

DEVELOPMENT AND EVALUATION OF A SWINE HERD HEALTH MONITORING SYSTEM

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A surveillance system based on serological monitoring was developed to detect changes in swine herd health status. The effectiveness of this system as well as the impact of seropositivity on weight gain and carcass quality were evaluated. Diseases monitored in the first year of this study included porcine respiratory and reproductive syndrome, transmissible gastroenteritis, swine influenza and Actinobacillus pleuropneumoniae. Short term changes in prevalence of these diseases $\geq 15\%$ could be detected by the surveillance system. Nursery pigs with high levels of maternal antibodies performed better and reached market weight earlier than those with low antibody levels. Six pigs that seroconverted for porcine respiratory and reproductive syndrome virus during the finishing phase had a significantly lower average daily weight gain than seronegative animals of the same group.

Our objectives were to develop a surveillance system and to evaluate its effectiveness to detect changes in herd health status in swine operations. During 1996 each of three farms was visited four times. At each visit serum samples from 90 pigs of different age groups were tested for antibodies to the following pathogens: porcine respiratory and reproductive syndrome virus (PRRSV), transmissible gastroenteritis virus (TGEV), swine influenza virus (SIV) and *Actinobacillus pleuropneumoniae* (APP). In two herds PRRSV was endemic, with seroprevalence rates of 17% and 50% in sows. TGEV infection was prevalent in all herds throughout the year; 37% to 67% of the sows were seropositive. However, grower and finisher pigs were seropositive for TGEV only sporadically. On all three farms seroprevalence rates were the highest for SIV, with averages of 64%, 64% and 66% respectively. Only one farm had APP seropositive animals during a limited period of time. Short term changes in prevalence of these diseases $\geq 15\%$ could be detected by our surveillance system ($\alpha=0.05$, power=0.80).

The system also was used to evaluate the impact of changes in seropositivity for PRRSV, TGEV, SIV and APP on weight gain and carcass quality. The economic impact of outbreaks of these diseases is well established. However, this relationship is less obvious with subclinical infections. Every farm had two cohorts of 30 pigs each followed from nursery to slaughter. Changes in their serological status and weight gain were monitored at 6-8 week intervals. At slaughter, carcasses were examined for gross pathology and carcass quality was scored. Production data on sows was recorded to determine the association of subclinical infection with reproductive performance.

Nursery pigs with high levels of maternal antibodies for PRRSV or SIV at 6-8 weeks of age performed better and reached market weight earlier than those with low antibody levels. Six pigs that seroconverted for PRRSV during the finishing phase had a significantly lower average daily weight gain than seronegative animals of the same group ($\alpha=0.05$). Other factors that remained in the final multiple regression model influencing average daily weight gain were farm and cohort effects, sex and lung pathology at slaughter. As none of the monitored farms practiced split sex feeding, female pigs showed slower growth than males. Finishers with signs of pneumonia at slaughter had a lower average daily weight gain compared to unaffected pigs.

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