SWINE DISEASE REPORTING SYSTEM

Swine Disease Reporting System
report 3 (May 1st, 2018)

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, to help develop the template, data is from the Iowa State University VDL. Specifically, for PRRSV PCR results, there was a contribution from the University of Minnesota VDL. Other VDLs should be participating soon.

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, Rodger Main, Daniel Linhares**.

University of Minnesota: Mary Thurn, Kimberly VanderWaal, Andres Perez, Jerry Torrison.

* Giovani Trevisan: Project coordinator. E-mail: trevisan@iastate.edu.
** Daniel Linhares: Principal investigator. E-mail: linhares@iastate.edu.

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, Douglas Marthaler, Emily Byers, Hans Rotto, Jane C. Hennings, 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

Power BI

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)

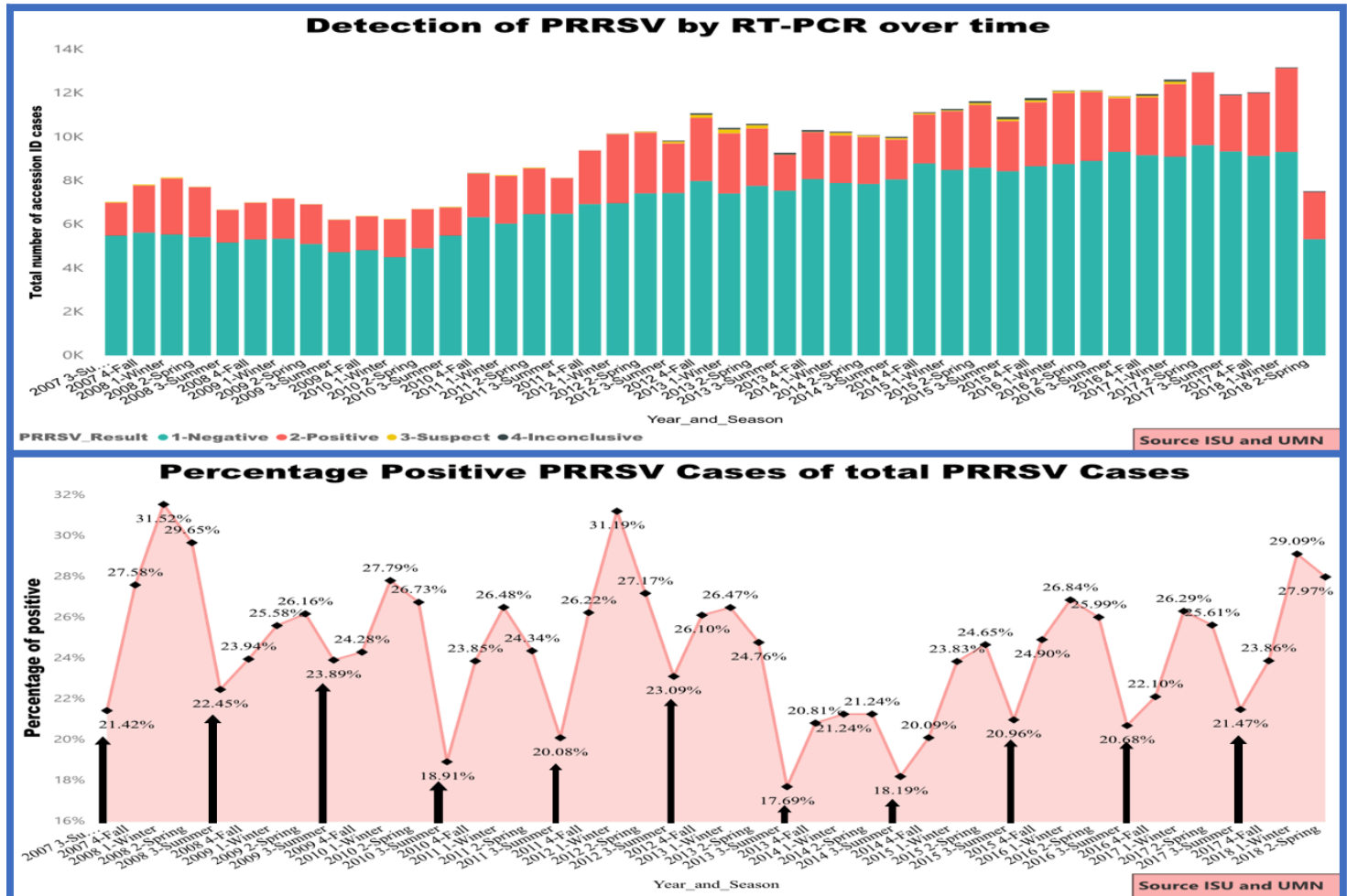## Page 1 – PRRSV rRT-PCR results over time: aggregated data from the ISU and UMN VDLs.

Figure 1   *Top chart*: Results of PRRS rRT-PCR cases over time. *Bottom right*: Percentage of positive results for PRRSV RNA by rRT-PCR.

On this report, PRRS rRT-PCR data from the University of Minnesota Veterinary Diagnostic Laboratory (UMN-VDL) was consolidated with the data from the Iowa State University Veterinary Diagnostic Laboratory (ISU-VDL).

SDRC Advisory Council highlights:
1) The pattern of increasing number of cases submitted for PRRS testing over time (2007-2018) did not change with the incorporation of UMN-VDL data.
2) The percentage of cases testing positive by rRT-PCR was lower on summer months (June, July, and August), compared to non-summer months.

IOWA STATE UNIVERSITY
Veterinary Diagnostic Laboratory

UNIVERSITY OF MINNESOTA
VETERINARY DIAGNOSTIC LAB

SHIC
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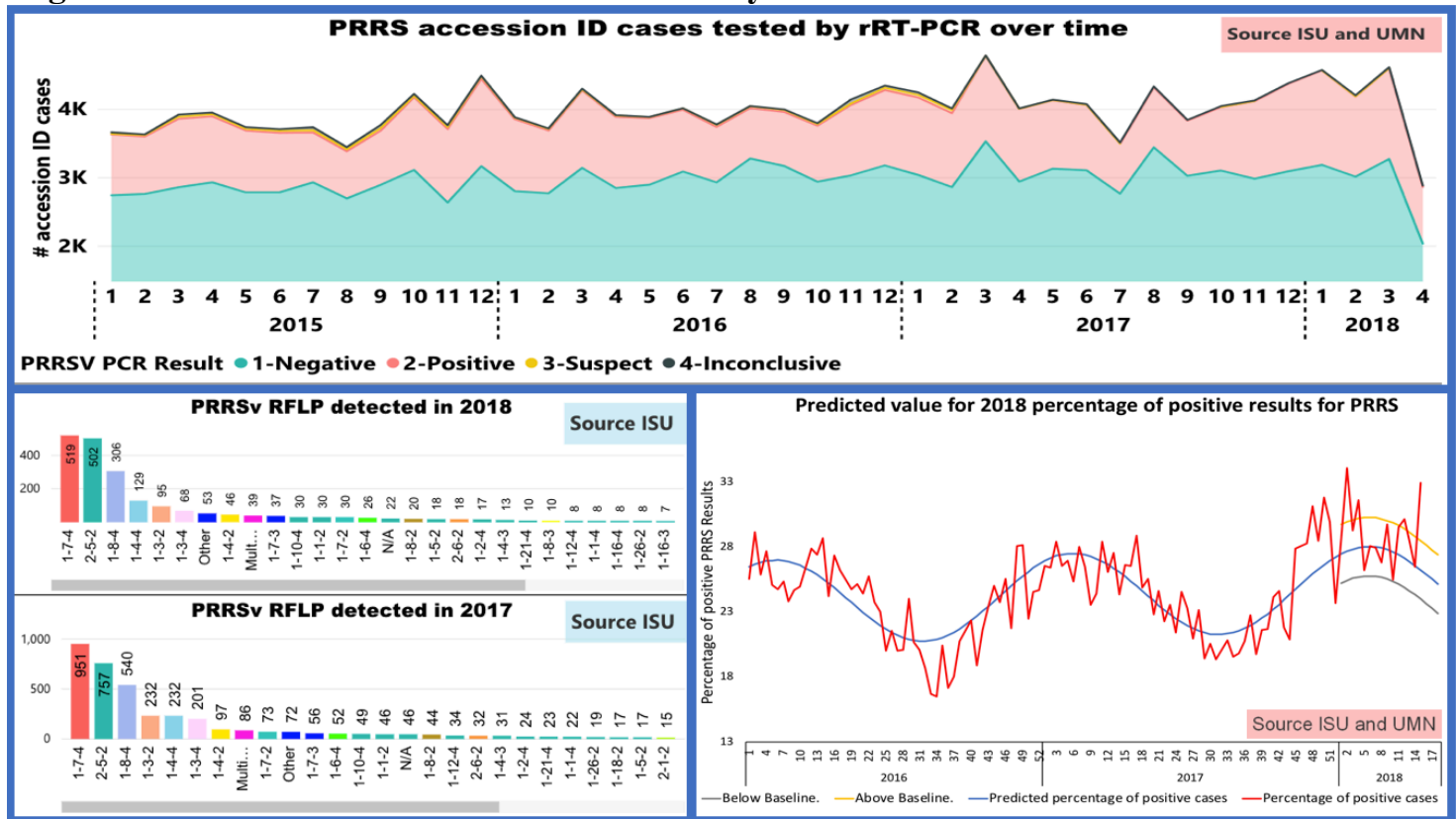## Page 2 – Detection of PRRSV RNA over time by rRT-PCR.

Figure 2   *Top chart*: Results of PRRS rRT-PCR cases over time. *Bottom right*: expected percentage of positive results for PRRSV RNA by rRT-PCR, with 1 standard deviation above and below the expected value. *Bottom left*: PRRS virus RFLPs detected on 2017, and 2018.

SDRC Advisory Council highlights:

1) There was a recent increase in cases testing positive for PRRSV by rRT-PCR. This increase may be in part due to a) increased use of processing fluid to monitor sow herds, and b) increased PRRSv activity in grow/finish pigs.

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Page 3 – Detection of enteric coronaviruses by rRT-PCR
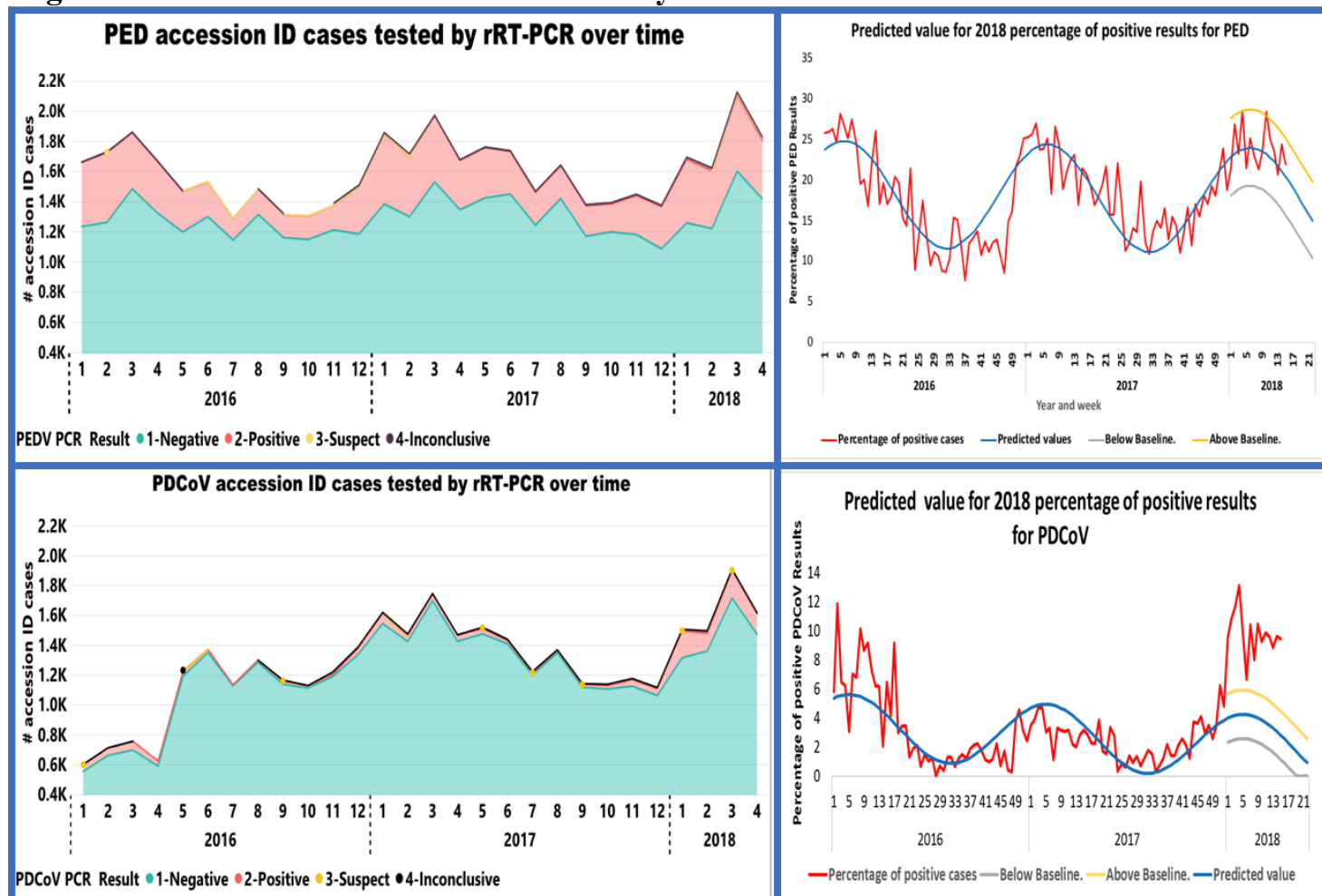

Figure 3 Left side: results of PEDV, and PDCoV rRT-PCR cases over time. Top right, and middle right charts: expected percentage of positive results for PEDV and PDCoV by rRT-PCR, with 1 standard deviation above and below the expected value, respectively.

SDRC Advisory Council highlights:

1) Deltacoronavirus (PDCoV) activity continues high relative to predicted values based on previous years.

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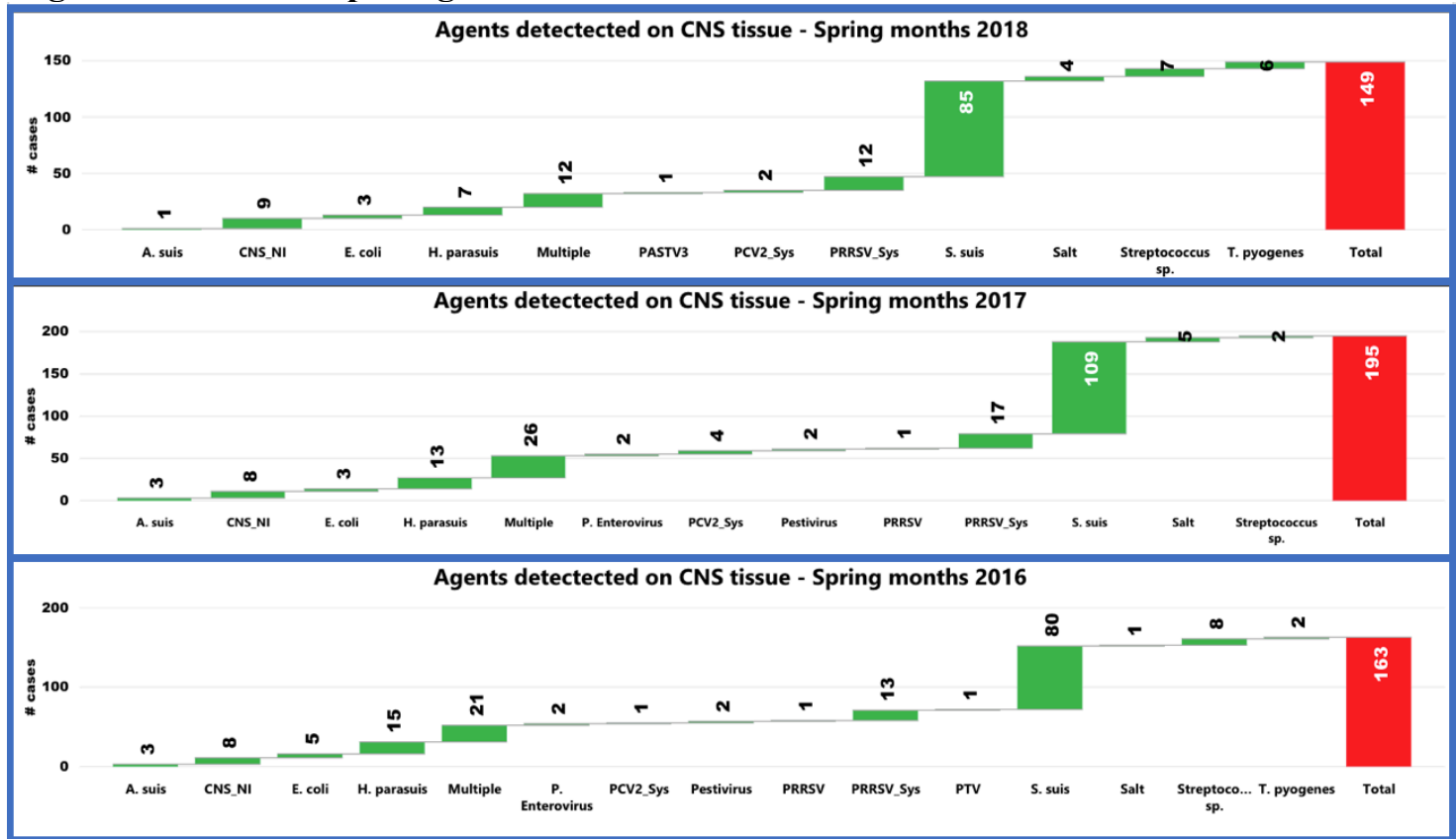## Page 4 – Detection of pathogens associated with CNS disease

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: spring months of 2016, middle spring months of 2017, top spring months of 2018. Spring months contains results of March, April, May. 'Multiple agents' represent cases with more than one pathogen detected on CNS tissues.

SDRC Advisory Council highlights:
   a) There was a 19% increase in the number of cases in 2017 compared to 2016 (163 to 195 cases). Partial data for the Spring 2018 indicates a 30-40% increase in CNS disease compared to spring months of 2017.
   b) *Streptoccocus suis* has been the main pathogen associated with CNS disease.

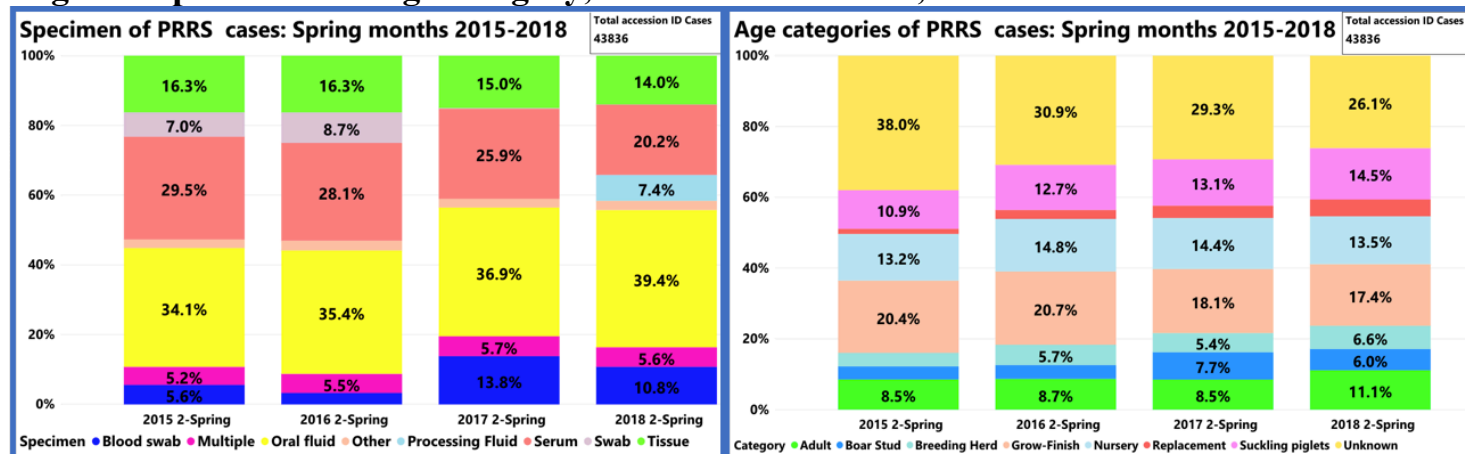## Page 5 – Specimen and age category, over time for PRRS, and enteric coronaviruses

Figure 5   Left: Specimens from cases submitted for PRRSV rRT-PCR. Right: Age category of cases submitted to for PRRSV rRT-PCR.
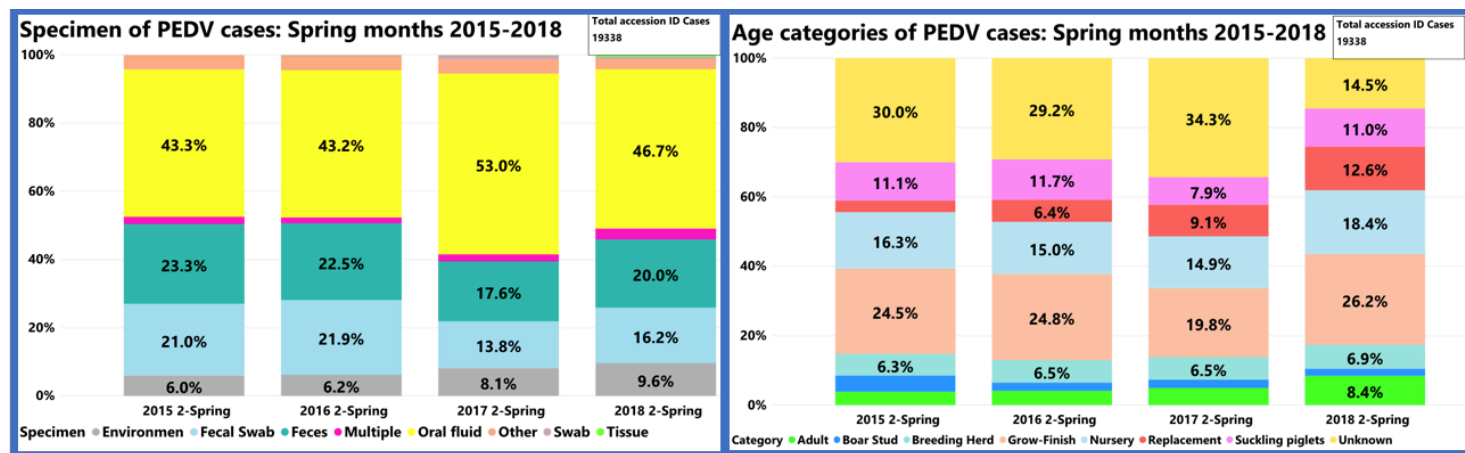

Figure 6   Left: Specimens from cases submitted for PEDV rRT-PCR. Right: Age category of cases submitted for PEDV rRT-PCR.
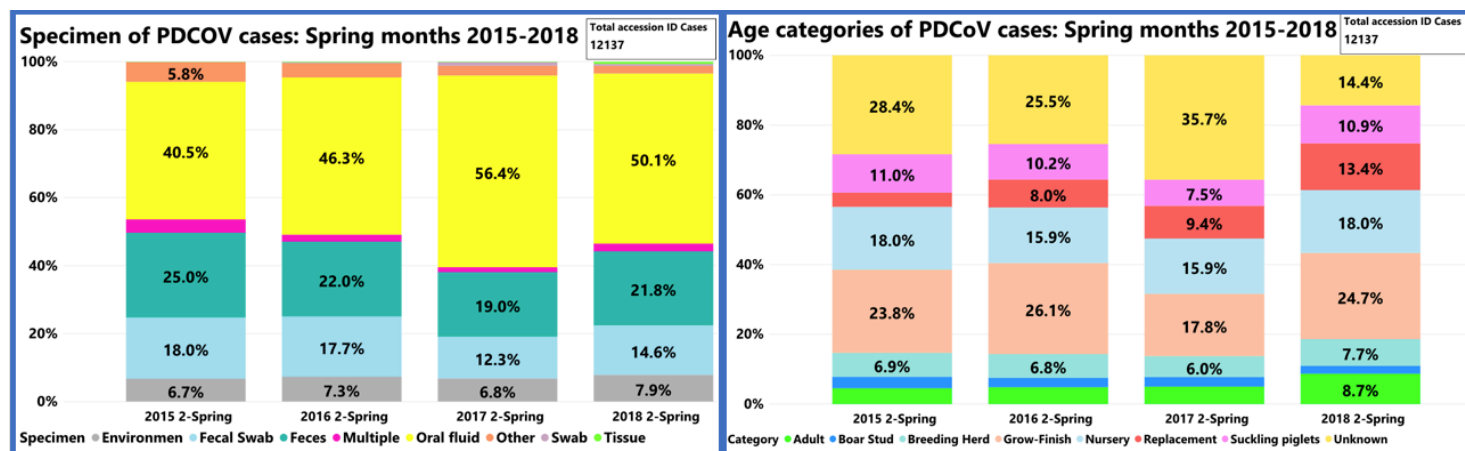

Figure 7   Left: Specimen from cases submitted to PDCoV rRT-PCR. Right: Age category of cases submitted for PDCoV rRT-PCR.

SDRC Advisory Council highlights (figures 5, 6, and 7):

a) There was a significant increase of processing fluids to test for PRRSV on sow farms. This specimen was not reported in previous years, and in 2018 accounted for more than 5% of total the submissions at the ISU and UMN VDLs for PRRS rRT-PCR testing.

b) The relative reduction 'unknown' age category has been motivated by electronic submission, and discounts offered from VDLs for cases with complete data in the submission form.