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Using differential somatic cell count to improve udder health

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Milk recording organizations and milk laboratories have offered individual cow mastitis screening using Somatic Cell Count (SCC) analysis for over 30 years. As management practices have improved to has udder health and herds have seen a decrease in cases of mastitis. US dairy farms have seen a steady decline in bulk tank SCC values. Although significant improvements have been made, mastitis is still one of the costliest disease farms have to deal with. AgSource herds typically use SCC analysis on all cows on a monthly basis and this has proven to be a very cost-effective measurement to monitor udder health. Typically cows are considered at risk for mastitis when the SCC value exceeds 200,000, cows with SCC less than 200,000 are considered healthy and not further diagnosed. Follow up diagnostics for cows exceeding 200,000 such as PCR and bacteriological testing can be used to more accurately pinpoint the specific mastitis causing pathogens. These methods are typically too expensive to use in a whole herd testing scheme. The question therefore is are there other cost-effective methods that can supplement SCC that can be used to easily screen cows and detect onset of mastitis at an earlier point where typically SCC may not have exceeded 200,000.

A possible opportunity may lie in the new Differential Somatic Cell Count (DSCC) measurement that is offered through the Fossomatic 7 DC from Foss Denmark. The DSCC represents the combined proportion of Polymorphonuclear Neutrophils (PMN) and lymphocytes in percent. The percentage of macrophages is 100 – DSCC. DSCC values can be provided for cows that have a SCC value that exceeds 50,000. Past research projects have shown the positive correlation between increased DSCC values as cows are subjected to mastitis causing pathogens. Cows considered healthy typically express low DSCC values (i.e. high percentage of Macrophages). Stage of lactation and parity have also shown to play a factor in DSCC measurements. To date most research was focused on establishing the relationship between changes in DSCC and infection, however little effort has been given to developing a practical application of DSCC in commercial milk testing schemes.

This presentation will provide an overview of current efforts within AgSource to determine if DSCC measurements can provide additional value over the standard mastitis screening using SCC. Efforts are primarily focused on those cows that have a low SCC (<200,000) and may potentially be infected but not considered as at risk in most current udder health management schemes. Secondary efforts are focused on the use of DSCC in determining cows if with high SCC are responding to treatment. Monthly and weekly SCC and DSCC values will be collected on select herds and follow up PCR will be conducted on cows of interest.

Keywords: mastitis, udder health, somatic cell count, differential somatic cell count