MAURITIAN EXPERIENCE
CROP WATCH ICP

Application of Satellite Technology and remote sensing for Crop Monitoring

Support implementation of the SDGs

FOOD SECURITY

Food and Agricultural Research and Extension Institute

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Research Scientist

• Mauritius: Agricultural Landscape

- ➢ High dependence on food imports >70%
- ➢ Vulnerable to natural calamities
- ➢ Mauritian Government promoting:

i. Agric. Diversification/Sustainable agriculture

ii. Use of innovative technologies to transform local agriculture

Crop	Area harvested in 2021 (ha)
Sugar cane	41, 897
Food crop	8, 004
Tea	669

Sheltered farming

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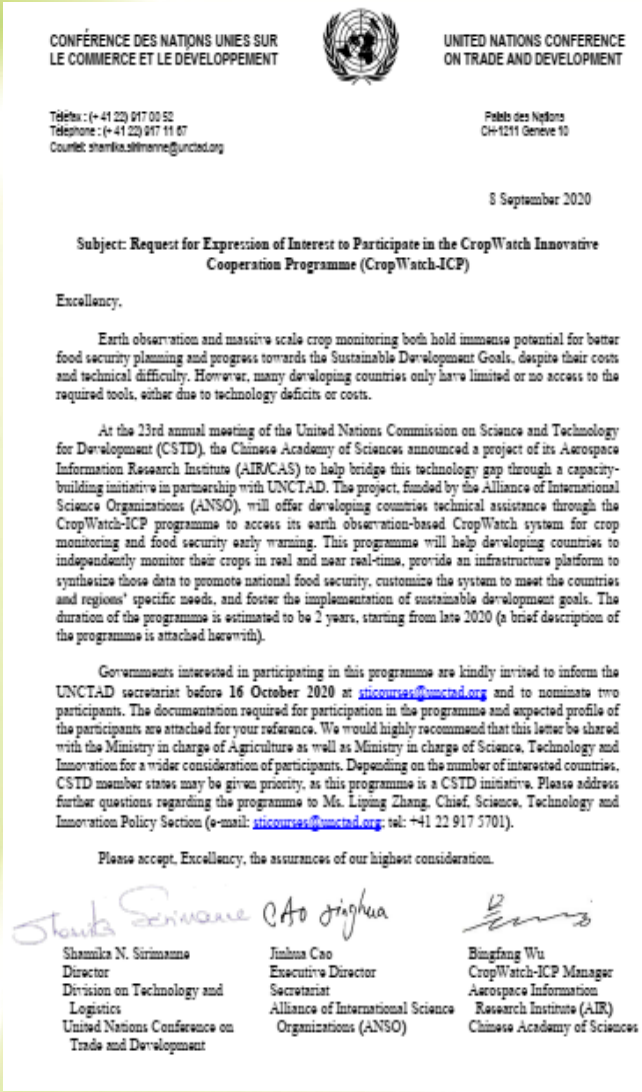
My Crop Watch Adventure …

1.	MARCH 2021	Call for Expression of Interest to participate in Crop Watch –ICP thro` Min. of Foreign Affairs



CONFÉRENCE DES NATIONS UNIES SUR LE COMMERCE ET LE DÉVELOPPEMENT

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

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Palais des Nations
CH-1211 Geneve 10

8 September 2020

Subject: Request for Expression of Interest to Participate in the CropWatch Innovative Cooperation Programme (CropWatch-ICP)

Excellency,

Earth observation and massive scale crop monitoring both hold immense potential for better food security planning and progress towards the Sustainable Development Goals, despite their costs and technical difficulty. However, many developing countries only have limited or no access to the required tools, either due to technology deficits or costs.

At the 23rd annual meeting of the United Nations Commission on Science and Technology for Development (CSTD), the Chinese Academy of Sciences announced a project of its Aerospace Information Research Institute (AIR/CAS) to help bridge this technology gap through a capacity-building initiative in partnership with UNCTAD. The project, funded by the Alliance of International Science Organizations (ANSO), will offer developing countries technical assistance through the CropWatch-ICP programme to access its earth observation-based CropWatch system for crop monitoring and food security early warning. This programme will help developing countries to independently monitor their crops in real and near real-time, provide an infrastructure platform to synthesize those data to promote national food security, customize the system to meet the countries and regions' specific needs, and foster the implementation of sustainable development goals. The duration of the programme is estimated to be 2 years, starting from late 2020 (a brief description of the programme is attached herewith).

Governments interested in participating in this programme are kindly invited to inform the UNCTAD secretariat before **16 October 2020** at stiecourses@unctad.org and to nominate two participants. The documentation required for participation in the programme and expected profile of the participants are attached for your reference. We would highly recommend that this letter be shared with the Ministry in charge of Agriculture as well as Ministry in charge of Science, Technology and Innovation for a wider consideration of participants. Depending on the number of interested countries, CSTD member states may be given priority, as this programme is a CSTD initiative. Please address further questions regarding the programme to Ms. Liping Zhang, Chief, Science, Technology and Innovation Policy Section (e-mail: stiecourses@unctad.org; tel: +41 22 917 5701).

Please accept, Excellency, the assurances of our highest consideration.

Shamika N. Sirimanne
Director
Division on Technology and Logistics
United Nations Conference on Trade and Development

Jinhua Cao
Executive Director
Secretariat
Alliance of International Science Organizations (ANSO)

Bingfang Wu
CropWatch-ICP Manager
Aerospace Information Research Institute (AIR)
Chinese Academy of Sciences

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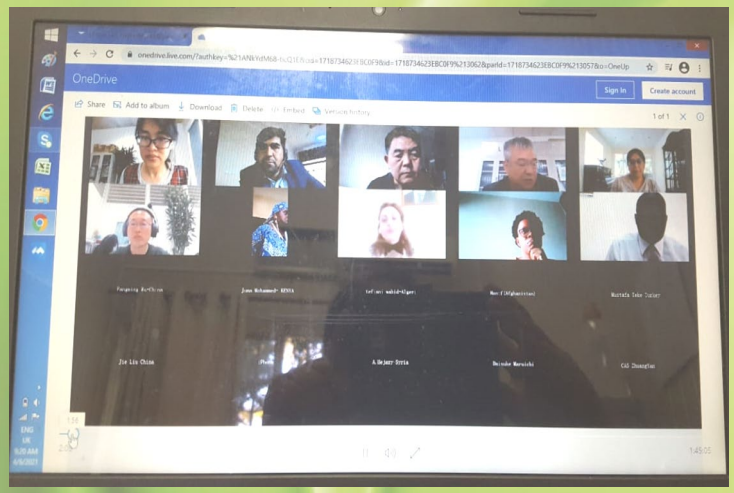
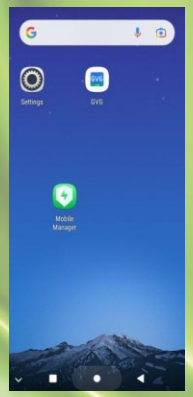
My Crop Watch Adventure…

2.	22 March to 26 May 2021	**On line training** ➢ **21 participants from 14 countries**





i. Introduction to cloud technology concepts, terms and indicators commonly used to assess crop condition such Normalized difference vegetative index (NDVI) ;

ii. Registration for access to the cloud platform and use of geo spatial information for crop condition monitoring;

iii. Downloading of GVG App on mobile phone and field applications

GVG App - User friendly tool to monitor crops

GIS, Video and GPS

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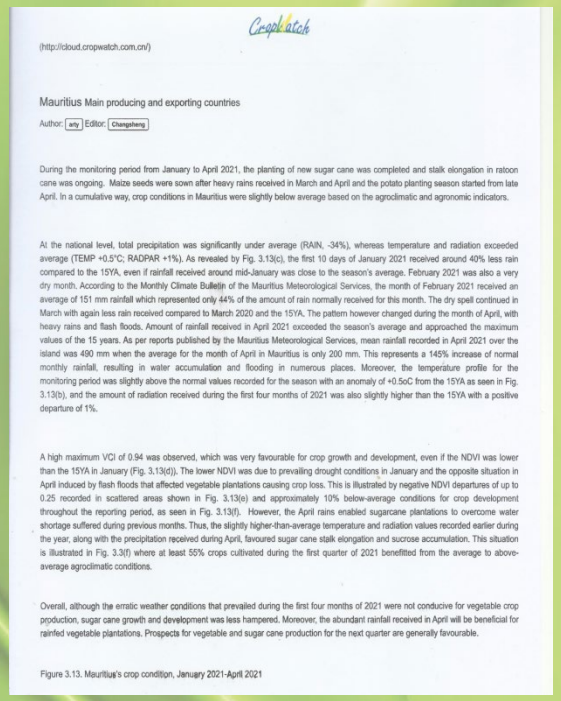
My Crop Watch Adventure…

3.	MAY 2021	Preparation of Country Bulletins; use of agro climatic and agronomic data available online to enable production forecasts and early warning bulletins



CropWatch

(http://cloud.cropwatch.com.cn/)

Mauritius Main producing and exporting countries

Author: arty Editor: Changsheng

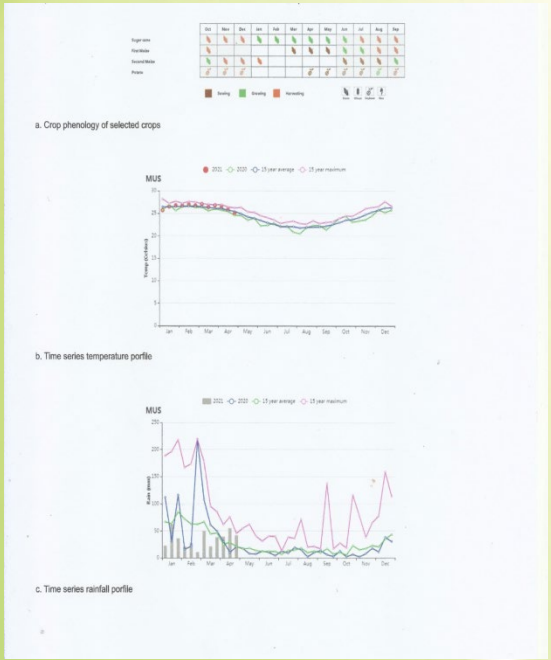
During the monitoring period from January to April 2021, the planting of new sugar cane was completed and stalk elongation in ratoon cane was ongoing. Maize seeds were sown after heavy rains received in March and April and the potato planting season started from late April. In a cumulative way, crop conditions in Mauritius were slightly below average based on the agroclimatic and agronomic indicators.

At the national level, total precipitation was significantly under average (RAIN, -34%), whereas temperature and radiation exceeded average (TEMP +0.5°C; RADPAR +1%). As revealed by Fig. 3.13(c), the first 10 days of January 2021 received around 40% less rain compared to the 15YA, even if rainfall received around mid-January was close to the season's average. February 2021 was also a very dry month. According to the Monthly Climate Bulletin of the Mauritius Meteorological Services, the month of February 2021 received an average of 151 mm rainfall which represented only 44% of the amount of rain normally received for this month. The dry spell continued in March with again less rain received compared to March 2020 and the 15YA. The pattern however changed during the month of April, with heavy rains and flash floods. Amount of rainfall received in April 2021 exceeded the season's average and approached the maximum values of the 15 years. As per reports published by the Mauritius Meteorological Services, mean rainfall recorded in April 2021 over the island was 490 mm when the average for the month of April in Mauritius is only 200 mm. This represents a 145% increase of normal monthly rainfall, resulting in water accumulation and flooding in numerous places. Moreover, the temperature profile for the monitoring period was slightly above the normal values recorded for the season with an anomaly of +0.5oC from the 15YA as seen in Fig. 3.13(b), and the amount of radiation received during the first four months of 2021 was also slightly higher than the 15YA with a positive departure of 1%.

A high maximum VCI of 0.94 was observed, which was very favourable for crop growth and development, even if the NDVI was lower than the 15YA in January (Fig. 3.13(d)). The lower NDVI was due to prevailing drought conditions in January and the opposite situation in April induced by flash floods that affected vegetable plantations causing crop loss. This is illustrated by negative NDVI departures of up to 0.25 recorded in scattered areas shown in Fig. 3.13(e) and approximately 10% below-average conditions for crop development throughout the reporting period, as seen in Fig. 3.13(f). However, the April rains enabled sugarcane plantations to overcome water shortage suffered during previous months. Thus, the slightly higher-than-average temperature and radiation values recorded earlier during the year, along with the precipitation received during April, favoured sugar cane stalk elongation and sucrose accumulation. This situation is illustrated in Fig. 3.3(f) where at least 55% crops cultivated during the first quarter of 2021 benefitted from the average to above-average agroclimatic conditions.

Overall, although the erratic weather conditions that prevailed during the first four months of 2021 were not conducive for vegetable crop production, sugar cane growth and development was less hampered. Moreover, the abundant rainfall received in April will be beneficial for rainfed vegetable plantations. Prospects for vegetable and sugar cane production for the next quarter are generally favourable.

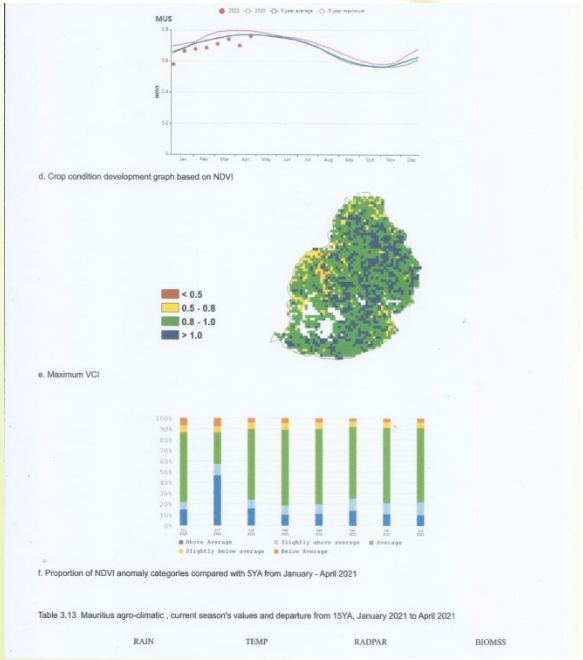
Figure 3.13. Mauritius's crop condition, January 2021-April 2021



a. Crop phenology of selected crops

b. Time series temperature porfile

c. Time series rainfall porfile



d. Crop condition development graph based on NDVI

e. Maximum VCI

f. Proportion of NDVI anomaly categories compared with 5YA from January - April 2021

Table 3.13 Mauritius agro-climatic , current season's values and departure from 15YA, January 2021 to April 2021

	RAIN	TEMP	RADPAR	BIOMSS

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4.	OCT to NOV 2022	FIELD ACTIVITIES USING GVG APP. Potato Plantations

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4.	OCT to NOV 2022	**FIELD ACTIVITIES USING GVG APP.** **Pineapple Plantations**

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4.	OCT to NOV 2022	FIELD ACTIVITIES USING GVG APP. Onion and Tomato Plantations

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5.	28 MARCH 2023	Participation in Crop Watch-ICP side event at the 23rd annual session of the United Nations Commission on Science and Technology for Development (CSTD), at UN Office in Geneva

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6.	07 to 10 AUG 2023	Regional training workshop for satellite crop monitoring using the Crop Watch system, Mauritius

“Welcome on Board of Crop Watch -ICP…”

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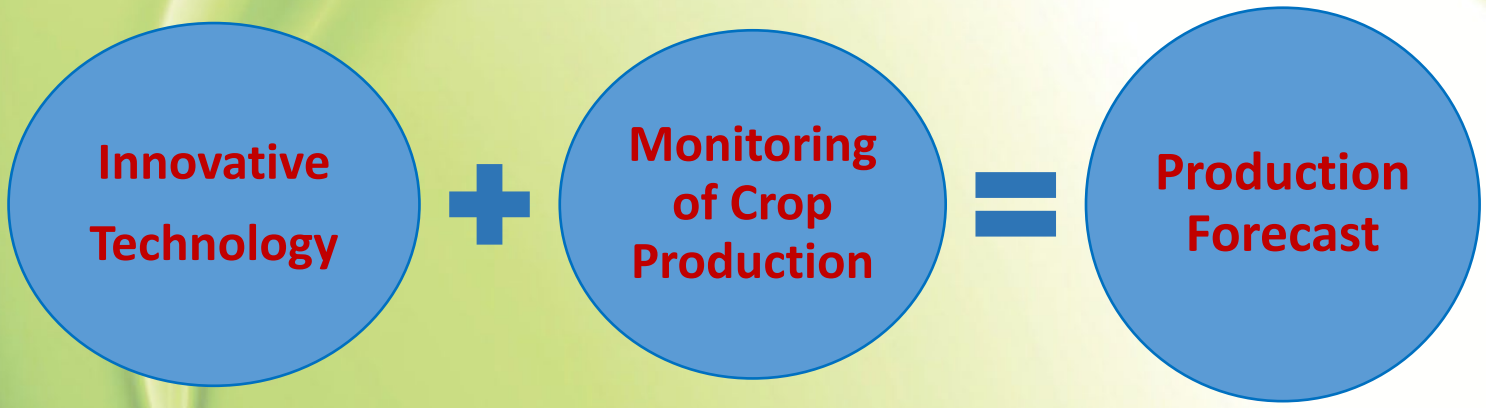
CROP WATCH - ICP



INNOVATIVE CROP MONITORING TOOL FOR FOOD SECURITY

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Acknowledgements

- Partners of Crop Watch-ICP (Organisers of training, and Regional Workshop, Resource persons, Sponsors)
- Management of FAREI and my colleagues, special thanks to Yaminee Hoolash
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- UNDP Office, Mauritius
- UNCTAD – Ms Eva Xiahui Xin, Mr George Colville, Mr Zenathan A. Hasannudin

THANK YOU

MERCI POUR VOTRE ATTENTION

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