



# Diagnostic samples

PW17001 Final report Appendix 7 Integrated pest management of nematodes in sweetpotato

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## **Diagnostic samples**

### **Summary**

During the project, 61 soil samples were received from sweetpotato growers experiencing nematode problems in their blocks. Soil samples were processed to determine the number of plant-parasitic nematodes present and whether these nematodes could be impacting yield and marketable product. Damaged and mishappen sweetpotatoes and root material was also received to assist with diagnosing plant-parasitic nematode problems.

### **Outputs**

- Grower field days presentations
- PRG meeting presentations

### **Outcomes**

- Diagnostic sample assist with the knowledge of nematode distribution for growers and researchers
- Growers have a greater understanding of the plant-parasitic nematodes in fields and of the ones causing the impacts to crop yield and damage.
- Individual growers have been informed of all nematode species in their blocks and changes over time.

## Introduction

During the project, 61 soil samples were received from sweetpotato growers experiencing nematode problems in their blocks. Soil samples were processed to determine the number of plant-parasitic nematodes present and whether these nematodes could be impacting yield and marketable product. Damaged and mishappen sweetpotatoes and root material was also received to assist with diagnosing plant-parasitic nematode problems.

## Materials and Methods

General methods are described in detail in appendix 2.

## Results and Discussion

The results of the diagnostic soil samples (Table 1) determined that *Meloidogyne* spp., (root-knot nematode) was the most commonly detected nematode pest in sweetpotato (Table 1). Forty-two of the 61 sites (69%) across all regions were identified with root-knot nematode present with numbers ranging from 1 – 10,599/200 g dry weight soil in Central Qld. In Wide Bay, 19 of 25 sites (76%) were found to have *Meloidogyne* spp., with 1 of 1 site (100%) in northern NSW, 9 of 18 sites (50%) in Central Qld, 4 of 5 sites (80%) in southern Qld and 9 of 12 sites (75%) in North Qld all similarly infested with *Meloidogyne* spp.

*Rotylenchulus reniformis* (reniform nematode) which is a major pest in the USA was present at some sites, mainly in the warmer areas with 6 of 25 sites (24%) in Wide Bay, 14 of 18 sites (78%) in Central Q and 1 of 12 sites (8%) in North Qld. Numbers ranged from 1- 1,257/200 g dry weight soil in Central Qld.

*Pratylenchus zaeae* was found from 9 sites (36%) in Wide Bay, 9 sites (50%) in Central Qld, 2 sites (40%) in southern Qld and 9 sites (75%) in North Qld.

Many other species of plant-parasitic nematode were present (Table 1), but these species are not considered to be pathogenic on sweetpotato crops.

Table 1 Plant-parasitic nematodes in sweetpotato production from diagnostic soil samples received from 2018 – 2023.

Plant-parasitic nematodes /200 g DW soil												
Grower ID	Region	Root-knot <i>Meloidogyne</i> spp.	Reniform <i>Rotylenchulus</i> <i>reniformis</i>	Lesion <i>Pratylenchus</i> sp.	Reniform <i>Rotylenchulus</i> <i>parvus</i>	Spiral <i>Helicotylenchus</i> <i>dihystera</i>	Spiral <i>Rotylenchus</i> <i>brevicaudatus</i>	Stubby <i>Paratrichodorus</i> sp.	Dagger <i>Xiphinema</i> sp.	Stunt <i>Tylenchorhynchus</i> sp.	Ring <i>Criconemella</i> sp.	Total Free-living Nematodes
D01 b	Wide Bay Qld	191	0	0	0	2725	0	0	0	0	0	1362
D03	Wide Bay Qld	871	0	0	0	0	0	0	0	0	0	3399
D04	Wide Bay Qld	8	0	0	0	59	164	40	0	0	0	
D06	Wide Bay Qld	51	0	48	0	11	0	5	0	0	0	2326
D23B	Wide Bay Qld	223	0	0	0	0	1414	0	0	0	0	1646
D24	Wide Bay Qld	20	0	3	9	97	0	3	0	0	0	3167
D25	Wide Bay Qld	0	0	0	0	0	0	0	0	0	0	463
D30	Wide Bay Qld	1078	0	0	0	0	0	0	0	0	0	2777
D35	Wide Bay Qld	104	0	11	0	0	0	2	0	0	1	2064
D41	Wide Bay Qld	1	1	0	0	161	0	0	0	0	0	470
D42	Wide Bay Qld	276	0	0	12	35	2	12	0	75	0	1246
D43	Wide Bay Qld	0	0	0	0	0	0	0	0	7	0	602

D44	Wide Bay Qld	1	0	4	0	0	136	0	0	0	0	532
D45	Wide Bay Qld	5	0	1	0	0	269	0	0	0	0	1238
D46	Wide Bay Qld	27	0	4	0	0	87	0	0	0	2	1090
D47	Wide Bay Qld	0	576	0	0	0	0	0	0	0	0	576
D47.1	Wide Bay Qld	64	1421	0	0	0	0	0	0	0	0	
D47.2	Wide Bay Qld	17	67	0	0	0	0	0	0	0	0	
D47.3	Wide Bay Qld	4	23	0	0	0	0	0	0	0	0	
D47.4	Wide Bay Qld	0	12	0	0	0	0	0	0	0	0	
GS02A	Wide Bay Qld	0	0	11	1	1	0	0	0	0	0	456
GS02B	Wide Bay Qld	0	0	22	19	6	0	0	0	0	0	296
C7 meth	Wide Bay Qld	140	0	0	0	10	0	0	0	0	2	140
C7 no m	Wide Bay Qld	269	0	0	0	16	0	0	0	0	5	269
D34A&B	Wide Bay Qld	84	0	1	0	0	0	1	0	0	1	84
TB01	northern NSW	88	0	0	0	84	0	2	0	0	2	877
D12	Central Qld	5	0	0	0	0	0	0	0	0	0	696
D13	Central Qld	0	163	0	0	3	0	0	0	0	0	589
D36	Central Qld	1	0	0	0	0	42	0	0	0	0	624
D37	Central Qld	0	57	0	0	0	1	0	0	0	0	541

D38	Central Qld	0	42	0	0	0	0	1	0	8	5	612
D39	Central Qld	1	1	0	0	0	0	0	0	6	0	1079
D40	Central Qld	12	0	4	0	0	0	0	0	0	0	1810
D50	Central Qld	10599	0	0	0	0	0	0	0	0	89	1191
D54	Central Qld	0	330	23	0	0	0	0	0	0	0	2192
D55	Central Qld	1	4	0	0	0	0	0	0	2	1	3165
D61	Central Qld	0	35	23	0	4	0	0	0	0	1	1675
D62	Central Qld	0	1	4	0	21	0	0	0	0	0	2640
D63	Central Qld	1829	10	17	0	0	0	0	0	0	0	915
D64	Central Qld	0	7	1	0	0	0	0	0	0	0	3679
D65	Central Qld	2	2	7	0	0	0	0	0	0	0	2413
D66	Central Qld	0	1	7	0	0	0	0	0	0	0	3857
D67	Central Qld	191	1	0	0	0	0	0	0	0	0	3216
EC10	Central Qld	2114	1257	0	0	0	0	0	0	0	0	0
D32	southern Qld	5	0	0	0	5	14	0	0	0	0	1413
D57	southern Qld	79	0	0	0	113	21	1	0	0	0	5551
D58	southern Qld	0	0	3	0	64	1	0	0	0	0	3667
D59	southern Qld	4	0	3	0	112	0	0	0	0	0	3294



D60	southern Qld	11	0	0	0	7	0	0	0	0	0	2935
D26	North Qld	1246	12	0	48	0	0	0	0	0	0	2516
D27	North Qld	53	0	0	25	0	0	0	0	0	0	4665
D28	North Qld	3707	0	0	0	0	0	0	0	0	0	6516
D31	North Qld	1	0	8	0	0	0	0	0	0	0	7274
D48	North Qld	28	0	69	8	0	0	0	0	0	0	2841
D49	North Qld	0	0	33	19	0	0	0	0	0	0	5295
D51	North Qld	248	0	157	0	0	0	0	0	0	0	2329
D52	North Qld	11	0	153	0	0	0	0	0	0	0	5838
D53	North Qld	234	0	4	0	0	0	0	0	0	0	3761
MHa	North Qld	0	0	3	0	0	0	1	0	0	0	3246
MHb	North Qld	0	0	730	0	0	7	0	0	0	0	9252
MHc	North Qld	3	0	1	33	1	0	0	0	0	0	2903

