

Indiana Cooperative Agricultural Pest Survey

2019 Annual Report for Survey

1 January – 31 December



Department of Entomology at Purdue University
Indiana Department of Natural Resources (IDNR)
United State Department of Agriculture (USDA), Animal and Plant Health Inspection Service
(APHIS), Plant Protection and Quarantine (PPQ)

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Pest Detection / CAPS Survey Accomplishment Report – FY2019

Year:	2019
State:	Indiana
Cooperative Agreement Name:	Indiana Agricultural Pest Surveys (CAPS) 2019
Cooperative Agreement Number:	19-8218-0332-CA
Project Funding Period:	1 January 2019 – 31 December 2019
Project Report:	PD / CAPS Survey Report
Project Document Date:	31 March 2020
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Quarterly Report	<input type="checkbox"/>
Semi-Annual Accomplishment Report	<input type="checkbox"/>
Annual Accomplishment Report	<input checked="" type="checkbox"/>

Pest Detection / CAPS Survey Accomplishment Report – FY2019

A. Narrative

Indiana Cooperative Agricultural Pest Surveys in 2019 were Corn Commodity, Soybean Commodity, Nursery and Retail Plants, and Exotic Wood Borer/Bark Beetle. All aspects of the Soybean Commodity survey were planned, executed and reported by the SSC. Only moth and invasive plant monitoring for the Corn Commodity survey was planned, executed and reported by the SSC. The disease monitoring portion of the Corn Commodity survey was a collaboration with the Purdue Plant Pest Diagnostic Laboratory (PPDL). Corn tissue samples were screened and tested by PPDL and the SSC reported data. The Nursery and Retail Plants survey was a collaborative effort of the SSC, Indiana Department of Natural Resources (IDNR), and PPDL. IDNR assisted in setting and servicing traps and obtaining foliar samples. PPDL screened foliar disease samples. The SSC assisted in survey planning/logistics, processing samples and archiving/reporting results. The Exotic Wood Borer/Bark Beetle survey was a collaborative effort with PPQ and CAPS. Pathway analysis was used to identify high-risk trap sites. PPQ co-planned the survey and set and serviced traps. The SSC co-planned the survey, processed and archived samples, and reported results. Survey data from APHIS collaborators (karnal bunt and khapra beetle) and IDNR collaborators (gypsy moth, Special Crops) were coded and/or uploaded.

Total proposed and actual survey funding was \$31,012. Survey details follow.

A.1. Soybean Commodity Survey:

Accomplishments:

Proposed and actual funding was \$5,817.

Proposed data were 1,458 records. Actual data were 1,573 records.

Cost per record was \$3.69.

A.1.a. Proposed total moth data for the Soybean Commodity Survey were 6 sites x 4 moth pests X 5 traps/pest X 12 weeks = 1440 records. Proposed yellow witchweed records were 6 sites x 1 observation x 3 sample dates = 18.

	Records	
	Proposed	Uploaded
1. Old world bollworm, <i>Helicoverpa armigera</i> ,	360	388
2. Egyptian cottonworm, <i>Spodoptera littoralis</i>	360	388
3. Silver Y-moth, <i>Autographa gamma</i>	360	389
4. Golden twin-spot moth, <i>Chrysodeixis chalcites</i>	360	390
5. Yellow witchweed, <i>Alectra vogelii</i>	18	18
total	1458	1,573

A.1.b. Survey Methodology: Methods were adapted from the CAPS Soybean Reference 2019. Six high-risk trap locations with high concentrations of grain crops (soybean and field corn) were chosen for this survey. Trap numbers and types placed at each location included: five bucket traps (green/yellow/white) with lure and kill strips for each of Old World bollworm, *Helicoverpa armigera*, Egyptian cottonworm, *Spodoptera littoralis*, silver Y-moth *Autographa gamma*, and golden twin-spot moth, *Chrysodeixis chalcites*. Traps were set on 20-21 May and were serviced weekly through the end of the reporting period 19-21 August.

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Yellow witchweed, *Alectra vogelii*, survey was a 20-minute rapid, visual search in an “M” shaped pattern across a soybean field performed monthly from 24 June to 21 Aug. This survey method was based on the generally recommended search pattern for pest insects and weeds by the Purdue Cooperative Extension Service.

A.1.c. Survey locations, trap service and weed search dates;

1. Jennings Co. Southeast-Purdue Agricultural Center, Butlerville, IN.
Trap dates; weekly from 5/21 to 8/20. Weed search dates; 6/26, 7/24, 8/20
2. Knox Co. Southwest-Purdue, Vincennes, IN.
Trap dates; weekly from 5/20 to 8/20. Weed search dates; 6/26, 7/24, 8/20
3. La Porte Co. Pinney-Agricultural Center, Wanatah, IN.
Trap dates; weekly from 5/20 to 8/21. Weed search dates; 6/24, 7/29, 8/21
4. Randolph Co. Davis-Purdue Agricultural Center, Farmland, IN.
Trap dates; weekly from 5/21 to 8/19. Weed search dates; 6/24, 7/29, 8/28
5. Tippecanoe Co. Meigs-Purdue Horticultural Center, Lafayette, IN.
Trap dates; weekly from 5/21 to 8/21. Weed search dates; 6/24, 7/29, 8/21
6. Whitley Co. Northeast-Purdue Agricultural Center, Columbia City, IN.
Trap dates; weekly from 5/21 to 8/19. Weed search dates; 6/24, 7/29, 8/19

A.1.d. Benefits and Results of Survey:

As in previous years, several endemic similar noctuid loopers were attracted to the *A. gamma* and *H. armigera* lures. This resulted in about 400 specimens that required screening by micro-dissection (*H. armigera*) and/or external morphology (*A. gamma*). No target species were identified.

A.1.e. Database submissions:

Old world bollworm, *Helicoverpa armigera*,
Date Range: 05-20-2019 thru 8-21-2019
Counties 6 Sites 5 Pos 0 Neg 388

Egyptian cottonworm, *Spodoptera littoralis*,
Date Range: 05-20-2019 thru 8-21-2019
Counties 6 Sites 5 Pos 0 Neg 388

Silver Y-moth *Autographa gamma*;
Date Range: 05-20-2019 thru 8-21-2019
Counties 6 Sites 5 Pos 0 Neg 389

Golden twin spot Moth, *Chrysodiexis chalcites*,
Date Range: 05-20-2019 thru 8-21-2019
Counties 6 Sites 5 Pos 0 Neg 390

Yellow witchweed, *Alectra vogelii*,
Date Range: 06-24-2019 thru 8-21-2019
Counties 6 Sites 6 Pos 0 Neg 18

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A2. Corn Commodity Survey:

A.2.a. Proposed moth data for the Corn Commodity Survey were 6 sites x 4 pests x 5 traps/pest X 12 dates = 1440 records. The proposed disease survey records were 100 sites x 4 pests X 1 visit=100 x4 =400 records. Proposed Asiatic witchweed data were 6 sites x 1 observation x 3 sample dates = 18 records.

Accomplishments:

Proposed and actual funding was \$5,817.

Proposed data were 1,858 records. Actual data were 2,673 records.

Cost per record was \$2.18.

	Records	
	Proposed	Uploaded
1. Old world bollworm, <i>Helicoverpa armigera</i>	360	390
2. Egyptian cottonworm, <i>Spodoptera littoralis</i>	360	388
3. Cotton cutworm, <i>Spodoptera litura</i>	360	388
4. Silver Y-moth, <i>Autographa gamma</i>	360	389
5. Brown stripe downy mildew, <i>Sclerophthora. rayssiae</i> var. <i>zeae</i>	100	275
6. Philippine downy mildew, <i>Peronosclerospora philippinensis</i>	100	275
7. Java downy mildew, <i>Peronosclerospora maydis</i>	100	275
8. Tar spot, <i>Phyllachora maydis</i>	100	275
9. Asiatic witchweed, <i>Striga asiatica</i>	18	18
Totals	1,858	2,673

A.2.b. Survey Methodology: Methods were adapted from the CAPS Corn Survey Reference 2019. Five bucket traps for each of adult silver Y-moth *A. gamma*, old world bollworm, *H. armigera*, cotton cutworm, *S. litura*, and Egyptian cotton leafworm, *S. littoralis* were deployed on 20-21 May at six high-risk locations. Disease targets including brown stripe downy mildew, *S. rayssiae* var. *zeae*, Philippine downy mildew, *P. philippinensis*, Java downy mildew, *P. maydis*, and Tar spot, *P. maydis* were sampled in 77 counties from about early June through late October. A few samples were submitted in Feb/Mar that represented the 2018 crop. These samples were screened by Purdue Plant and Pest Diagnostic Laboratory. Asiatic witchweed, *Striga asiatica*, survey was a 20-minute rapid, visual search in an “M” shaped pattern across a corn field that was performed monthly from 24 June to 21 Aug. This survey method is based on the generally recommended search pattern for pest insects and weeds by the Purdue Cooperative Extension Service.

A.2.c. Moth survey locations; trap service and weed search dates;

- Jennings Co. Southeast Purdue Agricultural Center, Butlerville, IN.
Trap dates; weekly from 5/21 to 8/20. Weed search dates; 6/26, 7/24, 8/20
- Knox Co. Southwest Purdue Agricultural Center, Vincennes, IN.
Trap dates; weekly from 5/20 to 8/20. Weed search dates; 6/26, 7/24, 8/20
- La Porte Co. Pinney Purdue Agricultural Center, Wanatah, IN.
Trap dates; weekly from 5/20 to 8/21. Weed search dates; 6/24, 7/29, 8/21
- Randolph Co. Davis Purdue Agricultural Center, Farmland, IN.

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- Trap dates; weekly from 5/21 to 8/19. Weed search dates; 6/24, 7/29, 8/28
5. Tippecanoe Co. Meigs Purdue Horticultural Center, Lafayette, IN.
Trap dates; weekly from 5/21 to 8/21. Weed search dates; 6/24, 7/29, 8/21
 6. Whitley Co. Northeast-Purdue Agricultural Center, Columbia City, IN.
Trap dates; weekly from 5/21 to 8/19. Weed search dates; 6/24, 7/29, 8/19

A.2.c. Continued: Exotic mildews and corn tar spot survey locations, sample dates (number of sites for a sample date).

01. Adams Co. 10/15
02. Allen Co. 9/16 (2)
03. Bartholomew Co. 10/21
04. Benton Co. 7/07, 7/23, 8/20, 9/27, 10/28 (3)
05. Blackford Co. 10/15
06. Boone Co. 7/29, 9/11 (4), 9/17, 10/15
07. Carroll Co. 7/24, 10/1 (4), 10/3,
08. Cass Co. 7/8, 10/3
09. Clay Co. 8/30
10. Clinton 10/9 (3)
11. Crawford Co. 10/23
12. Daviess Co. 8/2, 8/13, 8/21 (5)
13. DeKalb Co. 9/17
14. Delaware Co. 6/17, 7/17, 8/30, 10/9 (2)
15. Dubois Co. 8/6
16. Elkhart Co. 6/19, 8/14, 9/6, 10/4
17. Fayette Co. 10/15
18. Floyd Co. 8/28
19. Fountain Co. 6/12, 7/30, 10/9 (2)
20. Franklin Co. 9/23
21. Fulton Co. 7/10, 9/10
22. Gipson Co. 7/31, 9/17 (2), 10/9
23. Greene Co. 8/20, 10/21 (2)
24. Hamilton Co. 9/6 (2), 10/15
25. Hancock Co. 8/5, 9/23
26. Hendricks Co. 8/26, 9/18, 10/15
27. Henry Co. 9/14, 10/15, 11/5
28. Howard Co. 8/12 (3), 9/6 (3), 10/3
29. Huntington Co. 10/15
30. Jackson Co. 10/3
31. Jasper Co. 6/18, 8/28, 8/9, 9/17 (5), 9/26, 10/15 (3), 10/21
32. Jay Co. 7/30, 8/27 (6), 10/15 (2)
33. Jefferson Co. 8/26
34. Jennings Co. 9/26
35. Johnson Co. 10/9
36. Knox Co. 6/19, 7/5, 7/24, 8/1, 10/9 (2)
37. Kosciusko Co. 8/14, 9/6 (3)

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38. La Porte Co. 7/16 (2), 10/1 (4), 8/28, 9/4 (3), 9/17 (6), 9/20 (5)
39. Lagrange Co. 10/4 (2), 10/30, 9/11 (5)
40. Lake Co. 8/7, 8/26, 9/25
41. Lawrence Co. 7/24
42. Madison Co. 8/1, 10/9 (2),
43. Marion Co. 10/21
44. Marshall Co. 8/26, 9/12
45. Martin Co. 8/13
46. Miami Co. 9/6, 9/10, 10/15 (2)
47. Monroe Co. 10/21
48. Montgomery Co. 6/27, 7/2, 9/5 (4), 10/9 (2), 10/10
49. Morgan Co. 8/7, 10/15
50. Noble Co. 7/31 (2)
51. Owen Co. 10/21
52. Parke Co. 7/26, 10/9 (2)
53. Perry Co. 9/5
54. Porter Co. 7/16 (2), 7/19, 8/30, 10/1 (2)
55. Posey Co. 7/5, 7/22, 10/9 (2)
56. Pulaski Co. 8/15, 9/17 (2)
57. Putnam Co. 8/12, 10/21
58. Randolph Co. 10/2, 10/9 (2)
59. Ripley Co. 7/31
60. Rush Co. 10/9, 10/15
61. Shelby Co. 7/31, 9/13, 9/24, 10/15 (4)
62. Spencer Co. 8/9
63. St. Joseph Co. 7/31, 9/6 (3), 10/1, 10/4 (5), 9/7, 9/11
64. Steuben Co. 10/4 (2), 9/11 (2), 10/1
65. Sullivan Co. 7/15, 10/9 (2), 9/17
66. Tippecanoe Co. 2/19, 3/15 (2), 6/7, 6/24 (3), 7/29 (2), 9/26, 10/4, 10/9 (2), 10/30 (3),
67. Tipton Co. 6/7, 7/31, 9/6 (5) 9/26, 10/9 (2)
68. Union Co. 10/15
69. Vanderburgh Co. 7/26, 10/9
70. Vermillion Co. 9/6, 7/16, 10/9 (2)
71. Vigo Co. 7/15, 8/13, 10/8, 10/9 (2)
72. Wabash Co. 6/20
73. Warren Co. 9/6 (3), 9/26, 10/4 (3)
74. Washington Co. 8/5, 8/12
75. Wells Co. 10/15
76. White Co. 8/26, 9/13, 9/17 (4), 10/3
77. Whitley Co. 7/31 (2), 9/12

A.2.d. Benefits and Results of Survey: Tar spot, *P. maydis*, was confirmed at 103 sites in 54 counties resulting in 21 new county records: Adams, Blackford, Delaware, Fayette, Fountain, Greene, Hamilton, Henry, Howard, Jay, Marion, Miami, Monroe, Morgan, Owen, Posey, Putnam, Randolph, Sullivan, Union, Vigo.

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A.2.e. Database submissions:

Old world bollworm, *Helicoverpa armigera*,

Date Range: 05-20-2019 thru 8-21-2019

Counties 6 Sites 5 Pos 0 Neg 390

Egyptian cottonworm, *Spodoptera littoralis*,

Date Range: 05-20-2019 thru 8-21-2019

Counties 6 Sites 5 Pos 0 Neg 388

Cotton cutworm, *Spodoptera litura*

Date Range: 05-20-2019 thru 8-21-2019

Counties 6 Sites 5 Pos 0 Neg 388

Silver Y-moth *Autographa gamma*;

Date Range: 05-20-2019 thru 8-21-2019

Counties 6 Sites 5 Pos 0 Neg 389

Philippine downy mildew, *Peronosclerospora philippinensis*

Date Range: 02-19-2019 thru 11-05-2019

Counties 77 Sites 275 Pos 0 Neg 275

Java downy mildew, *Peronosclerospora maydis*

Date Range: 02-19-2019 thru 11-05-2019

Counties 77 Sites 275 Pos 0 Neg 275

Brown stripe downy mildew, *Sclerophthora rayssiae*

Date Range: 02-19-2019 thru 11-05-2019

Counties 77 Sites 275 Pos 0 Neg 275

Tar spot, *Phyllachora maydis*,

Date Range: 02-19-2019 thru 11-05-2019

Counties 77 Sites 275 Pos 103 Neg 172

Asiatic witchweed, *Striga asiatica*

Date Range: 06-24-2019 thru 8-21-2019

Counties 6 Sites 6 Pos 0 Neg 18

A.3. Nursery and Retail Plants Survey.

A.3.a. Proposed *Helicoverpa armigera* observations were 270 records. Proposed total boxwood blight, *Calonectria pseudonaviculata*, observations were about 200 records. Proposed collections for sudden oak death (SOD), *Phytophthora ramorum*, were 250 records.

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Accomplishments:

Proposed and actual funding was \$16,853.

Proposed data were 720 records. Actual data were 843 records.

Cost per record was \$19.99.

	Records	
	Proposed	Uploaded
1. Old world bollworm, <i>Helicoverpa armigera</i>	270	307
2. boxwood blight, <i>Calonectria pseudonaviculata</i>	200	186
3. sudden oak death, <i>Phytophthora ramorum</i>	250	350
Totals	720	843

A.3.b. Survey Methodology: This survey was integrated with the annual plant nursery and retail outlet inspections conducted by Indiana Department of Natural Resources. Subsets of sites for various pests were sampled from about 360 sites visited annually. State nursery inspectors set and monitored traps for old world bollworm, *H. armigera*, at 46 locations in 16 counties; observed and sampled foliage of ornamental boxwood cultivars *Buxus* spp. for boxwood blight, *C. pseudonaviculata*; at 51 sites in 27 counties; and observed and sampled a wide range of susceptible perennial plant foliage for sudden oak death, *P. ramorum* symptoms at 89 sites in 44 counties. Moth samples were sent to the SSC and foliar samples sent to Purdue University Plant Pest & Disease Laboratory.

For the moth survey, one plastic bucket trap with old world bollworm lure and kill strip was placed at each site. Sample interval was approximately biweekly. Sampling for boxwood blight, *C. pseudonaviculata*, was visual at plant nurseries, retail outlets, and landscapes with suspect boxwood leaf tissue submitted for microscopic confirmation at Purdue Plant Pest Diagnostic Laboratory (PPDL). Random and directed visual observations of potential host plants suspected of sudden oak death, *P. ramorum* lesions at 89 sites in 44 counties were tested at PPDL using an enzyme-linked immunosorbent assay (ELISA) consistent with the Nursery Survey Manual (Revised April 30, 2007) USDA-PPQ. Confirmation testing (PCR) was performed by an APHIS-approved lab at Michigan State University, East Lansing, MI.

The relatively high cost of the Nursery and Retail Plants survey was due to laboratory supplies and labor required for screening and confirmation.

A.3.c. Old world bollworm survey locations; trap service dates;

- | | |
|-----------------------------------|-------------------------------------|
| 01. Boone 6/19 – 9/26; 1 site | 09. Harrison 6/10 – 8/7; 1 site |
| 02. Clark 6/10 – 9/10; 2 sites | 10. La Porte 6/19 – 9/17; 2 sites |
| 03. Dearborn 6/14 – 8/28; 3 sites | 11. Porter 6/7 – 8/7; 3 sites |
| 04. DeKalb 6/17 – 9/20; 5 sites | 12. Ripley 6/14 – 8/28; 2 sites |
| 05. Dubois 06/19 - 9/17; 2 sites | 13. Tippecanoe 6/19 – 9/26; 5 sites |
| 06. Elkhart 6/7 – 9/16; 5 sites | 14. Vanderburgh 6/14 – 9/18 2 sites |
| 07. Floyd 6/10 – 9/5; 2 sites | 15. Vigo 5/28 – 8/1; 5 sites |
| 08. Hamilton 6/25 – 8/14; 5 sites | 18. Warrick 6/14 – 9/18; 1 site |

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A.3.c. Continued. Boxwood blight survey locations and dates

- | | |
|--|--|
| 01. Allen Co. 7/05, 7/24; 2 sites | 15. Jackson Co. 5/28; 1 site |
| 02. Bartholomew Co. 4/18; 2 sites | 16. Knox Co. 5/9, 6/3; 3 sites |
| 03. Clark Co. 5/2, 5/24; 2 sites | 17. Lake Co. 6/5; 1 site |
| 04. Daviess Co. 6/20; 1 site | 18. Madison Co. 6/19; 1 site |
| 05. Dubois Co. 5/22, 7/12, 8/14; 3 sites | 19. Monroe Co. 4/22, 5/6, 6/6, 6/10; 5 sites |
| 06. Floyd Co. 5/24; 8/8; 2 sites | 20. Montgomery Co. 9/5; 1 site |
| 07. Grant Co. 7/11; 1 site | 21. Noble Co. 8/6; 1 site |
| 08. Greene Co. 5/16; 2 sites | 22. Porter Co. 8/21; 2 sites |
| 09. Hamilton Co. 5/12 to 7/19; 5 sites | 23. Spencer Co. 7/9; 1 site |
| 10. Harrison Co. 5/21; 1 site | 24. Steuben Co. 5/9; 1 site |
| 11. Hendricks Co. 5/15, 5/21, 7/1; 4 sites | 25. Vanderburgh Co. 5/6, 6/14, 9/5; 3 sites |
| 12. Henry Co. 5/7; 1 site | 26. Vigo Co. 4/29; 1 site |
| 13. Howard Co. 6/17; 2 sites | 27. Warrick Co. 8/19; 1 site |
| 14. Huntington Co. 7/8; 1 site | |

A.3.2.c. Continued. Sudden oak death survey locations and dates.

- | | |
|---|---|
| 01. Allen Co. 6/25; 1 site | 23. Johnson Co. 5/22, 5/24; 4 sites |
| 02. Bartholomew Co. 5/21; 1 site | 24. Knox Co. 6/3 9/26; 3 sites |
| 03. Boone Co. 5/8, 5/29, 6/27; 3 sites | 25. LaGrange Co. 8/6; 1 site |
| 04. Clark Co. 5/24; 1 site | 26. Lake Co. 5/24, 5/31; 2 sites |
| 05. Clinton Co. 5/22; 1 site | 27. Lawrence Co. 7/23; 1 site |
| 06. Daviess Co. 6/5, 6/20; 3 sites | 28. Madison Co. 6/19, 7/15; 1 site repeat |
| 07. Dearborn Co. 5/22; 1 site | 29. Marion Co. 5/23 to 7/15; 6 sites |
| 08. Decatur Co. 5/22; 1 site | 30. Monroe Co. 6/6, 6/10; 2 sites |
| 09. Dubois Co. 5/22, 5/31, 8/14; 3 sites | 31. Perry Co. 5/21; 1 site |
| 10. Fayette Co. 5/28; 1 site | 32. Randolph Co. 5/22; 1 site |
| 11. Fulton Co. 5/14, 5/22; 3 sites | 33. St Joseph Co. 5/10, 6/14, 7/1; 3 sites |
| 12. Grant Co. 6/25; 1 site | 34. Scott Co. 5/22; 1 site |
| 13. Hamilton Co. 5/13 to 6/26; 5 sites | 35. Shelby Co. 5/22, 2 sites |
| 14. Hancock Co. 5/14; 2 sites | 36. Spencer Co. 7/9, 7/25; 1 site repeated |
| 15. Harrison Co. 5/28; 1 site | 37. Steuben Co. 6/27, 6/28, 7/2; 1 site repeated |
| 16. Hendricks Co. 5/21, 6/4; 4 sites | 38. Sullivan Co. 5/23; 1 site |
| 17. Henry Co. 5/22; 1 site | 39. Tippecanoe Co. 5/17 to 6/26; 6 sites repeated |
| 18. Howard Co. 5/22; 1 site | 40. Vanderburgh Co. 6/7, 6/25, 6/26; 5 sites |
| 19. Jackson Co. 5/21, 5/28, 6/10; 3 sites | 41. Wabash Co. 5/30; 1 site |
| 20. Jay Co. 5/21; 1 site | 42. Warrick Co. 6/6; 1 site |
| 21. Jefferson Co. 6/24; 1 site | 43. Wells Co. 6/5, 6/20, 2 sites |
| 22. Jennings Co. 5/23; 1 site | 44. White Co. 5/20, 5/22, 6/11; 3 sites |

A.3.d. Benefits and Results of Survey. No boxwood blight was detected in this survey.

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A.3.e. Database submissions:

Old world bollworm, *Helicoverpa armigera*,
Date Range: 05-28-2019 thru 9-26-2019
Counties 16 Sites 46 Pos 0 Neg 307

Boxwood blight, *Calonectria pseudonaviculata*,
Date Range: 04-18-2019 thru 9-5-2019
Counties 27 Sites 51 Pos 0 Neg 186 (=317,962 stems)

Sudden oak death, *Phytophthora ramorum*
Date Range: 03-28-2019 thru 9-28-2019
Counties 44 Sites 89 Pos 0 Neg 350

A.4 Exotic Woodborers/Bark Beetles Survey

A. 4.a. Proposed data collection for the risk-based, exotic woodborers/bark beetles survey were: Japanese pine sawyer beetle, *Monochamus alternatus*; large pine weevil (245 records), *Hylobius abietis*, black fir sawyer (245 records), *Monochamus urussovii*; sixtoothed bark beetle (245 records), *Ips sexdentatus*; European spruce bark beetle (245 records), *Ips typographus*; Mediterranean pine engraver (245 records); *Orthotomicus erosus* (245 records); six-tooth spruce bark beetle *Pityogenes chalcographus* (35 records); oak ambrosia beetle, *Playpus quercivorus* (140 records); European hardwood ambrosia beetle, *Trypodendron domesticum* (80 records); and Asian longhorned beetle, *Anoplophora glabripennis* (18 records).

Accomplishments;

Proposed and actual funding was \$2,528
Proposed data were 1,725 records. Actual data were 2,486 records.
Actual cost per record was \$0.98.

A.4.b. Survey Methodology: This survey is an APHIS-PPQ/CAPS collaborative effort. PPQ set and sampled traps and CAPS processed, identified, and archived samples. Exotic Woodborer/Bark Beetle Survey Reference, 2019, was followed. Wet cup Lindgren funnel traps were deployed at 61 Indiana sites representing 31 counties. Sites were chosen by recognition of apparent risk of receiving target pests through commerce, or by vulnerable habitat. One to 2 (varies by site) Lindgren funnel traps with wet cups containing dilute propylene glycol were placed at each site. Traps contained one of the following lures: Monochamol+alpha-pineneUHR+ethanol, Chalcogran, Lineatin, P. quercivorus, or IPS (tri-lure). Asian longhorned beetle, *Anoplophora glabripennis*, survey consisted of a 30-minute random search in a mixed hardwood forest once monthly in June, July, and August at 6 state-wide locations (counties).

A.4.c. Survey location and dates: Lindgren traps were located at 61 Indiana sites in 31 counties. Traps were deployed 18 March to 11 June. Traps were serviced about every two weeks until mid-November. Visual surveys were located in Knox, LaPorte, Tippecanoe,

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Randolph, Jennings, Whitley Counties which made total sites at 65 and counties at 66. Searches were made between 6/24 and 8/21.

A.4.2. WB/EBB survey (Lindgren trap) locations and date range.

Trap period extended from 2 March to 8 November.

Counties: 1 or 2 Lindgren funnel traps per site.

- | | |
|--|---|
| 01. Bartholomew Co. 6/12 – 10/26; 1 site | 17. Madison Co. 5/28 – 10/11; 1 site |
| 02. Boone Co. 5/31 -11/15; 2 sites | 18. Lake Co. 5/13 – 10/2; 1 site |
| 03. Clark Co. 3/26 – 10/10; 2 sites | 19. Marion Co. 5/23 – 11/8; 6 sites |
| 04. Crawford Co. 3/28 – 10/10; 1 site | 20. Martin Co. 4/9 – 10/15; 1 site |
| 05. Daviess Co. 4/3 – 10/17; 1 site | 21. Montgomery Co. 5/24 – 10/5; 1 site |
| 06. Delaware Co. 5/29 – 10/11; 1 site | 22. Orange Co. 3/27 – 10/22; 1 site |
| 07. Dubois Co. 4/5 -10/11; 1 site | 23. Owen Co. 5/30 – 10/12 1 site |
| 08. Elkhart Co. 3/21 – 10/9; 2 sites | 24. Parke Co. 5/24 – 10/5; 1 site |
| 09. Floyd Co. 4/25 – 10/22; 1 site | 25. Pike Co. 4/2 – 10-16; 3 sites |
| 10. Gibson Co. 4/3 – 10/17; 3 sites | 26. Porter Co. 3/18 – 10/8; 12 sites |
| 11. Greene Co. 6/3 – 10/14; 1 site | 27. Ripley Co. 3/29 – 10/18; 1 site) |
| 12. Hendricks Co. 5/28–10/25; 2 sites | 28. Scott Co 3/27-10/10; 2 sites |
| 13. Jefferson Co. 3/29 – 10/18 1 site | 29. Shelby Co. 6/4 -11/9; 2 sites |
| 14. Johnson Co. 5/23 – 10/5; 1 site | 30. Starke Co. 3/19 – 10/8 2 sites |
| 15. Lake Co. 3/18 – 10/8; 1 site | 31. Vanderburgh Co. 4/8 – 10/11; 1 site |
| 16. LaPorte Co. 3/19– 10/8; 4 sites | |

Counties: Visual search of mixed hardwood forest.

1. Jennings Co. 6/26, 7/24, 8/20; 1 site
2. Knox Co. 6/25, 7/23, to 8/19; 1 site
3. LaPorte Co. 6/24, 7/29, 8/21; 1 site
4. Randolph Co. 6/24, 7/29, 8/19; 1 site
5. Tippecanoe Co. 6/24, 7/29, 8/21; 1 site
6. Whitley Co. 6/24, 7/29, 8/19; 1 site

A.4.d Benefits and results of survey: CAPS staff screened 667 samples. No target species were detected.

A.4.e. Database submissions:

Asian longhorned beetle, *Anoplophora glabripennis*

Date Range: 06-24-2019 thru 8-21-2019

Counties 6 Sites 6 Pos 0 Neg 18

Japanese pine sawyer beetle, *Monochamus alternatus*

Date Range: 03-26-2019 thru 11-15-2019

Counties 22 Sites 36 Pos 0 Neg 348

Large pine weevil, *Hylobius abietis*

Date Range: 03-26-2019 thru 11-15-2019

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Counties 22 Sites 36 Pos 0 Neg 348

Black fir sawyer, *Monochamus urussovii*
Date Range: 03-26-2019 thru 11-15-2019
Counties 22 Sites 36 Pos 0 Neg 348

Sixtoothed bark beetle, *Ips sexdentatus*
Date Range: 03-26-2019 thru 11-15-2019
Counties 23 Sites 36 Pos 0 Neg 347

European spruce bark beetle, *Ips typographus*
Date Range: 03-26-2019 thru 11-15-2019
Counties 23 Sites 36 Pos 0 Neg 347

Mediterranean pine engraver, *Orthotomicus erosus*
Date Range: 03-26-2019 thru 11-15-2019
Counties 23 Sites 36 Pos 0 Neg 347

Sixtoothed spruce bark beetle, *Pityogenes chalcographus*
Date Range: 03-18-2019 thru 10-7-2019
Counties 1 Sites 5 Pos 0 Neg 70

Oak ambrosia beetle, *Playpus quercivorus*
Date Range: 03-27-2019 thru 10-22-2019
Counties 16 Sites 18 Pos 0 Neg 194

European hardwood ambrosia beetle, *Trypodendron domesticum*
Date Range: 03-27-2019 thru 10-22-2019
Counties 16 Sites 18 Pos 0 Neg 119

B. If appropriate, explain why objectives were not met. All objectives for reporting period 1 January to 31 December 2019 were met.

C. Where appropriate, explain any cost overruns or unobligated funds in excess of \$1,000. There were no cost overruns.

D. Supporting Documents (if applicable). None attached

**indicates information is required per 7 CFR 3016.40 and 7 CFR 3019.5*

Approved and signed by

Pest Detection / CAPS Survey Accomplishment Report – FY2019

Megan Abraham

Megan L. Abraham (Cooperator)

Date: 3-4-20

Gary W. Simon (ADODR)

Date: _____