Nius

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26 YEARS of Dedicated Agricultural Research for Sustainable Development

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Welcome to the 5th edition of NARI Nius for 2023. If you have any comments or contributions please drop us a line at: ***naripng@nari.gov.pg*** *for an e-copy*

Agriculture sector agencies urged to deliver on govt plan

Government agencies and departments are urged to deliver on the national government's plan through agricultural commercialisation and livestock development.

Agriculture Department Secretary Dr Sergie Bang made this challenge at the 12th NARI Agricultural Innovations Show saying key players within the sector will be called through stakeholder consultations to plan and see how they can deliver on their part to fulfil the National Agricultural Strategic Plan (NASP 2024-2033) .

Dr Bang says the government has committed K3.4billion to ensure its plan is delivered.

NARI Council Chairman Nimo Kama acknowledges the support of the national government and urged everyone to learn and interact with NARI to fulfil development aspirations of the government.

NARI Director General Dr Nelson Simbiken thanked and acknowledges the support from agencies within the private and public sector and welcoming Dr Sergie Bang as the Agriculture Secretary.

In commemorating NARI's 12th AIS and 25th anniversary, Dr Simbiken valued research contributions by the scientific staff, both past and present, saying quality of innovations and richness of participation in the show is growing every year.

Dr Simbiken says there is a changing need in innovative agriculture, technology and quality seeds to realize commercial agriculture in the rural economy which is aligned to NARI's Strategic Results Framework 2022-2026, an approach that is perfectly aligned to the Medium Term Development Plan 4 and NASP (2024-2033) to formalise market-driven production.

NARI is focused on engaging people and values the support of its staff and relevant stakeholders to ensure everyone has access to nutritious and health diets.

Morobe Governor Luther Wenge in his key note address affirmed the provincial government's support to NARI through the construction of an information centre and a tissue culture laboratory to conserve plant genetic resources.

Livestock scientist Arthur Roberts discusses importance of rearing the black soldier fly to show participants.

Staff of Muruk Tropical Produce Limited displaying a sample of the frozen taro.

Santos, gold sponsor to the 12th NARI AIS.

Plant Health Workshop ends on high note

Fourteen officers received certificates and recognised as plant health doctors after, through the support of the Centre for Agriculture and Bioscience International (CABI).

As plant health doctors, the officers will play the role like a '*medical*' doctor where symptoms are investigated before medicine is prescribed to cure the disease.

The plant health doctors will be able to identify symptoms of a plant disease or pest, collect, check infested samples and provide useful recommendations to farmers. If symptoms of a plant disease or insect pest are not clear, officers can seek advice from other colleagues who can be able to provide useful information.

Workshop Facilitator Dr Arnaud Costa of CABI conducted a series of modules in identifying common and confusing symptoms of diseases, recognising nutrient deficiencies, using mobile phones to identify plant diseases and an exercise on talking with farmers to understand how serious a disease or pest is in the field.

Officers from NARI, Kokonas Indastri Koporesen, Cocoa Board, FPDA, NAQIA and Coffee Industry Corporation went through a series of modules which looked at identifying pests and diseases affecting various horticultural plants and food crops.

NARI Director General Dr Nelson Simbiken officiated at the close of the workshop, thanked participants saying; with the skills and knowledge gained, they can plan for plant health clinics in their respective areas to assist farmers.

NARI is looking forward to learn about the progress of *'plant health doctors'* when they plan to hold a plant health clinic in their respective region to see how well they can be able to diagnose and prescribe good recommendations to the farming community.

Among the fourteen trained *'plant health doctors'* were two female officers; Botany Officer of NAQIA Carolyne Yallen and FPDA's Village Extension Manager Lonica Aris.

The Plant health workshop was run from October 23 to 27 at NARI's indoor Allan Quartermain Hall in Lae, Morobe province.

Group exercise on conducting diagnosis of plant samples showing plants affected pest or disease and providing good recommendation to farmers.

Pictorial group exercise on nutrient deficiencies in various plants.

Officers conducting a plant health clinic as part of a group exercise.

Certificate presentation to workshop participants.

Annual Innovations Show 2023 in pictures

Staff urged to contribute towards positive development

As the country marked its 48 Independence, NARI staff joined in the celebrations and was challenged to see if they have been contributing enough in reaching positive development for the country.

Dr Simbiken urged staff to be good stewards of time and resources and embrace care, love and peace in their line of work to reach development outcomes which are guided by aspirations, policies and vision set out by the government.

He says for NARI to move forward, it must partner with the government, commodity boards, and the private sector in the true spirit of public-private partnerships which are in line with its strategic plans to progress the agriculture sector to realise positive development outcomes.

"It is our 48 years of independence as a nation. Part of this journey was fore designed by our foremothers and forefathers, whose life was based on preservation, protection of the forest, food, health and what is our contribution to 48 years and beyond?, " expressed Dr Simbiken.

Dr Simbiken says the country's journey was fore designed when there we no pilots, doctors, lawyers, accountants but our forefathers had faith in seeing our nation harness resilience on its journey towards independence.

Staff were challenged and encouraged to contribute meaningfully in their work to realise positive development when joining the rest of the country to mark 48 years of independence.

Celebrations included flag raising, singing of the national anthem, reciting of the national pledge, reading of poems and an independence song. Staff and their families came in black, gold, red and white to mark independence.

Light refreshments was distributed after the official program with staff and their family to end the day's celebration.

Director General Dr Nelson Simbiken giving his official speech.


Female staff; Cresencia Mathews, Gloria Wingawe and Bridgit Samor.


Flag raising by one of the guard officers.

Happy 48th Independence PNG!

Taiwanese official visits NARI

A Taiwanese scientist visited NARI as part of a fact finding mission to see how rice cultivation can be improved with the aid of specialised skills in rice seed development, post processing, storage management, setting inspection criteria and other practical areas.

Dr Dong-Hong Wu is a specialist in rice breeding and has been working with the Taiwan Agricultural Research Institute (TARI) for fourteen years.

Dr Dong-Hong Wu

In his line of work, Dr Wu explained that rice breeding is a very important area in rice cultivation saying there is check points or areas that requires close attention before releasing a rice cultivar to farmers.

He says a rice breeder has to understand that hybrid rice varieties can't be stored or saved as it will not give maximum yield when planted, consider plant height and maturity; yield and multiple stress tolerance to disease, pests and other climatic conditions.

Momase Regional Centre and Taiwan Technical Mission officers with Dr Dong-Hong Wu (second from left in front row)

Dr Wu visited the rice fields at Bubia and Ziampir in Markham to see how well farmers are farming rice and find ways to improve farming practices for maximum yield.

Apart from improved rice cultivation practices, seed inspection and quality seed production for rice and other high value crops in Taiwan were presented.

He also visited the Southern Regional Centre in Central and conducted two weeks workshop on improved rice cultivation practices with staff.

Dr Wu expressed that; PNG can be able to make good progress not only in rice cultivation but also in other potential crops to progress which requires specialised skills and training.

Show coincides with 25th anniversary

NARI revived the annual Agricultural Innovations Show on October 18 after three years following the Covid-19 outbreak. The show coincided with NARI's 25th anniversary with the theme, "Research for a Productive Agri-food System" where the show finds research as critical to creating sustainable agricultural development for food, nutrition security and cash income.

Policy forum participants during the 2019 AIS.

A lack of investment into research will continue to affect the government's overall vision to agricultural development in PNG. Over 40 research and development organizations, extension service providers, private sector, NGOs, women's groups, farmer and community groups. Apart from the display of innovations, inventions and agricultural products, there was a seminar series including a answer and questions session during the 1-day event after three years at Bubia, outside of Lae.

Study assesses effectiveness of chemical control for taro beetle

A field experiment was carried out to assess how effective Bifenthrin is, a chemical pesticide used with three different application methods on two taro beetle species; Papuana and Eucopidocaulus.

The three application methods were; measuring beaker (standard practice), knapsack sprayer and hand sprayer.

Results from the field experiment showed that knapsack sprayer was more efficient and could cover a large taro field in a short period of time while carrying 10 litres of bifenthrin mixture and using a beaker is tedious.

Research Associate-Plant Genetic Resources Alex Galus expressed that the three methods used to control taro beetle were all effective and covered an area of 0.007 hectares.

The application of bifenthrin took between 18 to 43 minutes to apply on the same area of land.

Mr Galus explained that the field experiment results indicate that the three methods of applying bifenthrin were effective in controlling the taro beetles.

Taro is a priced crop in PNG and plays a very significant part in our socio-cultural activities.

The taro beetles may pose a threat to this socio-cultural activities and finding best possible ways like the application of bifenthrin can contribute towards sustaining such practices.

Taro field trial where Bifenthrin mixture was applied using the knapsack.

Standard practice of using beaker to apply bifenthrin mixture at the base of a taro plant.

Forestry students learn about pests and diseases

Thirty six students from the University of Technology's Forestry College in Bulolo made a brief visit to NARI as part of a learning tour on September 26.

The students are doing their second of year of study in forestry, met and interacted with staff from the Momase Regional Centre learnt about identifying diseases and pests affecting corn, sweetpotato, taro, and banana.

Their tour ended at the biotechnology laboratory where they learnt about the collection of disease samples from affected crops, equipment used to identify diseases and control measures to minimise spread of pests and diseases.

Research Associate–Plant Genetic Resources Cecily Walters shows how the Taro Leaf Blight disease spreads on taro plants.

NARI has worked in collaboration with other stakeholders on projects such as the Banana Wilt Associated Phytoplasma affecting local Marafuri banana in Markham, Bogia Coconut Syndrome in Madang

The thirty six forestry students from the University of Technology's Forestry College n Bulolo expressed gratitude after their brief visit to NARI.

Ms Tomi thankful after 17 years of service

Working at NARI is one the best decisions that Ms Barbara Tomi made when she started her career in 2007.

Ms Tomi after 17 years of committed service, decided to call it a day and take a break from official duty as a technical editor with the Information Knowledge Program.

She was fare welled on October 13, by colleagues who spoke highly of her undivided and quiet contributions through compilations of various publications.

Scientific Editor James Laraki expressed that she was a key member of the Publications team and contributed immensely in a silent way.

Ms Tomi is thankful that she has learnt during her tenure and recalled a lot of experiences with the changes taking place.

" During the field days, people were preparing their posters through cut and paste using copy board papers. This has improved now with a lot changes," expressed Ms Tomi in her moving speech.

She says that it would a great opportunity to be part of the 12th Agricultural Innovations Show this year before she leaves.

Ms Tomi was thankful that she had raised her two children who had continued on to fulfil their career pathways through her employment.

Other staff commended Ms Tomi on her willingness to work extra hours in preparation for big events, a reliable point of contact with any gender-related activities, a very skilled officer and developed good friendship with colleagues and outside of work.

NARI wishes Ms Tomi the best in her future plans and a well deserved break!

Ms Barbata Tomi

Ms Tomi (centre standing) and colleagues.

Ms Barbara Tomi receiving a gift from Scientific Editor James Laraki as Senior Human Resource Officer Lina Asiri looks on.

Ms Tomi reading wording on the cake which says, " Thank you for your service to NARI" as Senior HR Officer Lina Asiri looks on.

Ms Tomi cutting her farewell cake.

Farmer's wife ventures in making sweetpotato cookies

Naomi Ben is the wife of a lead farmer in Asaro Valley of Eastern Highlands. Naomi's husband, Ben Iseho is a sweetpotato farmer working with the Fresh Produce Development Agency, a partner with NARI and others under the Climate Smart Agriculture (CSA) project supported by the Australian Centre for International Agricultural Research.

Mrs Ben and her husband participated in a video production activity headed by the University of Goroka's Centre for Social and Creative Media and NARI through the project.

The development of videos are an important part of the project's case studies, participatory approach to capture indigenous knowledge and an important communication device.

Mrs Ben through her own initiative, ventured into making sweet potato flour to bake cookies and adding some roasted peanuts to give it a crunchy texture. Her cookies are sold at K2 each and sell fast before it reaches the local market.

Mrs Ben's story is one example of how farmers are able to learn and develop skills to be resilient during trying times brought on by negative effects of climate change.

Such initiatives supports one of the CSA project key objectives to improve the resilience of food production in PNG.

Through this video production, farmers share their experiences using indigenous knowledge to make informed decisions in farming and how climate change and its negative effects is affecting agricultural production.

This video production comprises of indigenous knowledge with best management practices to enhance agricultural food production and improve resilience for farmers in Eastern Highlands, Morobe and East New Britain.

Videos which are developed through the CSA project will be used as informative tools to help other farmers make informed decisions through the use of weather information to enhance food production and income earning opportunities.

Mrs Naomi Ben.

Sweetpotato cookies mixed with peanut and were selling at K2 a piece when the video production team from CSCM and NARI

Video production with farmers in Goroka

NARI, Goroka University's Centre for Social and Creative Media and FPDA joined hands with farmers in Eastern Highlands through a video production activity supported by ACIAR under the Climate Smart Agriculture project.

The project partners travelled to Bena, Ifiyufa and Asaro Valley to conduct farmer interviews on indigenous knowledge and their farming practices.

Farmers interviewed expressed that their local knowledge has been influenced greatly by climate change and is affecting their food production and income. They said there should be some form of awareness to help them make informed decisions, as their livelihoods is dependent on food crops.

NARI and UoG's CSCM team setting up the camera for farmers' interview at Bena, Eastern Highlands.

The videos developed is part of the ACIAR-supported CSA project to capture indigenous knowledge and use videos as a communication tool to improve resilience in agricultural production.

Seasonal Farm Advisory (12/10/2023)

Alerts and Warnings

Drought Alerts or warnings are issued when acute water shortages are likely to occur.
Figure 1 highlights areas considered to be suffering from a prolonged (drought watch), serious (drought alert) or severe rainfall deficiencies (drought critical). The terms **drought watch**, **drought alert** and **drought critical** are defined by:

- **Drought watch –** rainfall lies between the bottom 30th and 10th percentiles for the period in question.
- **Drought alert –** rainfall lies above the lowest five percent of recorded rainfall but below the lowest ten percent for the period in question,

Drought critical - rainfall is among the lowest five percent for the period in question.

There is a strong likelihood of persistent dry conditions over southern half of the mainland starting from Tabubil in the west to Central province in the east from October 2023 to March 2024. Drought critical areas have emerged in parts of Gulf, Western, Hela and SHP.

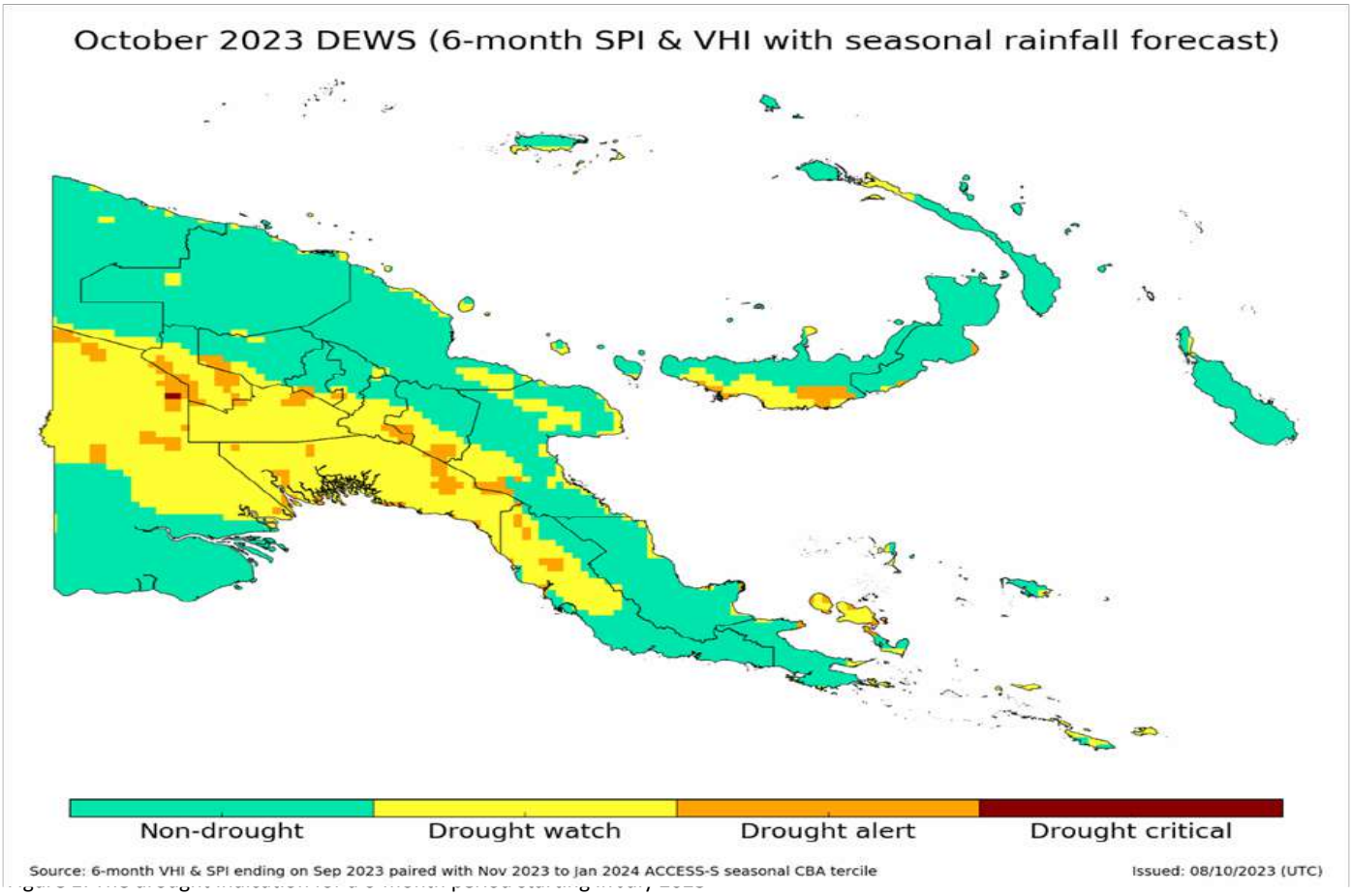

Figure 1: The drought indication for a 6-month period starting in October 2023

If you are planting food crops in October, in the Gulf, Western, Hela and Southern Highlands provinces, East New you will need to consider that hand irrigating might be required over the forecast period to ensure the crops mature without water stress and tuber yields are not negatively influenced.

Seasonal Farm Advisory 12/10/23

Historical Summary

It is important to understand how much rain has fallen up until the point at which the forecast is made. The cumulative rainfall over the previous four months provides an important insight into the level of soil moisture available for crops. When 100m to 500mm less rainfall has fallen than the four-month average, soil moisture levels are likely to be lower than normal. A forecast of dry conditions, coupled with lower-than-normal soil moisture levels will mean that farmers will have to consider management practices that conserve moisture.

Figure 2 highlights that much of Tabubil, Ok Tedi and North Fly area, including parts of Gulf, Central and Milne Bay provinces have received between 250 and 500 mm less rainfall over the June to September period, than the average total for the 2000 to 2021 period.

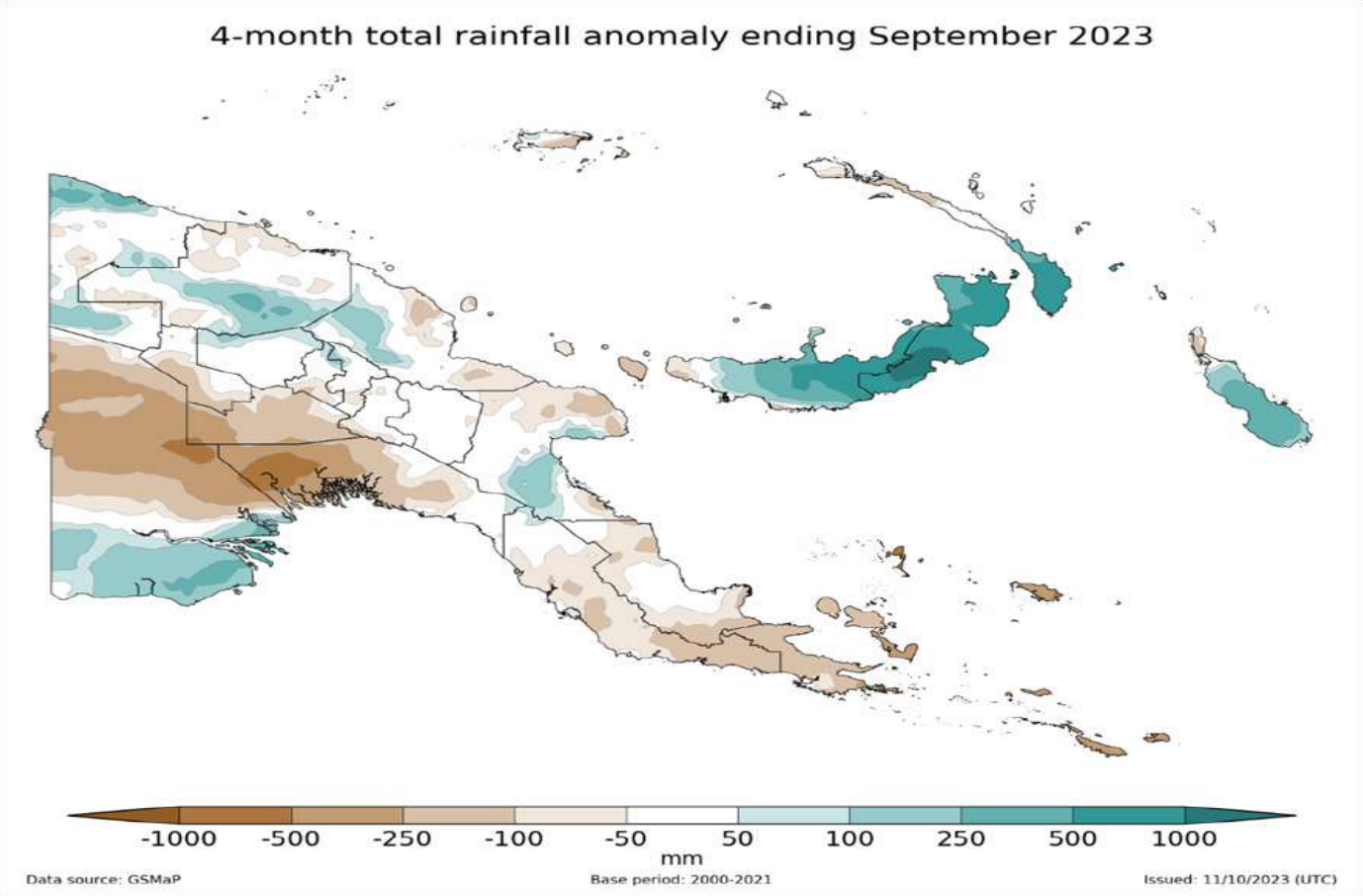

Figure 2: The cumulative rainfall map for the four-month period till September 2023.

Seasonal Climate Forecasts

There is an increased likelihood of drier than normal conditions developing over the southern parts of PNG starting from the Western to the Milne Bay provinces including the New Guinea Islands and AROB with above normal conditions for Sepiks and Madang over the next three to four months (Figure 3 and 4). The likelihood of below normal rainfall conditions for the October to December 2023 period is between 60 and 80% over much of the central PNG, East and West New Britain, New Ireland, Bougainville and Manus Islands (See Figure 3). For the November 2023 to January 2024 period, the likelihood of below normal rainfall continues to be between 40 and 50% over much of the country (See Figure 4). Over the Momase and the New Guinea islands, the likelihood of above normal rainfall is between 40 to 50%.

Seasonal Farm Advisory 12/10/23

Some location-specific rainfall outlooks:

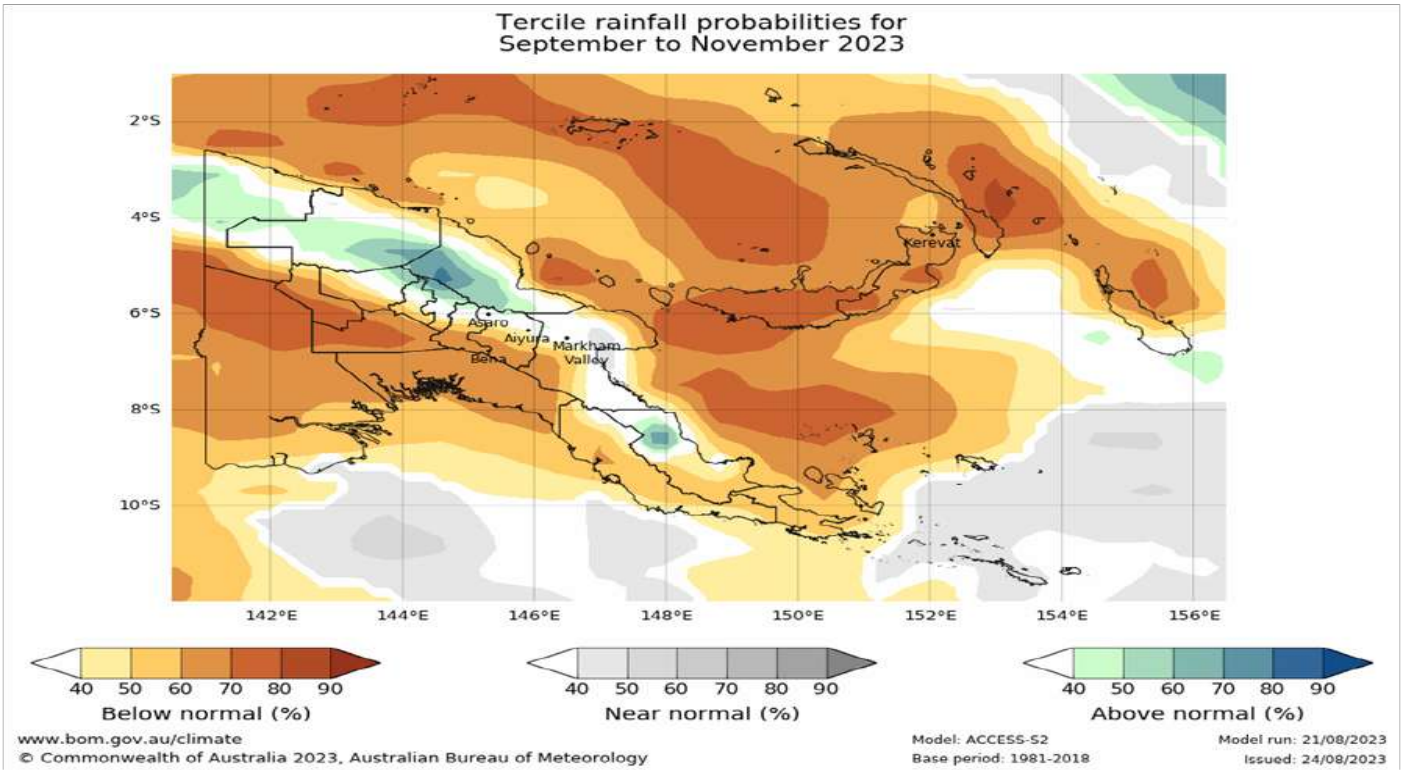

Figure 3: The forecast likelihood of below normal, normal and above normal rainfall conditions for the period September to November 2023.

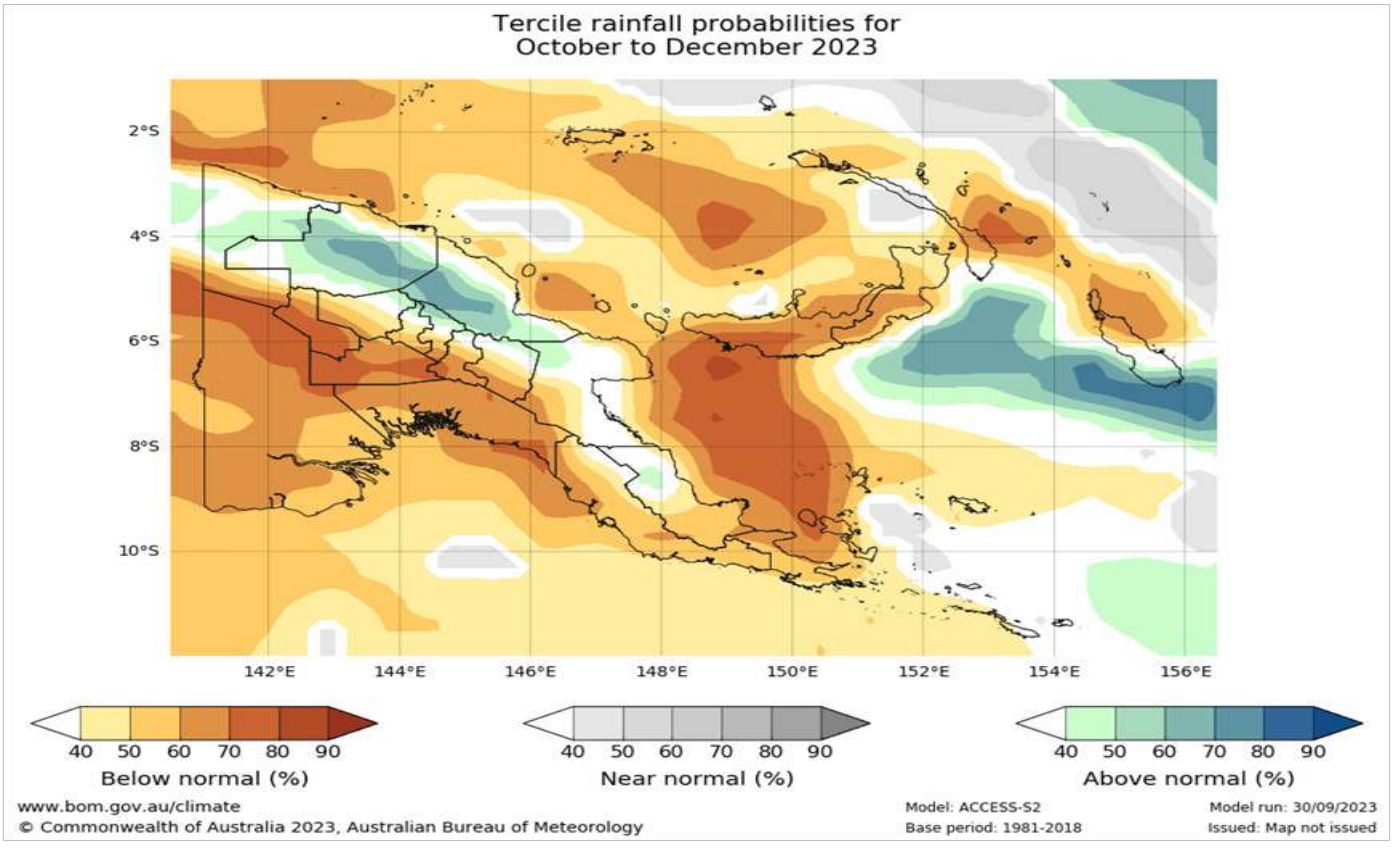

Figure 4: The forecast likelihood of below normal, normal and above normal rainfall conditions for the period October to December 2023.

Seasonal Farm Advisory 12/10/23

General recommendations (Aggregated RMM)

With the exception of those areas (e.g. Lae) receiving rainfall under the SE Trades influence, the months of the June to October period are typically the drier months with some areas which receive most rainfall under the NW Monsoon influence having a pronounced "dry season".
The Seasonal Rainfall Forecasts for June to August, July to September and August to October 2023 suggest above normal rainfall conditions over much of the northern half of the PNG mainland (I.e. Morobe, Madang, East Sepik and northern parts of West Sepik),.
The Islands region and central highlands region (particularly parts of Hela, Southern Highlands and Enga) are likely to experience a drier than normal "dry season". The Southern region is expected to be as usual for this time of the year.
This is a period of gradual decline in soil moisture with reduced rainfall. Crop productivity will largely depend on its adaptation and soil water holding capacity. While areas differ, the "Above normal" forecasts at this time of the year are only likely to provide supplementary soil moisture do not ensure success for commercial crops without irrigation.

Table 1 Considerations to changes to Farm Management practices for "Dry Season" areas

Considerations to changes to Farm Management practices for "Dry Season" areas (*The Islands region and central highlands region (particularly parts of Hela, Southern Highlands and Enga)*	
Pre-planting decisions	Due to the drier than normal conditions, you may want to reconsider planting crops at this time if irrigation is not available.
Land Preparation	Consider planting close to an irrigation source for water access.
Irrigation / soil water management	Recommend irrigation for all commercial growers for various crops during this period. In drier highlands areas like Bena, irrigation is essential for any commercial crops. Mulching may assist to retain soil moisture. Note – Due to less cloud cover, higher yields can be expected with irrigation for most crops.
Pest and diseases	Ensure weeds are controlled to reduce competition for soil moisture. Sweet potato weevil infestation can be high. Manage using surveillance and cultural controls (barrier plants, repellent plants etc) or pheromone traps.
Harvest	The lack of cloud cover will heat produce in the field and increase need for post harvest cooling - Harvest early in the day or late afternoon to avoid peak periods of heat stress
Frost	A higher incidence of frost can be expected in high altitude areas

Seasonal Farm Advisory 12/10/23

Table 2 Considerations to changes to Farm Management practices for Northern half of the PNG mainland (i.e. Morobe, Madang, East Sepik and northern parts of West Sepik)

Considerations to change to Farm Management Practices " for above normal rainfall areas."	
Pre-planting decisions	These conditions are ideal for taro, so there is little need to modify the planting environment through enhanced drainage, etc
Land preparation	Consider establishing deeper/wider/additional surface drains to shed water from the cropping area. Choose sloping/elevated land in preference to flat land if possible. Consider raised planting on well formed mounds (made larger than usual) to encourage runoff. If possible, rotate crops on the same field to reduce the build-up of disease.
Crop Selection	If there is preference for growing the normal crop mix, consideration might be given to increasing the area of crops that are better suited to these rainfall conditions and reducing the area of susceptible crops (i.e. risk mitigation). Alternative short season crop types might also be considered in order to avoid the late dry conditions.
Pest and diseases	Weed pressure is also likely to be high in the early part of the crop season and can compete with the crop for light, nutrients and water. Weeds around the perimeter of the crop can also act as a host for various pests and diseases and should be removed. Adequate labour and other pest/weed control supplies should be provisioned in advance.
Harvest	There is less risk associated with leaving the crop to fully mature and cure in the field.

Laboratory Service Enquiries

The Professor John Kola Chemistry Laboratory is a national chemical testing laboratory that has been operating for over 30 years.

The laboratory offers a wide range of analytical and diagnostic testing services.

The laboratory is accredited to ISO/IEC 17025 which is a general requirement set by the International Organisation for Standardization (ISO) and International Electrotechnical Commision (IEC) for the competence in testing laboratories.

It certifies a laboratory as an Accredited Chemical Testing Laboratory under the ISO/IEC 17025:2005 Guidelines.

Prof John Kola Chemistry can perform chemical testing and all methods used are recommended by American Public Health Association (water), Australasia Soil and Plant Analysis Council (soil and plant), Association of Official Analytical Chemist (food and natural products).

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Carrying out nitrogen test.

Carrying out food testing on fat extractor equipment

Guesthouse Enquiries

Gadi Ling Guesthouse

Kerevat, Rabaul, East New Britain

Contact person: Daisy Besari
Phone: **983 9145 or 983 9200**
Email: daisy.besari@nari.gov.pg

Hill Top Guesthouse

Aiyura, Eastern Highlands

Phone: 7969 5466 between 8am to 5pm

Contact person: Tamo Tarra
Email: tamo.tarra@nari.gov.pg

Western Pacific Guesthouse

Contact persons
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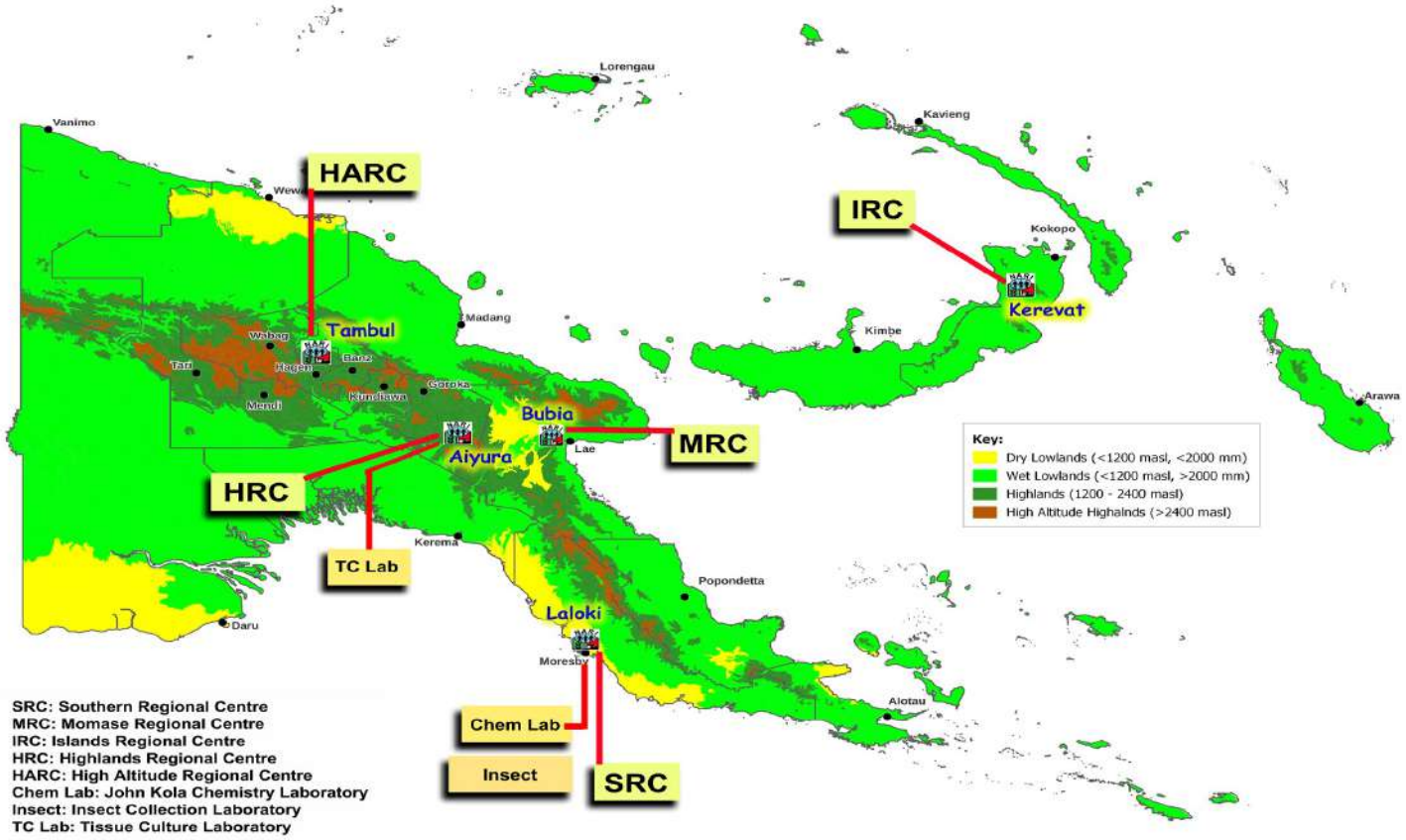
For more information

Our Regional Centres



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The National Agricultural Research Institute (NARI) was established by an Act of National Parliament of Papua New Guinea (PNG) in July 1996 as a public funded, statutory research organisation, to conduct and foster applied and adaptive research into:

i) any branch of biological, physical and natural sciences related to agriculture;

ii) cultural and socioeconomic aspects of the agricultural sector, especially of the smallholder agriculture; and

iii) matters relating to rural development. and of relevance to Papua New Guinea.