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Control of Enterotoxigenic *E. coli* in a Commercial Swine Operation by Use of a Competitive Exclusion Culture

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Economically, colibacillosis is the number-one disease of suckling piglets and *Escherichia coli* diarrhea is the third most prevalent disease of nursery-age pigs in the U.S. (NAHMS Swine: Part II). Disease induced by *E. coli* has become increasingly difficult to treat because of the build-up of antibiotic resistance. We have developed a recombinant, porcine-derived competitive exclusion culture of known bacterial composition (designated RPCF) that has been shown to protect neonatal and nursery-age pigs from challenge with pathogenic strains of *E. coli* (1, 2, 3). The purpose of the present study was to evaluate the efficacy of this RPCF culture to protect nursery-age pigs in a commercial swine operation from field challenge by an enterotoxigenic strain (F-18) of *E. coli*. In field trials involving 2 nursery farms, piglets were administered the RPCF culture within 24 h of birth, monitored throughout the nursery period, and the production records of RPCF-treated pigs were compared to untreated pigs from the same farm. On Farm #1, the RPCF-treated pigs had 0.56% less mortality than the untreated pigs (1.44% vs. 2.00%, respectively), and medication costs in the RPCF-treated pigs were reduced by \$0.07 per pig. When projected on an annual basis (27,000 pigs), decreased mortality and medication costs would show a cost benefit of \$7,938. On Farm #2, mortality was 8.3% in untreated pigs compared to 1.07% in RPCF-treated, and medication costs were reduced by \$0.70 per pig in the RPCF-treated. Annually (27,000 pigs), this would translate to an on-farm savings of \$78,084 for mortality (1,952 more pigs at \$40/pig), and \$18,900 for medication costs. Both farms had a history of mortality (5-11%) and morbidity from an F-18 strain of *E. coli*, and although broad-spectrum antibiotics had

been utilized, control of the disease was limited. While it is obvious that Farm #1 did not have the severity of problems that Farm #2 had, there was still a cost benefit from RPCF use on Farm #1. Only RPCF-treated pigs have been placed on Farm #2 for 3 production cycles and no new outbreaks of *E. coli* have occurred.

Summary

Results of these field trials indicate that under commercial conditions the competitive exclusion culture was effective in controlling disease induced by enterotoxigenic *E. coli* and RPCF may be a viable alternative to the use of antibiotics. Additional trials are in progress and swine industry participation is solicited for continued evaluation prior to commercial development of RPCF.

References

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