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Examples of trials in grow-finish pigs

Lisa J. Becton, DVM

Premium Standard Farms

Research trials are an integral part of the learning process for any organization. Trials provide specific information about a procedure or product and how it reacts under certain conditions or with a specific genetic type. Performing such field trials does require some time and thought for initial development, design, implementation, and outcome determination. Properly designed trials are well worth the time and effort and can yield very beneficial results.

Why would you perform in-house field trials?

- Evaluate a specific procedure or product under your own field conditions and with your specific genetics.
- Verify that specific protocols yield expected results.
- Update or re-evaluate current versus older information.
- Free product 'demos.'

What information is needed for a sound trial?

- What is your desired outcome? Define this and the measurements will follow:
 - ADG;
 - FC;
 - Culls;
 - Mortality; and/or
 - Other?
- Numbers of animals/trial units is needed for study?
- The unit of measure for a trial:
 - Pig;
 - Pen;
 - Airspace;
 - Barn; or,
 - Complex/site.
- What is the expected difference that is needed between treatment and control to yield impact to the system (budget sensitivities)?
- Standard deviation as the measure of variability within system or across barns.

- Project coordinator—implementation of project and data collection/coordination.

Data analysis

- Have data collected and organized in easily evaluated format.
- Many types of statistical programs available for data analysis.
 - Use a program that is comfortable for you!
 - Cooperate with other groups or parties that can help with data evaluation.
 - Get results to target parties in a timely fashion!

Example

Problem

Valley View, one of the larger GF complexes within the system, showed deteriorating performance over the last two years. Performance at this site was trailing the rest of the company and not looking to improve unless other measures were taken.

Valley View was sourced from a modified three-site nursery. The source sow units were split into three "pods" and pigs were placed to nurseries by the pod system. Prior to the trial all pigs were vaccinated for mycoplasma in the finisher.

Review of the sow and nursery system revealed a change in PRRS status and timing of seroconversion. In the past the nursery had been placing PRRS-negative pigs to Valley View. The pigs would seroconvert for PRRS somewhere between 4–8 weeks in the finishing and subsequent performance did not seem to suffer. For 2000, there was substantial PRRS seroconversion variation and not all sow units were at the same status. In order to avoid giving mycoplasma vaccine at the time of seroconversion, the decision was made to split the PRRS-positive and -negative pods and vaccinate accordingly. The negative pod (3-5-11-14) would vaccinate at 3 and 5 weeks on feed in nursery (two-dose). The remaining two positive pods would vaccinate at placement to grow finish (one-dose). This was initiated week 31 of 2000 and ran through week 52 of 2000.

Assumptions

- Past production data evaluated for Valley View (looked at 6 months of closeout data).
- Minimal variability for Valley View production.
- To achieve 0.1(and 0.05(, we needed a minimum of 16 barns for each group.
- Data collected in-house from closeout information.
- Data to evaluate:
 - ADG;
 - FC;
 - mortality;
 - culls; and,
 - percent marketed.
- Budget variances for data evaluation (measures financial benefit for each incremental change):
 - FC=0.04;
 - mortality=1%;
 - culls =0.5%; and,
 - ADG = 0.04.
- Used Statistix program for data analysis.

shown by the graph representing percent marketed. Not only did two-dose vaccination increase percent marketed, it also reduced the variability and spread of percent marketed within the treatment group.

This trial showed that two-dose mycoplasma vaccination was more effective in controlling disease than the one-dose program. This is a critical point since this particular finisher was experiencing other health challenges (PRRS) at the same time. The decision to switch to a two-dose vaccine in the Valley View system was solidified by this trial. Two-dose vaccination in the face of ongoing health challenges improved performance (culls, mortality, and FC).

We are continuing to perform in-house trials comparing vaccination and antibiotic protocols, antibiotic alternatives, flow changes, and feed changes.

In summary, field trials can add substantial information and value to a system. If performed properly, trials can add dollars to the bottom line without harming on-going production. It is critical to create a sound trial based on statistics and disease prevalence, with a clear, well defined outcome.

Results

Evaluation of the data showed that mortality, culls, and FC were positively affected by this trial. Financial analysis showed a benefit to the system of approximately \$1.2 million dollars. A striking effect of two-dose vaccine was



	single	double	P value
# barns	31	17	.03
mortality	7.61%	6.01%	.001
cull	1.53%	.87%	.005
pctmkt	90.87%	0.0001%	
FC	2.85	2.77	.001
ADG	1.74	1.76	>.1

Figure 1. Low percent marketed tail is cut off and we see more groups with higher percent marketed

