

Cal Poly Strawberry Disease Diagnostic Service Research Update on *Neopestalotiopsis* spp.

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Background

Pestalotiopsis is a fungus common to many environments, but not generally considered a serious pathogen of strawberry. *Pestalotiopsis longesetula* was first reported causing fruit rot in Florida in 1972. A *Pestalotiopsis* species was isolated again in the 2012-2013 Florida strawberry season but considered a secondary pathogen. In 2017, 2018, and 2019-2020 seasons, another leaf spot and fruit rot outbreak caused serious losses in FL which is now attributed to a *Neopestalotiopsis* species. Due to this situation, our diagnostic service has been vigilant on this pathogen.

Detection of *Neopestalotiopsis* spp. in California

Since 2020, the Cal Poly Strawberry Center disease diagnostic service also isolated several *Pestalotiopsis*-like fungi from strawberry plant crowns. This is not unusual, but given the situation in FL we wanted to determine if these fungi were capable of causing disease. By sequencing DNA and high-resolution melt analysis molecular technique, all these isolates were identified as *Neopestalotiopsis rosae* which is **not** the virulent *Neopestalotiopsis* sp. identified in Florida.



Figure 1. Leaf symptoms and signs of *Neopestalotiopsis* sp. infection from Florida

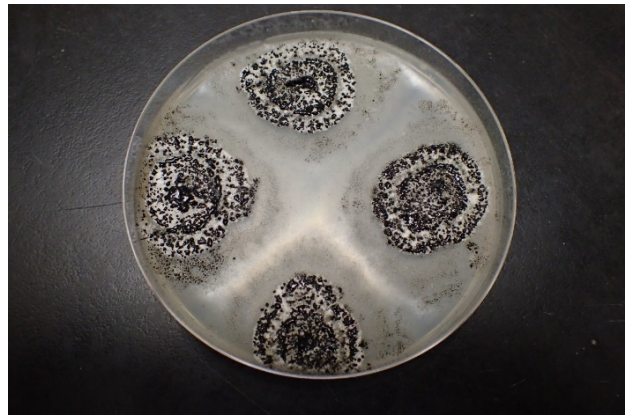


Figure 2. Culture of *Neopestalotiopsis* sp. from Florida



Figure 3. Culture of *Neopestalotiopsis rosae*



Figure 4. *Neopestalotiopsis rosae* conidia

Pathogenicity of *Pestalotiopsis*-like isolates from California

In trial 1 strawberry cvs. Monterey, BG-4367, BG-3324 and Sweet Ann were used. In a second trial, cvs. Monterey and Albion were used. In both trials, little to no disease was detected in plants inoculated with the fungus.



Cal Poly Strawberry Disease Diagnostic Service Summary of Diagnostic Service Activity 2021

Between January and July 2021, 60 strawberry sample submissions were received. Each submission typically consisted of 3-5 plant samples but was greater when new transplants, leaf, or fruit samples were submitted. Plant samples were tested using plating on selective media and molecular methods.

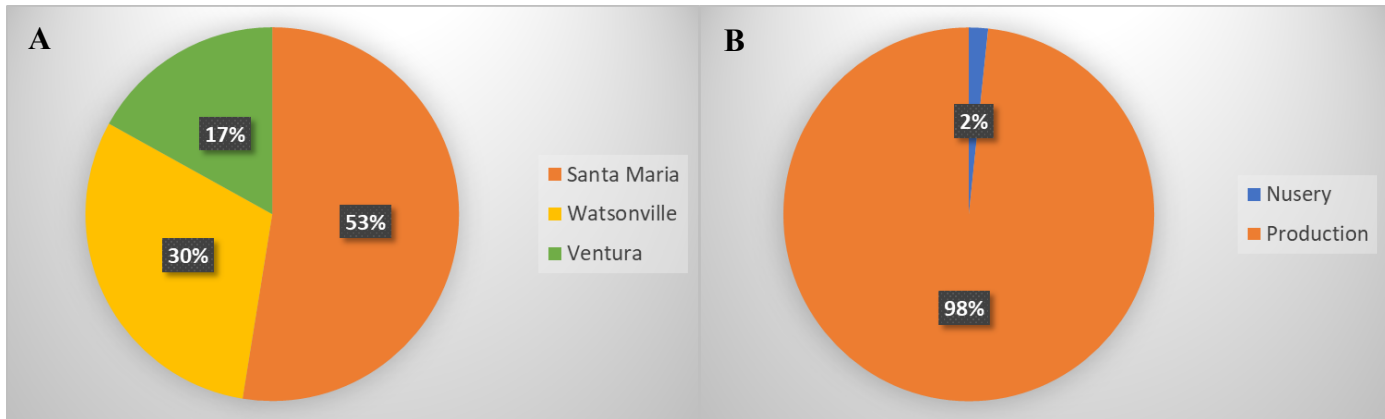


Figure 1. A) Diagnostic samples by district and B) by production type.

Table 1. Comparison of disease identification up to July 2021 with the past years.

Disease/pest/disorder	Number of samples			
	2018	2019	2020	2021
Abiotic/pest problems	18	38	39	11
Macrophomina crown rot	2	22	37	14
Phytophthora crown rot	14	16	10	6
Fusarium wilt	2	9	31	8
Verticillium wilt	1	5	17	2
Zythia dry calyx, leaf blotch, crown infection	0	4	9	0
<i>Rhizoctonia</i> spp.	NA	NA	5	4
<i>Pythium</i> spp.	NA	NA	NA	18
<i>Botrytis</i> spp. (box rot)*	NA	NA	NA	1
<i>Ilyonectria</i> spp. **	NA	NA	NA	2
Total number of samples	33	86	164	60

NA: Not available

* ‘Frigo’ or frozen strawberry plants dying in the boxes is called ‘box rot’ and can be caused by many fungi including *Botrytis cinerea*.

** *Ilyonectria* spp. (synonymous *Cylindrocarpon* spp.) is part of the strawberry black root rot pathogen complex with *Pythium* spp., *Rhizoctonia fragariae*, and *Fusarium* spp.)