Introduction

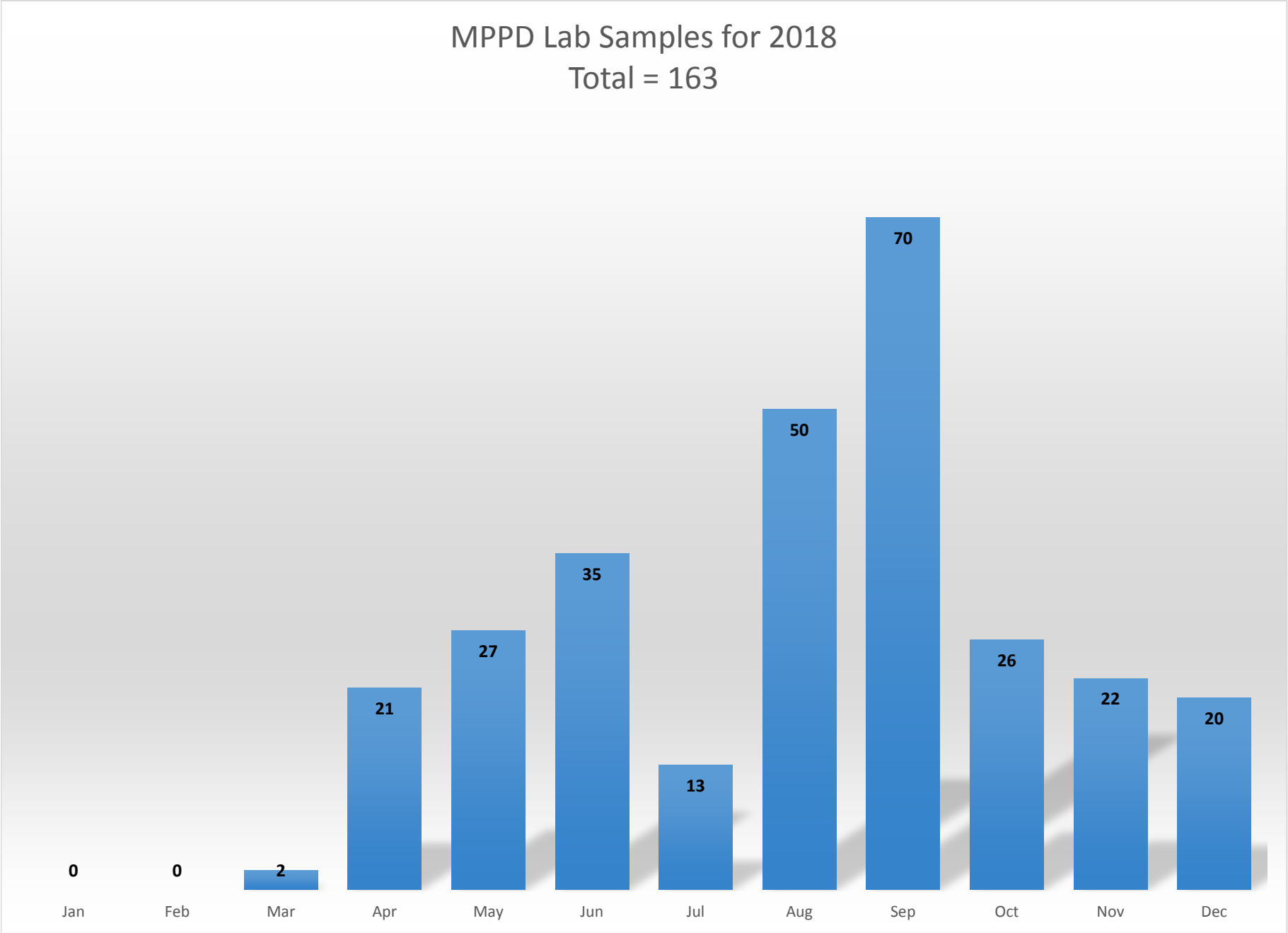
The Molecular Plant Pathogen Detection Lab (MPPD Lab), run by Dr. Curt Colburn, mainly utilizes the molecular technique of polymerase chain reaction (PCR) to identify plant pathogens. Both standard PCR and real time PCR are used. These techniques allow us to amplify a trace amount of pathogen DNA into a larger and detectable amount of DNA. The PCR technique identifies pathogens much faster than traditional methods and can easily identify pathogens that are difficult to identify any other way. In some cases, pathogens, such as *Phytophthora* species, are identified by colony morphology.

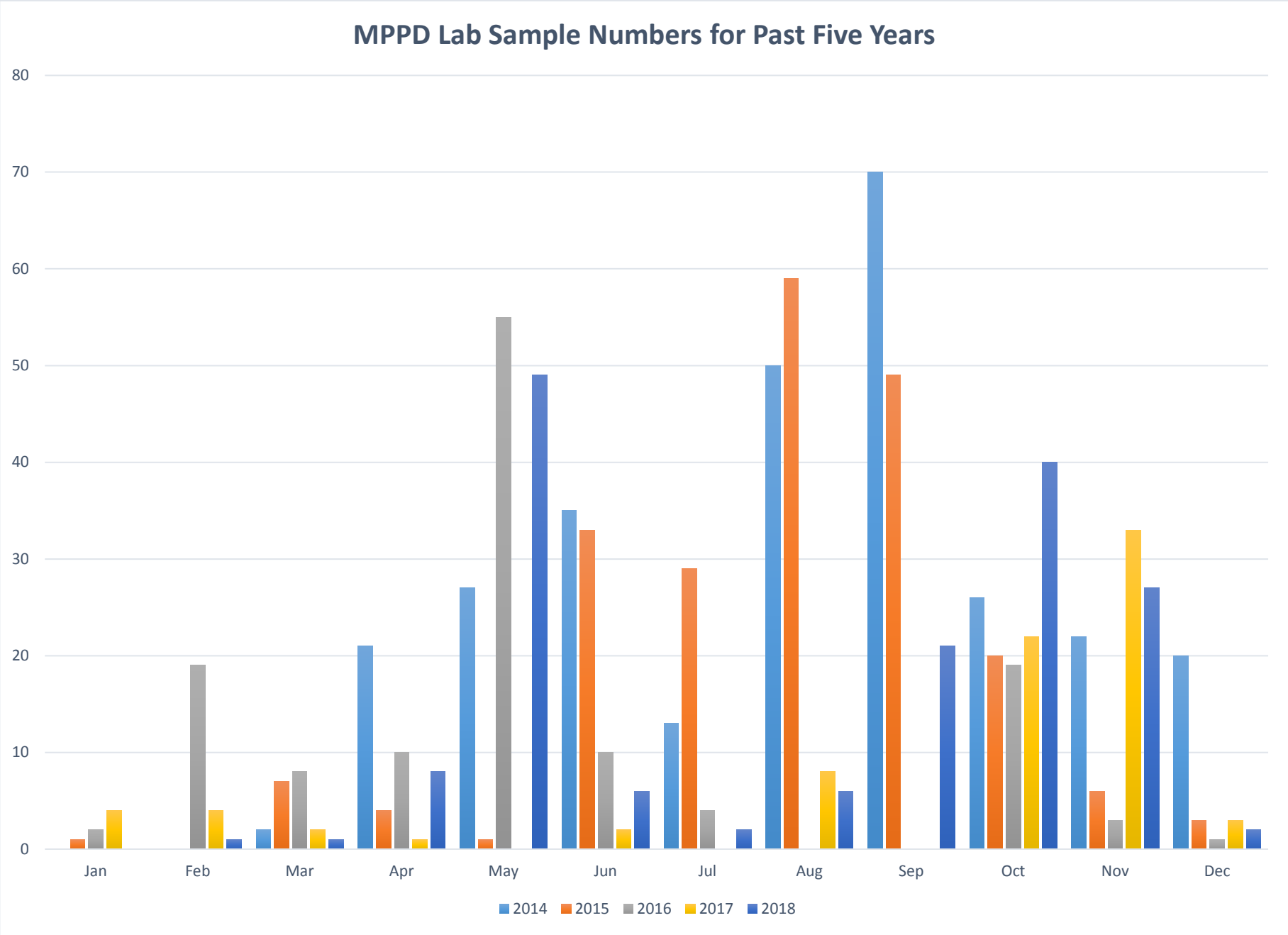
The main purpose of the lab is to identify plant diseases of USDA-APHIS regulatory concern, and as such, the lab works closely with Department of Plant Industry (DPI) Inspectors as they do inspections and surveys across the state. Through this process, the lab also supports South Carolina growers because it provides early detection of exotic plant diseases.

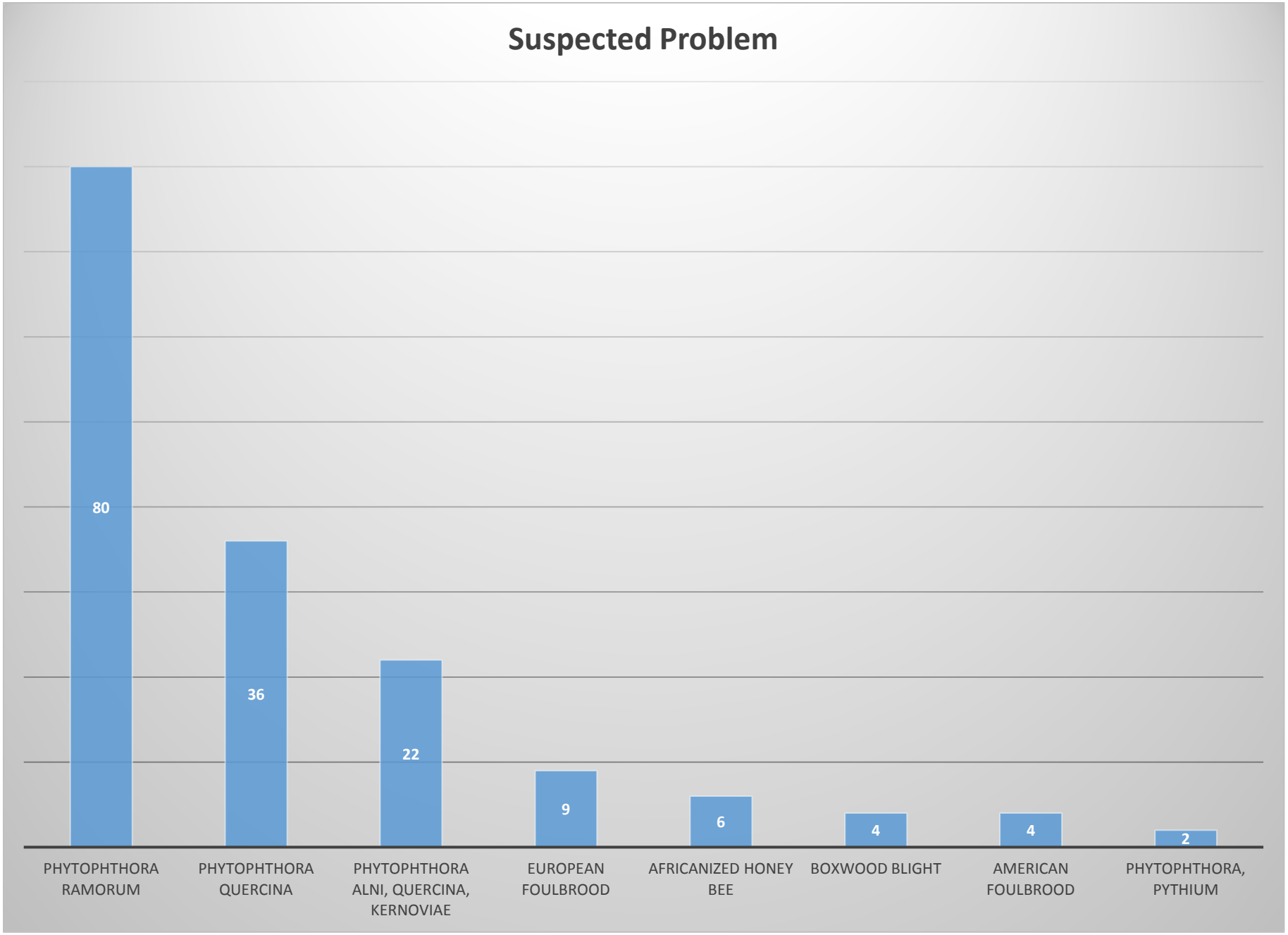
In addition, the lab has taken on non-plant disease issues that are relevant to Agriculture and public health. These include detection of foulbrood disease of bees, identification of Africanized honeybees and microbial source tracking for municipal water sources.

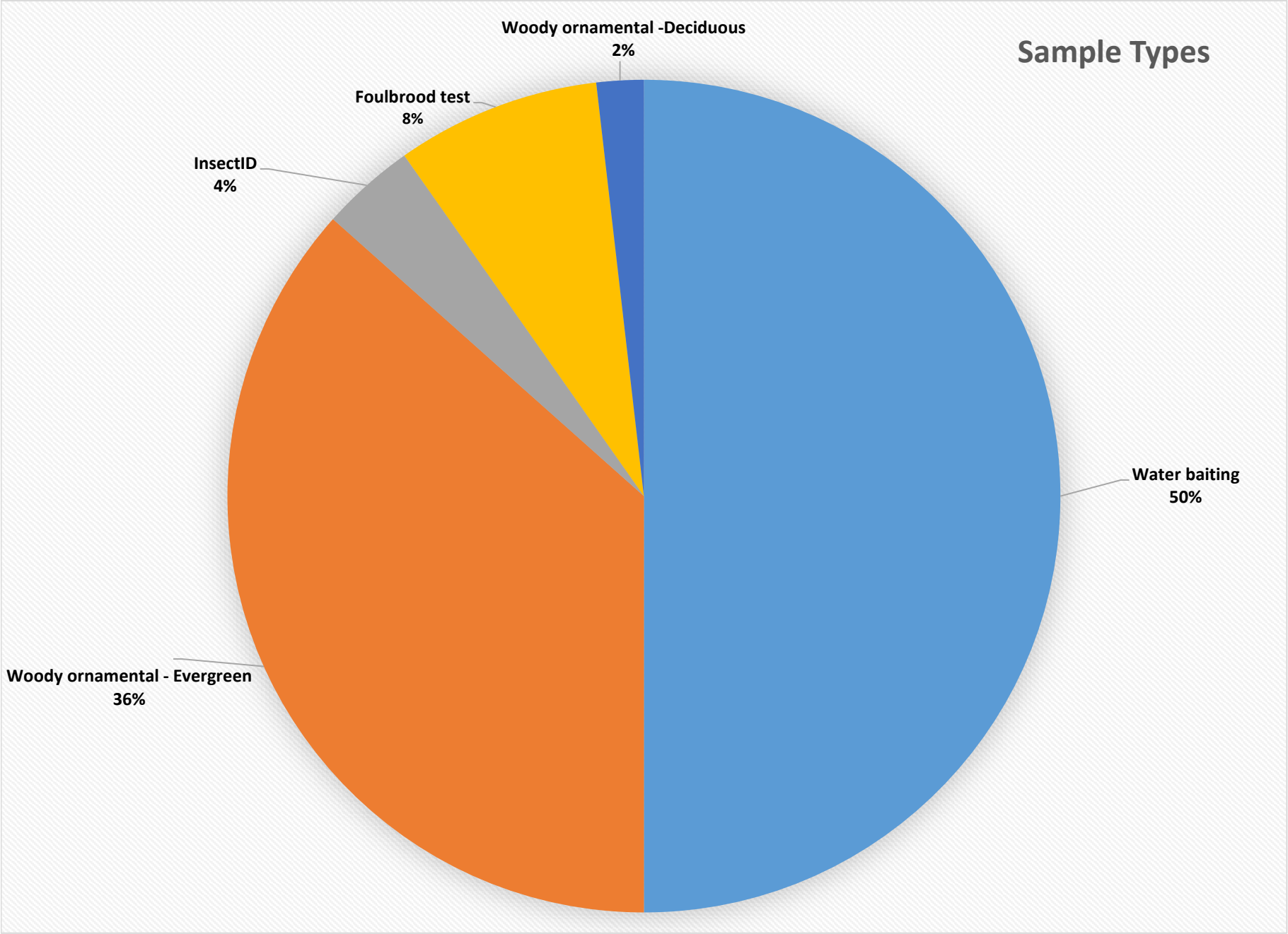
Because many MPPD Lab samples come from DPI surveys, the numbers vary widely over the years. Curt also works closely with the Clemson University Plant and Pest Diagnostic Clinic (PPDC), specializing in diagnostics for boxwood and lavender samples, especially when Phytophthora diseases are suspected.

Meg Williamson, PPDC Diagnostician and Lab Manager


MPPD Lab Samples for 2018
Total = 163
0
0
2
21
27
35
13
50
70
26
22
20
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


MPPD Lab Sample Numbers for Past Five Years
80
70
60
50
40
30
20
10
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
2014
2015
2016
2017
2018


Suspected Problem
80
36
22
9
6
4
4
2
PHYTOPHTHORA RAMORUM
PHYTOPHTHORA QUERCINA
PHYTOPHTHORA ALNI, QUERCINA, KERNOVIAE
EUROPEAN FOULBROOD
AFRICANIZED HONEY BEE
BOXWOOD BLIGHT
AMERICAN FOULBROOD
PHYTOPHTHORA, PYTHIUM


Sample Types
Woody ornamental -Deciduous
2%
Foulbrood test
8%
InsectID
4%
Water baiting
50%
Woody ornamental - Evergreen
36%

MPPD Lab Identifications and Diagnoses for 2018

	Confirmed	Not detected	Suspected	Inconclusive
HONEY BEE TESTING				
American foulbrood (Paenibacillus larvae larvae)	2	2	0	0
European foulbrood (Melissococcus plutonius)	9	0	0	0
European honey bee (Apis mellifera european)	6	0	0	0
Boxwod blight				
Boxwood (Buxus sp./spp.)				
Boxwood blight; Leaf and stem blight (Calonectria pseudonaviculata)	0	3	0	0
Boxwood Macrophoma leaf spot (Macrophoma candollei)	3	0	0	0
Japanese Boxwood (Buxus microphylla var. japonica)				
Anthracnose; Twig dieback (Colletotrichum sp./spp.)	1	0	0	0
Boxwood blight; Leaf and stem blight (Calonectria pseudonaviculata)	0	1	0	0
PHYTOPHTHORA DISEASES ON PLANTS				
Azalea; Rhododendron (Rhododendron sp./spp.)				
Phytophthora leaf spot (Phytophthora nicotianae)	23	0	0	0
Ramorum blight (Phytophthora ramorum)	0	23	0	0
Camellia (Camellia sp./spp.)				
Phytophthora leaf spot (Phytophthora nicotianae)	9	0	0	0
Ramorum blight (Phytophthora ramorum)	0	10	0	0
Common Camellia (Camellia japonica)				
Phytophthora leaf spot (Phytophthora nicotianae)	4	0	0	0
Ramorum blight (Phytophthora ramorum)	0	6	0	0
Japanese Andromeda (Pieris japonica)				
Aerial blight (Phytophthora nicotianae)	1	0	0	0
Phytophthora leaf spot (Phytophthora nicotianae)	3	0	0	0
Ramorum blight (Phytophthora ramorum)	0	4	0	0
Native Rhododendron (Rhododendron catawbiense)				
Aerial blight (Phytophthora nicotianae)	2	0	0	0
Ramorum blight (Phytophthora ramorum)	0	2	0	0

	Confirmed	Not detected	Suspected	Inconclusive
Pieris (Pieris sp./spp.)				
Ramorum blight (Phytophthora ramorum)	0	3	0	0
Viburnum (Viburnum sp./spp.)				
Phytophthora leaf spot (Phytophthora nicotianae)	10	0	0	0
Ramorum blight (Phytophthora ramorum)	0	11	0	0
PHYTOPHTHORA SPECIES IN WATER SOURCES				
Ponds; Lakes; impounded waters (Aquatic habitat)				
Phytophthora sp./spp.	0	1	0	0
Phytophthora cinnamomi	2	0	0	0
Phytophthora nicotianae	1	0	0	0
Phytophthora quercina	0	9	0	0
Pythium sp./spp.	1	0	0	0
Phytophthora ramorum	0	8	0	0
River; Stream; creek; waterway (Aquatic habitat)				
Phytophthora cinnamomi	1	0	0	0
Phytophthora quercina	0	7	0	0
Phytophthora cinnamomi	2	0	0	0
Phytophthora ramorum	0	2	0	0
Water Sample (Aquatic habitat)				
Phytophthora alni	0	2	0	0
Phytophthora sp./spp.	0	1	0	0
Phytophthora cinnamomi	5	0	0	0
Phytophthora kernoviae	0	3	0	0
Phytophthora quercina	0	45	0	0
Pythium sp./spp.	1	0	0	0
Phytophthora ramorum	0	9	0	0