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Group Relationship of Salmonella ELISA Antibody Status of Grower-Finisher Hogs to Fecal Shedding Detectable by Culture

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In 1998 and 1999, 15 groups of 30 pigs (450 total) were randomly picked (each total group size = 185), double ear-tagged, individually fecal and blood sampled, and placed into one of 5 separate finishing facilities (3 groups/facility) within a vertically integrated pork production system. Fecal and blood sampling was continued on individually identified animals at approximate monthly intervals for 3 or 4 times with the last pre-harvest samples being collected 2 to 18 days prior to slaughter (9 day average). All groups remained on full feed until loaded for shipment. Transport time and methods, separation of groups during transit and at the packer, and lairage were about the same for all groups. Ileocecal LNs and cecal/rectal combined fecal samples were collected at slaughter from individually identified hogs. Sera was tested by the MIX-ELISA for *Salmonella* antibodies at BI NOBL and fecal samples were cultured for *Salmonella*, serogrouped, and sent to NVSL for serotyping.

The results were: (1) No statistically significant reduction in ADG between culture pos alone, ELISA pos alone, pos culture/pos ELISA and neg culture/neg ELISA hogs in 13/15 groups pre-harvest; (2) Extreme variability between fecal culture and ELISA results in individuals and groups pre-harvest (183/234 [78%] ELISA

pos 1 to 3 times were culture neg at all samples pre-harvest; 44/205 [21%] ELISA neg on all samples were culture pos on 1 to 3 samples pre-harvest.); (3) Lack of individual or group pos correlation between ELISA immediately pre-slaughter and slaughter LN culture ($P=0.45$); (4) Lack of individual or group pos correlation between immediate pre-slaughter fecal culture and slaughter rectal/cecal culture ($P=0.07$); and (5) Strong evidence for *Salmonella* contamination at slaughter and/or in transit, after hogs exited the farm (There was HIGHLY SIGNIFICANT [$P < 0.0001$] correlation between pos cecal/rectal and pos LN culture at slaughter; 106 isolates were cultured from 88 hogs pre-harvest and 269 isolates were cultured from 217 hogs at slaughter [2.5X and 2.6X more pos hogs and isolates at slaughter versus all samples pre-harvest, respectively] plus different *Salmonella* serotypes at slaughter versus pre-harvest).

In summary, assessment of the *Salmonella* status of groups of hogs by fecal culture 2 to 18 days (9 day avg) prior to slaughter minimized the confounding variables introduced when prediction of the immediate pre-slaughter *Salmonella* status of groups of hogs was attempted at slaughter.