Economic drivers for animal health interventions

At the recent 22nd International Pig Veterinary Society Congress held in South Korea Merial hosted a satellite symposium at which David J. Holtkamp from Iowa State University in the USA looked at the factors involved when making recommendations for animal health interventions in a wean-to-market operation. We now highlight the key points that he raised.

When evaluating the value of animal health interventions, net profit is calculated as the difference between total revenue and total costs. To understand how interventions affect profitability we need to focus on five components of revenue and costs:

1. Revenue is earned on a per kilogram of live or carcase weight but the price received for each kilogram is not the same. Animal health interventions have an impact on the kilograms sold and the mix of discounts and premiums received.

2. Weaned pig costs are incurred on a per pig placed basis and animal health interventions in a wean-to-finish operation do not impact on total weaned pig costs.

3. Fixed costs do not change regardless of how many pigs are produced or how many kilograms of pork are produced and sold. Fixed costs are linked to buildings and the 'DIRTI' five of depreciation, interest, repairs, taxes and insurance. When assets are owned they are written off over, for example five years. In the short term, animal health interventions in wean-to-finish pigs will not change the total fixed costs of production.

4. Feed costs are incurred on a per kilogram of gain basis. Animal health interventions may impact feed costs via improved FCR as well as via increased total kilograms of gain if mortality is reduced or pigs are heavier at marketing.

5. Non-feed variable costs are all the other variable costs and include labour, medicines, vaccines, utilities, fuel, administration costs, transportation etc, etc. Animal health interventions may impact non-feed variable costs by changing total animal health costs as well as indirectly by increasing the total kilograms of gain if mortality is lower or marketing weights are heavier.

The relative contribution of each of the four cost components to total costs varies month by month. For example in the USA between 2006 and 2010 feed costs ranged from 43-58% and weaned pig costs ranged from 17-30%, whereas non-feed variable costs and fixed costs averaged 23 and 7% of total costs respectively.

The value of animal health interventions stem from improved productivity or more efficient use of resources such as feed or housing. The 'big four' which impact on wean to market profitability are mortality, average daily gain, FCR and total animal health costs.

When a pig dies or is culled two things happen. Firstly the revenue that would have been gained from the sale of that animal is lost and, secondly, feed and other variable costs that would have been incurred between time of death/culling and the time the pig went to market are saved.

The cost of the mortality is the difference between these two figures. A pig that is lost just before marketing has little cost reduction and the consequences of its loss on the business are great.

In general, as the profitability of producing pork increases, the value of an animal health recommendation that reduces mortalities/culls also increases.

Space utilisation

The value of increasing average daily gain is greatest when space is very limited and a large proportion of the pigs are sold at less than profit maximising weights.

The value of increasing average daily gain under these circumstances is that more pigs are sold at weights with higher premiums or lower discounts.

As average daily gain increases more pork is sold and the additional revenue generated from the extra weight exceeds the additional costs of producing that extra meat.

A 'profit maximising' producer will continue to feed pigs to heavier weights as long as the additional revenue exceeds the additional costs. However, space limitations often hinder this strategy.

The more limiting space is the more valuable increasing average daily gain is as pigs are removed earlier, thereby making space available for other pigs. In some circumstances, this can also reduce other costs such as housing if this is charged per day to the pig.

Improvement in FCR

In theory, the value of an animal health intervention that arises from an improvement in FCR is easy to calculate. However, all feed usage calculations are complicated by feed wastage in the pen and the problem of how to allocate feed usage by a pig in a group.

The value of improvements in FCR is very sensitive to the price of the feed and is not influenced by market pig price or the price of any other inputs.

Any animal health intervention will increase total animal health costs but other animal health costs may decline. For example, the cost of vaccination may be offset by reduced medication costs. Changes in animal health costs due to an animal health intervention are not sensitive to market pig prices or any input prices other than the cost of the animal health product.

The data from Agri-Stats can be used to identify metrics most closely associated with profitability. The top metrics are related to revenue and the top three are post-weaning mortality, market cull and pre-weaning mortality; the fourth is market pig price.

The next three are related to costs and are total finishing cost, wean pig cost and finishing feed cost.

According to this analysis, profitability is most significantly driven by revenue, which is driven by the number of pigs marketed which in turn is driven by keeping pigs alive. Minimising costs, while important, is not the primary driver of profitability.

So, frequently, relatively small productivity improvements in mortality and other drivers of revenue are needed to get an acceptable return on a recommended animal health intervention. ■