

Monitoring and Predicting Growing Pig Performance

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▪ Introduction

Growing pig records are an odd category of records within swine production. We know that they are very important. We know that good grow/finish performance is a major part of remaining competitive in this industry. Nonetheless, we find, in many cases, that grow/finish records are only given a passing emphasis in creating a proper monitoring system for the modern swine farm.

Why is this the case? Many people have argued that there is little information to be gained out of a grow/finish record-keeping system. I consider this rather myopic as it is a major cause of variation in profitability between farms and if this is the case then we must start measuring different things. Thus we needed to re-examine the way record-keeping is approached.

As we examined the use of growing pig records in the industry, we found that growing pig records are grossly underutilized. Growing pig records have been mostly used on a retrospective basis to define plans for future groups and to monitor health through mortality rates. Planning of facility and system designs has only been based on a rudimentary understanding of historic performance.

Thus, if we were going to improve growing pig monitoring we have to improve the utility of growing pig records and probably do this by increasing the amount of information collected. We then must use this information efficiently to provide contemporary estimates of performance and guidance on interventions.

▪ **Uses for Growing Pig Records**

This gave us the opportunity to start from the ground up. When we examined the requirements for good growing pig performance, we came up with the following three rules:

Efficiently use variable inputs.

We consider the major variable input to be simply feed. Thus, feed efficiency has to remain a major concern in monitoring. However, with feed efficiency, we have found that it is relatively stable within the same diet in the same system. In our hands the major predictors of changes in feed efficiency are increased mortality rates, increased marketing weights and poor feeder adjustment. We should be able to monitor and adjust our estimates based on the first two and weed out those farms that are doing poorly on the latter. In other words, we need to be able to adjust feed efficiencies to the differences between groups.

Efficiently use fixed costs (Capacity utilization)

We consider the fixed inputs to be labor and facilities and therefore to we want to ensure that the capacity is used efficiently. Thus, planning the introduction of pigs and looking closely at optimal turnovers is an important part of growing pig management. Nonetheless, we cannot make it the primary purpose as it has to be considered within the realm of the other constraints of the barn. We thus feel that, in many cases, maximization of output, especially pounds per square foot is an ineffective measure. Instead the aim should be to maximize marginal profits with each group of pigs.

Improve the quality of the pigs

This sounds intuitive and yet it is rarely examined within the growing pig record-keeping system. Too much of our time is spent on cost minimization when, in fact, we should be looking at areas that improve profitability. This is not an intuitive area and thus, increases the complexity of growing pig records.

▪ **An Alternative Approach**

The swine record system that we have developed is called PigGain7 and is part of the PigWin7 family of pig-keeping records and tools and information is available at "www.pigwin.com". The aim in development of this module was to address the previous three objectives using a common open database that allows our analysis plus others to be done easily. Furthermore, there is an aim to create this database in a format that allows synchronization with financial databases. This open database would also allow for good graphical engines to interface with the records to allow rapid comparisons. Yet, if we simply stop at

this point it would continue to be a relatively passive part of production decision making and add little value to the process.

Our aim therefore was to answer the following three questions and thus create a proper monitoring system for use in a production environment:

What do we expect performance to be?

This can be based on historic performance or it can be based on definitions by input suppliers. The major areas of expected performance are as follows: an expected growth curve, an expected feed conversion curve, and an expected variation in weights. If we add to that a feed budget, we can then project not only growth performance but feed delivery schedule.

What does the supplier want?

This is a more complex area but it is characterized by the payment grid. In this area, we wish to take the expected carcass characteristics of the pig and the expected range of weights to identify not only values of the pigs for various weights but also the marginal profits for those weights. These analyses must be done for the group as a whole. This allows us to identify optimal weights for individual pigs, optimal marketing schemes for groups of pigs as a whole and can predict the potential marginal profit for that group if we project a market value at time of marketing.

Is the group of pigs performing as expected?

This is an important part of in-process monitoring. We need to ensure that performance follows expected levels. This is essentially statistical process control. The problem is in monitoring the growth of pigs. We can monitor a relatively useless variable such as mortality rates, but what we actually wish to monitor is weight. We can do this by randomly sampling weight and comparing it against the expected growth curve. This is particularly laborious and feed disappearance is often an alternate measure of growth if we have good expected feed consumption and growth curves. Therefore, we suggest that weekly feed inventory be recorded and this can be used for an indirect measure of growth rate. We have found this to be relatively accurate and very useful in scheduling feed deliveries.

However, what we do require is a rapid introduction of data from growing pig barns into our database. Hanging up a piece of paper in the growing pig barn and submitting that information once the barn is closed is unacceptable. Pigwin7 has also developed a program called PigPad7 using a hand-held personal digital assistant (PDA) to record that data and rapidly update the database. This solves data entry labor requirements and also increases the frequency of data entry.

▪ Summary

This growing pig record-keeping system is undoubtedly more intensive than most. It requires an active involvement in creating expected performance levels and then requires some monitoring performance as well. The pay-back is a more accurate identification of strategies to efficiently utilize your resources.

Pig production and marketing is relatively complex, unstable and contextualized within the current economic areas. Therefore, production and marketing plans change and will continue to change depending on the performance of the pigs, among other factors. Such a database, as illustrated in this workshop, can allow increased value of the pigs to be realized and the pay-back can be quick and quantified.

In comparing such a record-keeping system to reproductive records we can see that this is a more complex system. We must admit that growing pig management is more complex and this tool allows us to make the challenge.

