Panama TR4 Program Management Board

Statement from the Chair in response to the 2021 Panama TR4 Epidemiological Review

Summary

The 2021 Panama TR4 Epidemiological Review (Review) was independently commissioned by the Panama TR4 Program Management Board (Board) in February 2021. The Review examined patterns of spread of Panama disease tropical race 4 (Panama TR4, the disease) to and from current infested properties of Far North Queensland, and whether existing control and containment strategies were sufficient. With the completion of the Review, key actions have been generated including targeted research into containment and innovation to support surveillance, and empowering growers through agronomic insights.

The Review confirms that the combined industry and government response to control and contain Panama TR4 in Far North Queensland has been highly effective. To achieve this outcome, tens of millions of dollars have been invested by both government and industry, and great sacrifices have been made by growers operating with Panama TR4. The growers themselves know only too well how physically, financially, and emotionally demanding it is to manage Panama TR4, and they require our collective continued support in the years to come.

With the emergency response phase firmly in the past, it is time we shift gears towards a sustainable model for the future management of Panama TR4 under the leadership of industry which will take effect from 1 July 2023. This Review has provided direction for how we can enhance government, industry, and growers' prospect for containing this potentially devastating disease.

Read the full version of the 2021 Panama TR4 Epidemiological Review here.

Highlights of the Review

The Review supported actions in response to Queensland's Panama TR4 incursion to date and identified key areas of research that will inform future disease management strategies. In summary:

- Queensland's response to the incursion of Panama TR4 was successful in controlling and containing the disease in Far North Queensland.
- The disease is expected to spread, and more properties will become infested over time. All stakeholders must be prepared for this escalation of disease, and ongoing vigilance in following biosecurity procedures is essential to containing Panama TR4.
- As the Panama TR4 Program transitions disease management to industry, realistic and cost-effective solutions must be sought for ongoing control and containment of the disease.
- Laboratory samples should continue to be collected from plants showing symptoms of Bacterial Corm Rot or Panama TR4, as both pathogens are often present in the one plant.
- Targeted research is necessary to inform alternate surveillance methods without compromising effectiveness.
- Targeted research is necessary to inform the most effective and affordable diagnostics and destruction protocols.
- Targeted research is also necessary to inform agronomic decisions that may improve plant resilience to infection.

Actions the Board will be taking

The Review's recommendations identified priority areas of research that the Board is progressing to next stages. These include:

- An in-depth investigation into the destruction protocol and the parameters of the destruction zone, considering herbicide use, inoculum levels, root to root contact, and use of urea. (Recommendations 8, 9, 10)
- Evaluating the area of eradication where the disease is in the exponential phase and initial exclusion and containment practices appear to have failed. (Recommendation 11)
- Investigation into the effectiveness of sniffer dogs, e-noses or acoustics in detecting the disease in asymptomatic plants. (Recommendation 12)
- Investigation into the collection of field data on environmental and host factors (such as soil physical and chemical properties, topography, rainfall and plant age) affecting the interaction between host and pathogen. (Recommendation 13)
- Investigation into detection surveys that target plantations where soil physical and chemical factors predispose plants to infection. (Recommendation 5)
- Investigation into field trials on infested properties to develop soil fertility adjustment programs that will minimise plant losses to Panama TR4. (Recommendation 7)

Further work is now being undertaken to determine the scope and funding requirements for each body of research.

The full list of recommendations that came from the Review can be found in Appendix 1.

Actions which growers can take

The Review also suggests ways in which growers can limit the impact of a Panama TR4 incursion through agronomic practices. Growers can:

- Apply integrated management strategies that improve plant and soil health so that plants are less predisposed to infection[1].
- Maintain a relatively high soil pH level, apply regular low nitrogen inputs, and maintain high levels of macro- and micro-nutrients to assist with minimising crop losses to Panama TR4[2]. This recommendation supports the existing research currently being conducted by the Department of Agriculture and Fisheries (DAF).
- Add organic matter to soil, improve drainage where possible and establish well-vegetated inter-rows.

Actions the Queensland Government will take

The Department of Agriculture and Fisheries (DAF) will continue to support industry beyond 1 July 2023 through ongoing extension activities, research into soil health and research into Panama TR4 resistant varieties. Continued diagnostic services on a fee for service basis will also be available. In the shorter term the Panama TR4 Program will aid capacity building of the ABGC throughout the transition period. Research currently being conducted by DAF on soil health properties will continue over the next two years, aiming to enhance industry's ability to manage disease spread into the future.

Actions for Industry to consider

Perhaps the hardest issue relating to Panama TR4 is planning for when disease spread has reached exponential stage and exclusion and containment measures start failing. Leadership must decide at what point (if any) the eradication of entire growing areas is warranted,[3] with the understanding that compensation will not be available.

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[1] Pegg K, Summerell B, O'Neill W, 2021 Panama TR4 Epidemiological Review (PV), Version 1.0, 21/07/2021 (the Review), page 13
[2] page 14 of the Review
[3] page 10 of the Review

The Review has also highlighted the need for industry to consider the methodologies they are willing and capable of implementing into the future, aligning to the level of risk they are willing to accept. The methodologies for surveillance, destruction and compliance will all need thoughtful consideration.

How were these decisions from the Review made?

Recommendations from the review were either supported or not supported by the Board (Appendix 1). Priority action was given to those recommended actions that involve research.

In conclusion

The 2021 Panama TR4 Epidemiological Review confirms that the response of Panama TR4 was successful in controlling and containing the disease in Far North Queensland. Six years has passed since the first incursion and the focus must now shift toward sustainable long-term control and containment measures. On a macro level the Review offers guidance in targeted areas of research to support future disease management guidelines. These research areas include an investigation into the destruction protocol and the parameters of a destruction zone, environmental and host influences on the pathogen, and innovations in detecting the disease in asymptomatic plants. On a micro level the Review indicates that a strong and healthy crop can limit the disease's impact on a production area, empowering growers to protect their farms beyond biosecurity through agronomic practices.

As the Panama TR4 Program transitions the leadership of disease management to industry in 2023, effective and practical solutions must be sought for a future with this disease. Vigilance in biosecurity practices must be the new normal for Queensland's banana growing regions. This means every grower should protect their farm at the gate, and entire communities should be aware of their general biosecurity obligation[4]. With so much at stake, biosecurity is everyone's responsibility.

Yours sincerely

Malcolm Letts
Chair
Panama TR4 Program Management Board

Tell us what you think

To discuss future management of Panama TR4 contact ABGC's Industry Transition Leader, Geoff Wilson on 0418 644 068 or email geoff@abgc.org.au.

To discuss banana research, contact Agri-Science Queensland's Banana Production Systems' Team Leader, Stewart Lindsay on 0428 112 657 or email stewart.lindsay@daf.qld.gov.au.

Read more about the Panama TR4 Program Management Board here.

If you're a grower and wish to contact the Panama TR4 Program Management Board, call ABGC CEO, Jim Pekin on 07 3278 4786 or email jim@abgc.org.au.

If you're not a grower and wish to contact the Panama TR4 Program Management Board, call the Program via Biosecurity Queensland on 13 25 23 or email panamatr4@daf.qld.gov.au.

Read more about your general biosecurity obligation or watch this YouTube video from Biosecurity Queensland.

Follow the Australian Banana Growers' Council Facebook Page for alerts about Panama TR4.

Learn more about how to #PanamaTR4protect and stay up to date on future developments of Panama TR4 in Queensland by subscribing to our Updates.

[4] Queensland Government general biosecurity obligation, https://www.daf.qld.gov.au/business-priorities/biosecurity/policy-legislation-regulation/biosecurity-act-2014/general-biosecurity-obligation

APPENDIX 1

List of Recommendations from the 2021 Panama TR4 Epidemiological Review

Recommendation 1: TR4 is a global problem, which in Queensland is confined to the Tully Valley. All TR4 growers need continued support from Government, ABGC, and other stakeholders in the industry. It will require a cooperative effort to contain the disease. Board: Supported.

Recommendation 2: As the only feasible method of preventing dispersal from one area is to eliminate the source of inoculum, blocks in the area where the pathogen is widely distributed, and the disease is in the exponential phase need to be eradicated and securely fenced. Board: Supported in principle.

Recommendation 3: Initiate an in-depth field analysis of the area where the disease is in the exponential phase to determine when and how it was introduced, and why it has spread so widely. Board: Not supported.

Recommendation 4: Recognise the need to retain a disease management strategy to deal with future flare-ups in a timely and thorough manner. Board: Supported.

Recommendation 5: Detection surveys should target those plantations where soil physical and chemical factors predispose plants to infection. Board: Supported in principle.

Recommendation 6: Laboratory samples should continue to be collected where there is confusion as to whether the disease is Bacterial Corm Rot or Fusarium wilt. It is not unusual to find both pathogens in the one plant. Board: Supported.

Recommendation 7: Field trials should be initiated to develop soil fertility adjustment programs that will minimise losses to TR4. Board: Supported in principle.

Recommendation 8: As herbicide injection of infected plants generates a high level of inoculum, this treatment should be removed from the destruction protocol. If gouging of growing points in the cut stool, and application of urea does not prevent regrowth in the tropics, (as it did in the subtropics), research will be required to find an alternative treatment. Board: Supported in principle pending further investigation.

Recommendation 9: Growers should be encouraged to cut and bag suspect plants, and erect an exclusion zone, soon after a sample is taken. Board: Supported.

Recommendation 10: The dimensions of the destruction zone should be altered to be three rows of bananas wide (the infected plant is in the middle row) and 20 metres in length (10 metres in each direction from the infected plant). Board: Supported.

Recommendation 11: Where exclusion and containment have failed, and the disease progress curve is in the exponential phase with disease accelerating, it is time to consider eradication of the infested area. This action may prevent a local epidemic becoming a general epidemic for the Tully Valley. Board: Supported in principle.

Recommendation 12: Consideration be given to commissioning research to evaluate the use of sniffer dogs, e-noses, or acoustics to detect the disease in asymptomatic plants. Board: Supported.

Recommendation 13: As there will be a wide variation in Fusarium wilt incidence and severity from one field to another in the Tully Valley, consideration be given to the commissioning of research to facilitate the collection of field data on environmental and host factors (soil physical and chemical properties, topography, rainfall, plant age etc.) affecting the host/pathogen interaction. Data generated can then be used to predict likely disease outbreaks, and it will allow growers to make rational decisions on disease management. Board: Supported in principle.

Recommendation 14: If the result of the molecular diagnostic testing is positive, destruction protocols to proceed before the results of the VCG test are available. Board: Supported in principle pending further investigation.