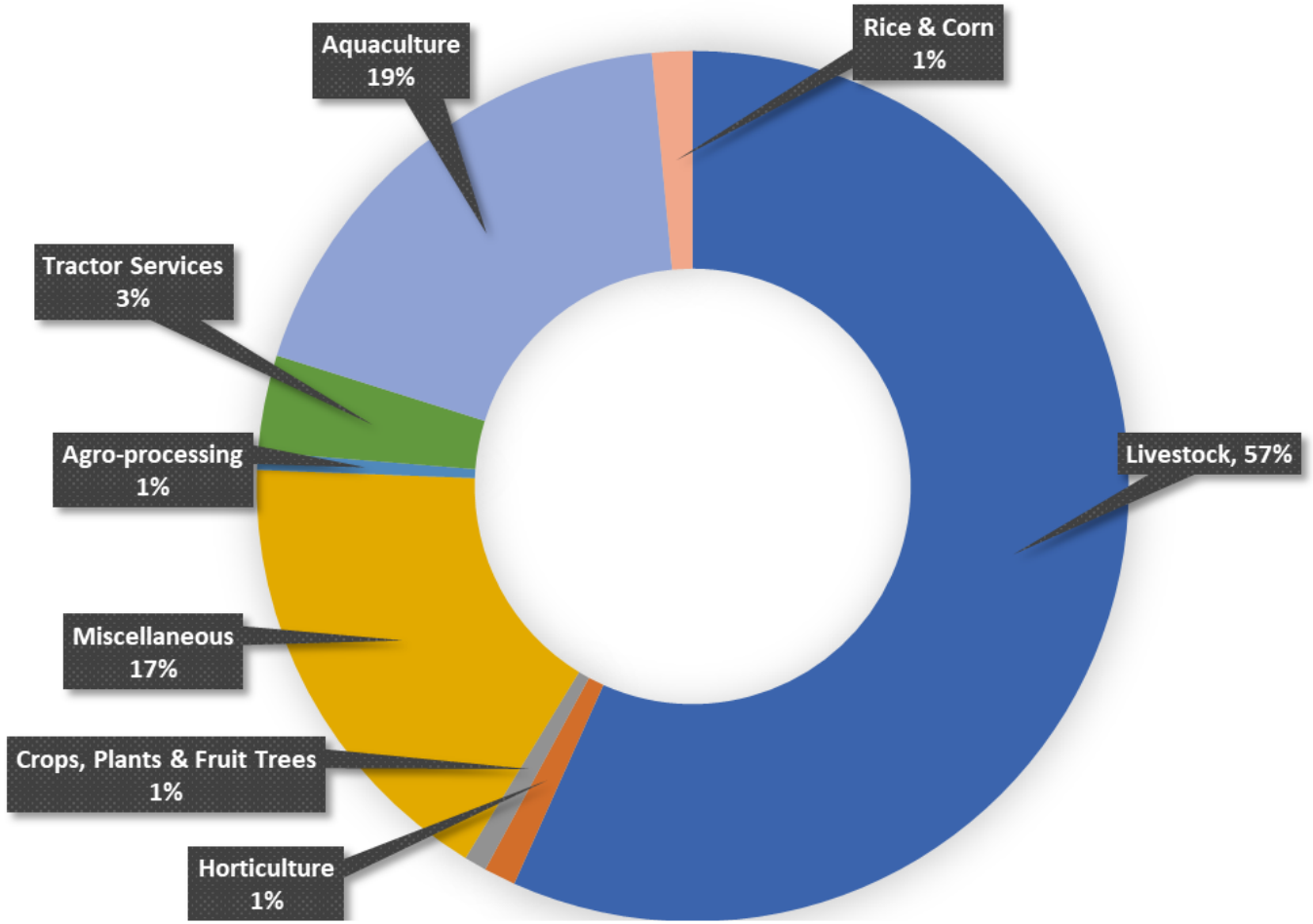
Revenue Collection

Source	2019 (BZ$)	2020 (BZ$)	2021 (BZ$)
Livestock	52,204.50	65,137.50	**138,153.00**
Horticulture	5,689.00	8,164.35	2,866.03
Crops, Plants & Fruit Trees	8,729.75	9,677.50	2,032.25
Miscellaneous	48,280.00	30,856.50	**41,120.80**
Agro-processing	890.00	1,331.75	1,610.00
Tractor Services	6,370.00	11,701.75	8,757.50
Aquaculture	25,023.87	22,079.03	**45,403.17**
Rice & Corn	1,657.25	3,459.25	3,658.75
Total	**148,844.37**	**152,407.63**	**243,601.50**
Sheep & Goat Project*	15,459.00	15,306.00	57,686.00

* Sales from the Sheep project deposited in separate revolving fund

2022 REVENUE CONTRIBUTION BY ACTIVITY

- The sale of cattle accounted for 57% of revenue collected in 2021 ($138,153.00)
- Second highest revenue generator is the sale of fingerlings and gutted whole fish from the THC ($45,403.17)
- The RDIC also generates funds from the lease of land and rental of houses ($41,120.80)



LESSONS LEARNT

03

Main lesson learnt

- The value of networking, partnerships and team work to achieve goals.
- Priority setting is at the core of proper planning and strategizing to achieve common goals and maximize available funds.
- Timely submission of fund request enabled much work to be achieved but this needs to be done at the onset of the fiscal year rather than the end of first quarter as was done in 2021. This will allow the program to properly schedule the work on station.

PRIOTRITIES/PLANS

04

Description/Specification	Output
Enhance research and extension services capabilities, especially with regards to identifying and supporting productivity in crops and livestock production, the cultivation of non-traditional crops, and new agro-processing activities, through the adoption of new technologies.	1. Research in priority crops and thematic areas undertaken through collaboration with regional entities (NGO, academia, International research organizations etc). 2. Increase/enhance knowledge and skills of technical personnel through capacity building.
A reinvigorated research and development center supporting the development of the agriculture sector through the validation of adoptive technologies.	1. A research and development plan for the center describing the prioritized interventions for research in priority crops and thematic areas. 2. Technical staff able to conduct on station and on farm research. 3. By extension, support research projects at the three district agriculture stations including on farm trials, (Orange Walk, Stann Creek, and Toledo)
Promote RIDC visibility with the production of technological packages obtained from research and demonstration activities carried out in the areas of livestock production, the cultivation of non-traditional crops, and agro-processing activities.	1. Production of video manuals in selected commodities/ production systems 2. Support the process of transfer and adoption of technology within the farming community. 3. Compilation of research and demonstration projects executed by the MAFSE

PERFORMANCE INDICATORS

Indicator	Level at present	2022	2023	2024
Increase in vegetable demonstration plots	3	6	8	10
Number of livestock evaluations carried out	0	1	2	3
Number of revised crop and animal information sheets produced by national programs	0	4	6	6
Number of research evaluation reports revised and approved	1	6	8	10
Number of evaluation/validation plots established in priority crops	2	6	6	12
Number of trainings plans developed and executed for extension officers	0	5	5	5
Number of manuals and/or informative material produced by R&D on priority commodities	0	3	3	5

PERFORMANCE INDICATORS CONT'D

Indicator	Level at present	2022	2023	2024
Number of meetings/forums held with national R&D stakeholders	0	1	1	2
Number of improved varieties of varied crops validated prior to introduction into the agro-production stream	0	2	3	3
Number of technical entries into R&D national database	0	6	6	15
Increase by 10% in overall income generated from technology transfer and services in Central Farm	$240,000.00	$253,000.00	$278,300.00	$306,130.00
Number trainees adopting skills and techniques in agro-processing to improve enterprises		10	10	20

CONCLUSIONS/RECOMMENDATIONS

05

- An effective research program requires dedicated and full time staff that have an appreciation for the scientific approach and understand the important role that research plays in the development of and adoption of technology.

- Each national program needs to have a realistic and attainable work plan for their interventions at the district level, preferably at the agriculture stations.

- Each national program should aim at generating at least one research-oriented work per year. These activities should not be limited to field trials but also include the systematization of their activities (record keeping, SOPs, case studies etc.).

- Work towards cementing the partnerships with key stakeholders in public-private-academia to move agriculture R&D.

Ina Iris Sanchez
Coordinator
Research and Innovation
Research, Development and Innovation Center
Central Farm

Email: ina.sanchez@agriculture.gov.bz
Tel: 8242123

THANK YOU