

# Reporting the unusual: What does this mean?

Linda Peacock and Erin Lane- KVH



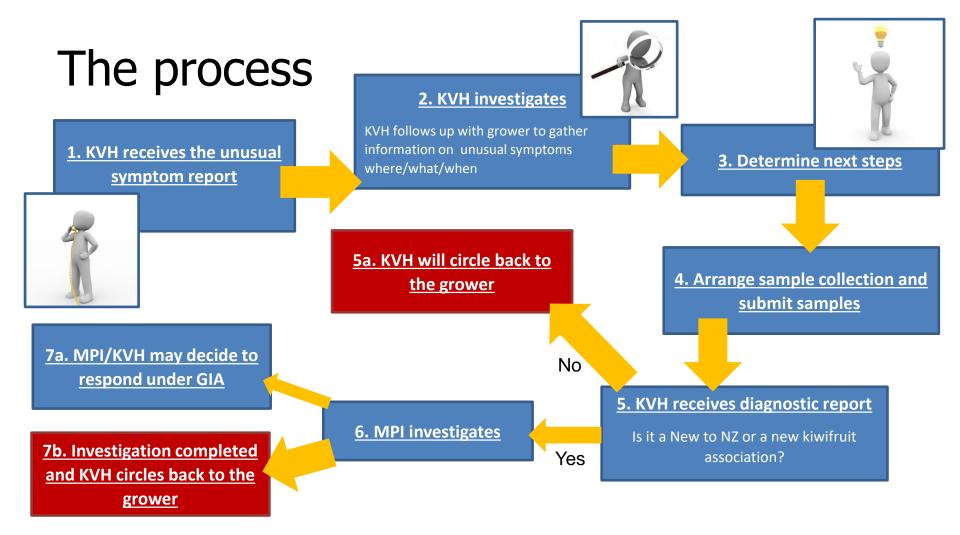






# Why report the "unusual"?

- Unusual is anything without an obvious explanation, or even a change in what was previously considered "normal"
- General surveillance is important to facilitate early detection. This is one of the biggest predictors of eradication success.
- Reporting of unusual symptoms gives industry the best chance of identifying things that are "new" or emerging
  - possibly organisms new to NZ science
  - new associations of organisms with kiwifruit
  - organisms already present but risk profile appears to be changing





Summary of 2020 reports

37 reports through to KVH

- 17 pathogen related
- 10 pest/insect
- 2 nutritional
- 5 "other"- i.e. associated to frost damage, girdling damage
- Jury is still out on a few recent reports...

On what? HW, G3, Bounty, Bruno, Cryptomaria

#### Where?

Kerikeri, Whangarei, Waiuku, Tauranga, Te Puke, Opotiki, Hawke's Bay, South Island









#### **Case Study 1:** G3 – Hawke's Bay

- Areas with poor bud-break seen in Spring 2019
- Production drop at 2020 harvest
- Mushy buds reported autumn 2020
- Various canker symptoms also seen
  some associated with grafts
- Samples went to MPI

PLANT HEALTH AND ENVIRONMENT LABORATORY TAMAKI	Ministry for Primary Industries Menat0 Ahu Metua	10	
Lab Accession Number: T20_01576 PHEL Report Number: 134363	Postal Address: PO Box 2005, Shortland SL, Auxiland 1140, New Zeal Physical Address: 231 Monin Road, SL. Johnis, Auxiliand, New Zeal Email: Operiumer: Reception Transkilgrup go	and and the	
Final Report GENERAL SU	RVEILLANCE	-	
CUSTOMER SUPPL	IED INFORMATION		
	Submitter: Linda Pescock Submitter Phone No: () 0274752909 Submitter email: linda peacock (gkvh.org.nz Submitter Address: Kiwifruit Vine Health (KVH)		
Collector: Linda Peacock Collector Phone No: () 027475200 Collection date: 2007/2020 Country of Origin: Submitter Comments: -	Site: 16 Haumoana Road, Hastings		
The customer has supplied host and sample reference information			
Mycology Comments		-	
Soil, root, trunk, and cane (bud) samples of firree kiwifnit plants showing fungal and fungal-like organisms were isolated using plating and balting :	disease symptoms have been submitted for testing. Several		
Phylopithora was not detected from root and soil samples, but a range of	Clonostachys rosea (Anamorphic (Hyphomycetes		Katharika Hofer
Phytopythium are commonly found in soil and water and some have bee as well as root rot of hydroponic crops. Their effect on mature kiwihut pl	This fungues was isolated from trank tissue. It is common 14.3040001	ly found on a linsail range of hosts and	likely an endophytic organism.
Several of the the isolated organisms have keen associated with disease none, some, or all of them have contributed to the observed symptoms.	Ivonectria robusta (Ascomvcetes)		Katharina Hofer
none, some, or all of them have contributed to the observed symptoms.	This fangus was isolated from twelk losue. It is reported from an internation latern lexics of Activate chanasia (Hoye from Activate delicities showing symptoms of section to	to cause klack foot disease on grapes	
	from Actinida deliciosa showing symptoms of 'swolen to a characteristic	unk syndrome' as well as from Malus s	p, and Paeonie sp.
Sample 1: Actinidia chinensis (kiwifruit) - Soil, roots, canes, trunk		102	Katharina Holer
MYCOLOGY LABOR	Pythium rostratifingens (Peronosporales: Pythiae This tangai-like organism was isolated from root tissue.	eae)	Kationia Hole
Alternaria arborescens (Anamorphic (Hyphomycetes))	N, HA, H, PORTO, K, M, MIL, P		
This fungus was isolated from kusi material. It has been reported to be present in New Zealand. It was previously isolated from kis	Pythium sp. (Oomycetes)		Katkarina Hofer
W DE PESEN IN NEW ZENNIN, IL WAS PERIODSY ISUALEN POINTNE N,ACMORH	This tungal-like organism was isolated from soil. It could species.	not ike identified to species level as it i	s likely to represent on undescribed
Epicoccum nigrum (Anamorphic (Hyphomycetes))	W,WE, W,PORED, X,W,201,2		
This fungus was isolated from kwal material. It is known as a cosh fungal species is present in New Zealand.	Fusarium sp. (Anamorphic (Hyphomycetes))		Katkarina Hofer
Nigal species is present in New Zealans. NJNE, NJPORED, XJNJEDJO	Public running provident p	elongs to the Pusantum asiam species plant hosts and were previously isolati	complex. Species in the complex. all from root and wood Essue of
	symptomatic Actividia sp. plants in New Zalitans. U_VAL #_POINTL_P		
	Fusarium equiset/ (Anamorphic (Hyphomycetes))		Katharina Hofer
	This fangue was isolated from trank tassae. It is common secondary invader. This species was previously isolated	ly found in soil and plant debris and pri from wood and soil sameles collected	manly known as a saprophyte or from symptomatic Actinicia se.
Epicoccum italicum (Pleosporales: Didymellaceae)	Katharina Hoter		
			Katharina Hofer
This fargus was isolated from lead material. It was first described in 201 Zeoland, it was previously isolated from Acce cellowiene, Persee errent coloniser on this host.	cana, and Ranunculus acris. It is likely to be a secondary	acies can be endophytes, saprophytes	
M_ADMORPH		acies can be endophytes, saprophytes Frot in a wide range of hosts. This isol INA sequence analysis revealed that i in 2010 and Ranuncuks acris in 2013.	ate could not be identified to species t is identical to two New Zeoland
Clonostachys rosea (Anamorphic (Hyphomycetes))	Katharina Haller	e 2010 and Hanarouss across 2013.	
This fungus was isolated from bank tissue.		e e	Sample Reference: Sample 2
llyonectria robusta (Ascomycetes)	Kathorine Mafar	LABORATORY RESULTS	CONTRACT
This Angus was isolated from their tissue.			Katharina Hofer
N_KONCHINA			
Diaporthe australafricana (Diaporthales: Diaporthaceae)	Katharina Holer	1 Y 100	
This fungus was isolated from trank tissue. Overseas, it has been assoc including Vitis visiVerie, Vaccinium sp., Convius aveillane, Pronus duble,	Sated with conker and diskack disease on a range of hosts, Satis sp., Jugiero sp., and Persea americana. It has also	tes))	Katharina Hofer
The foreground association consider transmission of approximations of the providence of the transmission of transmission of the transmission of th	elook on keelhut in Chile. Diaporthe australatioana is not I of the ITS region revealed that this isolate is identical to an		
ISOURE TOWN TOWN HOW ZECOME PHONE DOMESTICA ISSUES IN 2010. ICANI, IC-POTING, IC-JULING, S			
Giobisporangium intermedium (Peronosporales: Pythiaceae)	Katharina Hofer		
This fungal-like organism was isolated from soil and was formerly know	n as Pythium intermedium.		
NOME REPORTER COLORS	2000/00/00/00/00/00		
Fusarium sp. (Anamorphic (Hyphomycetes)) This largue was isolated from not tissue. It belongs to the Fusarium so	Katkarina Hoter		
Hold Merger Hold Goulder Hold Hold Hold Hold Hold Hold Hold Hold	an sport conput.		
Somple 3: Actinidia chinensis (kiw/hult) - Sol, roots, canes, trunk	Sample Reference: Sample 3		
MYCOLOGY LABORATO	RY RESULTS		
Epicoccum nigrum (Anamorphic (Hyphomycetes))	DENTIFIER Kathorina Hofer		
This fungus was isolated from level material.	90.000 (00.000)		
N_ADMORTH			
Alternaria arborescens (Anamorphic (Hyphomycetes)) This larges was isolated from leal material.	Katharina Holer		
This fungus was isolated from buil material. IL_cuctome			
Epicoccum italicum (Pleosporales: Didymellaceae)	Katharina Haler		
This fungus was isolated from livel material.			
N, ANG, N, MONTEO, N, M, DOO, S			
	222.222.525.525.525.5		
Clonostachys rosea (Anamorphic (Hyphomycetes)) This fangus was isolated from bank fissue.	Katharina Hofer		

#### Diagnostic report

Buds	Alternaria aborescens – Secondary coloniser
	<i>Epicoccum nigram</i> – Secondary coloniser
	Epicoccum italium – Secondary coloniser
Trunk	Ilyonectria robusta- known to cause kiwifruit disease offshore- causes black foot in grapes
	Clonostachys rosea- Likely endophytic organism
	Fusarium solani sp- Known to cause root rot in many hosts and often isolated from kiwifruit
	Fusarium equiseti - Primarily known as a saprophyte or secondary invader
	Diaporthe australafricana- Reported as new to NZ
Root	Pythium rostratifingens
	Fusarium solani sp- Known to cause root rot in many hosts and often isolated from kiwifruit
	Mortierella sp- likely saprophytic
Soil	Pythium sp likely to represent an unidentified species
	Phytopythium vexans
	Globisporangium intermedium (previously Pythium intermedium)



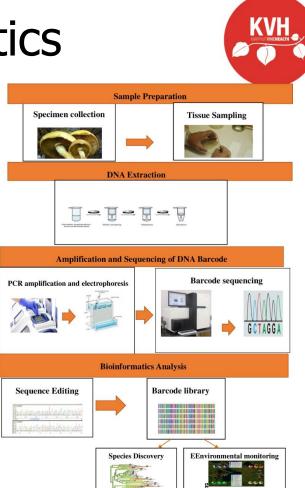
#### Case study 2: Shelter species

- 2019: 5-6 (2m) trees with symptoms
- 2020: more symptoms, including on two more sites (>5km away)
- Counted 50-80 affected trees (0.5-1.8m). Problem trees were often in groups (5-15 trees)
- No change in planting, fertilizer, or irrigation processes
- Root samples showed
  Phytophthora cryptogea and P. cinnamomi, Cylindrocarpon sp, Pythium sp.
- In stems: *Pestalotiopsis sp* (associated with dieback and cankers in conifers)



## Improvements in Diagnostics

- Previously cultured based, morphological methods were relied upon
- Disease can be caused by a complex of organisms, making diagnostic difficult
- New molecular methods (i.e. sequencing) spit out more "new to NZ" but are they really?
  - Renamed- not really "new" but a new name
  - Complexes are separated into species
  - Previously "unidentified"

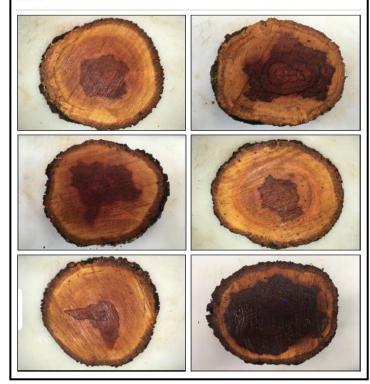


### What do we do with these reports?



Tyson JL, Mellow KD, Lewis K

Maroh 2020





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Creating good management practice advice

Understanding changes in risk profiles

Sharing the knowledge



## **Questions?**