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This report is available at Iowa State University Digital Repository: https://lib.dr.iastate.edu/swinedisease_reports/5
What is the SDRS?

SHIC-funded, veterinary diagnostic laboratories (VDLs) collaborative project, with goal to aggregate swine diagnostic data from participating reporting VDLs, and report in an intuitive format (web dashboards), describing dynamics of disease detection by pathogen or disease syndrome over time, specimen, age group, and geographical space.

For this report, data is from the Iowa State University VDL and South Dakota State University ADRDL. University of Minnesota VDL and Kansas State University VDL. Specifically, for PRRSV RFLP data, the results are from Iowa State University VDL.

For all “2018 predictive graphs”, the expected value was calculated using a statistical model that takes into account the results from 3 previous years. The intent of the model is not to compare the recent data (2018) to individual weeks of previous years. The intent is to estimate expected levels of percent positive cases based on patterns observed in the past data, and define if observed percentage positive values are above or below the expected based on historic trends.

Collaborators:

Iowa State University: Giovani Trevisan*, Leticia Linhares, Bret Crim; Poonam Dubey, Kent Schwartz, Eric Burrough; Rodger Main, Daniel Linhares**.

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Advisory Council:

The advisory group reviews the data to discuss it and provide their comments to try to give the data some context and thoughts about its interpretation: Clayton Johnson, Emily Byers, Hans Rotto, Jeremy Pittman, Mark Schwartz, Paul Sundberg, Paul Yeske, Pete Thomas, Rebecca Robbins, Tara Donovan.

This report is an abbreviated version of the dashboards that are available online.

To access the full data, use your computer, tablet, or phone to:

1) Scan the code below, or go to: www.powerbi.com
2) Login: sdrs@iastate.edu
3) Password: Bacon 100
4) On the left bar, click on ‘Apps’
5) Select your dashboard of interest (e.g. PRRS)
5) More information at the SDRS webpage https://fieldepi.research.cvm.iastate.edu/swine-disease-reporting-system/

Report # 9 (November 6th, 2018)

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October of 2018 reported > 6,000 PRRS PCR cases for the first time for a single month;

Significant increase in the percentage of positive results was detected during the weeks of 42 and 43 of 2018 (Calendar days 14th to 27th of October), indicating perhaps the beginning of the PRRS season for the 2018-2019 winter.

- Most of the increased PRRS PCR positivity was driven by cases from wean-to-market pigs, which has been consistent with previous years.
- PCR-positive cases increased from 34.77 to 42.82% in wean to market, 15.12 to 17.84% in adult/sow, and 13.28 to 14.67% in unknown age category. The case load increased from 1,110 to 1,658 (+ 49.37%) in wean to market, from 2,010 to 2,451 (+ 21.94%) in adult/sow, and from 1,815 to 2,088 (+ 15.04%) for unknown. Similar pattern of detection in Iowa, Illinois, Missouri, Nebraska, and Oklahoma.

In 2018 there has been a relative increase of RFLP 2-5-2, and decrease of RFLP 1-7-4 compared to previous year, likely reflecting increased use of attenuated virus vaccination in pig herds.

Wild-type PRRSv sequences increased by 89.06% from September to October (128 to 242), and vaccine-like sequences increased by 81.71% (82 to 149) in the same period.

- Wild type increase was 102.71% (37 to 75) in Adult/Boar Stud/Breeding Herd/Replacement/Sucking piglets, and 118.86% (53 to 116) in Nursery/Grow-finish
- Vaccine type increase was 90.32% (31 to 59) for Adult/Boar Stud/Breeding Herd/Replacement/Sucking piglets, and 138.71% (31 to 74) in Nursery/Grow-finish
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**Figure 3** Left side: results of PEDV, and PDCoV rRT-PCR cases over time. Right side charts: expected percentage of positive results for PEDV and PDCoV by rRT-PCR, with 1 standard deviation above and below the expected value, respectively.

PEDV, PDCoV, and TGEV rRT-PCR test results were consolidated from Iowa State University Veterinary Diagnostic Laboratory (ISU-VDL), University of Minnesota Veterinary Diagnostic Laboratory (UMN-VDL), South Dakota State University Animal Disease Research & Diagnostic Laboratory (SDSU-ADRDL), and Kansas State University Veterinary Diagnostic Laboratory (KSU-VDL).

**SDRS Advisory Council highlights:**

a) Level of detection of PEDV by PCR continues to meet the expected value, indicating that the increased detection level is within the expected for the beginning of the winter season.

b) PDCoV PCR testing still has positivity above expected for the year of 2018.
Page 3 – Detection of pathogens associated with CNS disease

Figure 4 Pathogen detection on CNS tissue over time. Each green bar indicates a different agent or syndrome. The red bar accounts for the sum of the green bars. Bottom: fall months of 2016, middle fall months of 2017, top summer fall of 2018. Fall months contains results of September, October, and November. ‘Multiple agents’ represent cases with more than one pathogen detected on CNS tissues.

SDRS Advisory Council highlights:

a) There was 1 case of *E. rhusiopathiae* on the 2018 Fall season, and similar detection number for PCV2, and PSV for 2018 and 2017 Fall seasons.

b) There were 2 cases of Pestivirus (Shaker Pig Syndrome) for Fall season of 2018, which is above the same season of 2016 and 2017.
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Detection of pathogens in respiratory tissue over time (2 of 2)

**Figure 6**  Multiple agents detected in respiratory tissue per accession ID case level. Each bar represents a combination of 2 or more agents.

**SDRS Advisory Council highlights:**

a) Association of Influenza A virus and *S. suis* (*IAV S. suis*) in respiratory tissues was more frequent in Fall season of 2018 than previous years.
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The ten most frequent pathogen detected on enteric tissue with multiple occurrence Fall-2018

The ten most frequent pathogen detected on enteric tissue with multiple occurrence Fall-2017

The eight most frequent pathogen detected on enteric tissue with multiple occurrence Fall-2016

**Figure 8** Multiple agents detected in enteric tissue per accession ID case level. Each blue bar represents a combination of 2 or more agents.

**SDRS Advisory Council highlights:**

a) Coinfection between *E. coli* and Salmonellas (E. coli Salm), Rotaviruses and Salmonellas (ROTA Salm), and Rotaviruses, *E. coli* and *Clostridium perfringens* (ROTA E.coli C.Perf) have increased detection for Fall of 2018 compared to the same period of previous years.

b) All cases of *E. coli* and Salmonellas, those for Rotaviruses, *E. coli*, and *Clostridium perfringens*, and 6 of 7 for Rotaviruses and Salmonellas were diagnosed as enteritis.

c) There were 4 cases of enteritis caused by coinfection between Rotaviruses and Coccidia (ROTA COCC) reported in Fall season of 2018.
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**Figure 9** Number of accession IDs submitted to VDL’s for testing according to the site category for Summer season of years 2015 to 2018. Each color represents one category. *Top left:* categories for PRRSV. *Top right:* categories for TGEV. *Bottom left:* Categories for PEDV. *Bottom right:* Categories for PDCoV

**SDRS Advisory Council highlights:**

a) **PRRSV:**
   - Number of unknown categories decreased in summer of 2018 compared with previous summer seasons (2015 to 2017).
   - Number of accession ID from replacement and sucking piglets had the highest increase in number of submissions.

b) **TGEV:**
   - Expressive increase in the number of tests, which can be attributed to a change in procedure at some VDL’s, that started testing cases submitted for PEDV, and PDCoV for TGEV as well.

c) **PEDV:**
   - Lower unknown accession ID cases in summer 2018, than summer season of years 2015 to 2017.
   - Replacement, nursery, and suckling piglets had higher number of accession ID tested in summer of 2018 than previous years.

d) **PDCoV:**
   - Lower unknown accession ID cases in summer 2018 than summer season of years 2015 to 2017.
   - Replacement, and suckling piglets had higher number of accession ID tested in summer of 2018 compared to summer season of previous years. Number of accession ID cases for grow-finished decreased between 2016 and 2018.
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