Pig Production Delays

Warning : This document may contain generalisations, sweeping statements, exaggerations and inaccuracies.

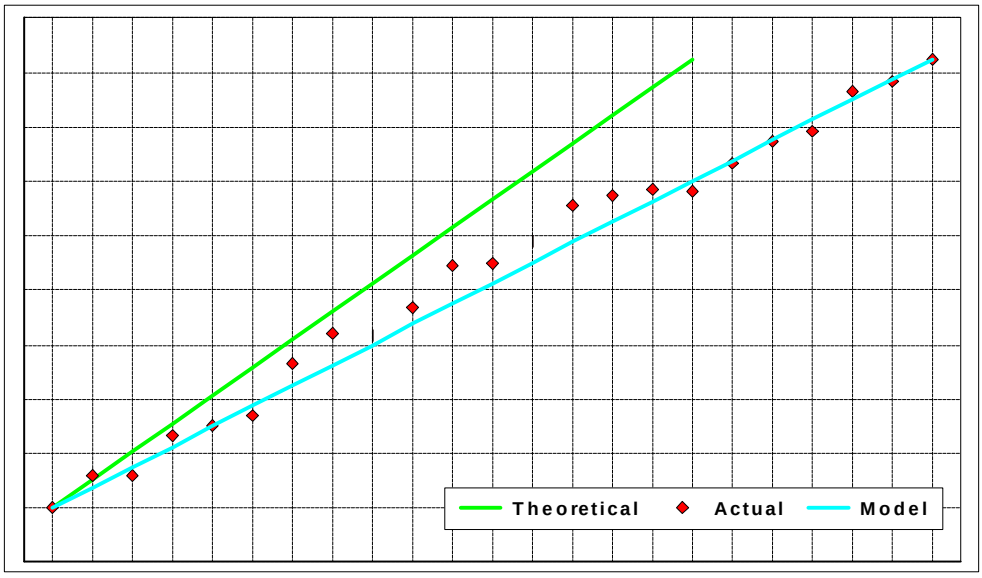
The growth of pigs from weaning to slaughter is like a journey from A to B.

In theory, the journey - overall speed, how long it takes, fuel efficiency - is dependent on the technical performance of the vehicle. Unlike pigs, cars are a straightforward lump of machinery, it's possible to predict its performance - by design and workshop trial - extremely precisely. It's possible to optimise performance and economy by adjusting the engine, and selecting the right fuel and tyres.

And yet in practice, we know that journeys almost always take longer and use more fuel than the theory dictates, because of things that happen along the way - curves in the road, traffic hold ups and all the rest. The practical performance is never quite as theory dictates.

So, you could build this failure to perform into the transport model. To measure actual results - fuel consumed and total journey time - and build it into the model as a generalised "derating". For example, if technical measurements indicate a journey time of 1 hour and 1 gallon but you measure 1.1 hours and 1.1 gallons, to apply a general derating of 10%.

This is just what is done in the pig model. Theory or narrow experiments such a feed trials indicate a result of X, but it is derated to commercial farms by a factor of such and such.



This is illustrated in this chart. On the one hand, the theoretical model predicts a certain performance. On the other, actual results show something else. The "adjusted Model" line shows performance from the actual figures.

Whilst understandable, I believe this is fundamentally the wrong approach, because it is trying to combine two fundamentally different things. Theoretical performance is to do with the performance of the vehicle and engine, traffic delays are not. When you're stuck in a traffic jam, it makes little difference whether you're in a Ferrari or a Ford Popular.

You might improve the results in terms of journey time and fuel efficiency by making the car better overall. ***Let's look at it another way***. How about finding out where the delays are and seeing if we can avoid them?

Loss of pig growth - like traffic hold ups - means that the journey takes longer. All the pigs - like all the vehicles - get there in the end, but the longer it takes, the more it costs. This is especially so in pigs, where it costs a lot - in maintenance intake - just to stand still. It gets still

worse - if the pig isn't eating enough to move forward (i.e. more than maintenance) - it will find itself actually sliding backwards.

It's tempting to think - as you may do with car journeys - "I'll make up the lost time later". (In pig terms, this is the "Compensatory Growth" argument.) It doesn't happen. In a Ferrari, you can go way over the speed limit and given an open road and no speed restrictions, you might do just that. A bus can't do that - it can only go as fast as it can go. A pig can't do that either. In any case, if a pig could go faster, you'd let it.

Delays cost time. Time costs money. Avoiding delays is worth money. It's that simple.
Some delays are easy to avoid, some delays are not. Some are cheap to tackle, some are not. Avoiding a traffic delay reduces the overall journey time and improves fuel consumption without buying a new motor car.

Knowing where the delays are, how long they are, and how much they cost would be pretty darned handy before you start. Otherwise, you may be trading one delay for another, or spending all your money tackling a one minute delay and leaving the 10 minute one.

Until now, what have you had to tell you where the delays are, and how much they cost?

Not a lot. It's been like driving a car without a speedometer or a watch. In the past, no one bothered at all, they simply started from A and got to B some time or another.
Slightly more sophistication in pig accounting has improved things a little. At least, now, it's fairly routine to count the pigs in and count how many pigs and what weight comes out the other end, how many days and how much feed. Like timing how long your journey took and how much fuel you used.

Doesn't give you much idea what's happened in between. In between, you've relied on "how the pigs look" or peripheral stuff like max min thermometers. That's like driving without a speedometer. With motor cars, you can see the others driving around you, so at least you get some idea. With pig production it's pure and simple guesswork and "experience" such as it is.

With real time production data, you can see what's happening. This is just stage one. At least now you're eyes are open. You haven't just got in the back of the car and closed your eyes until journey's end. This doesn't fix anything, but you're on the way.

Sure, having a look to see that equipment is operating as it should is useful, but it's only the start. Temperatures, heater operation, what the fans are doing - all that may be interesting, but the important thing is what the pigs are doing. How much they eat, how much they drink.

This is where it gets a bit more difficult, because it's stuff you're not used to looking at. It may take a while to learn. Don't be downhearted, it's worth the effort.

The first thing you'll notice is that, far from this steady speed model you may have imagined, the whole thing is inclined to be irregular. If you read any account of feed trials, for example, they always talk about "so much average daily feed intake", or "average daily gain" as if it is a constant figure. This is just like talking about average speed or average fuel consumption. It comes from the same route - timing the total journey and taking the total fuel.

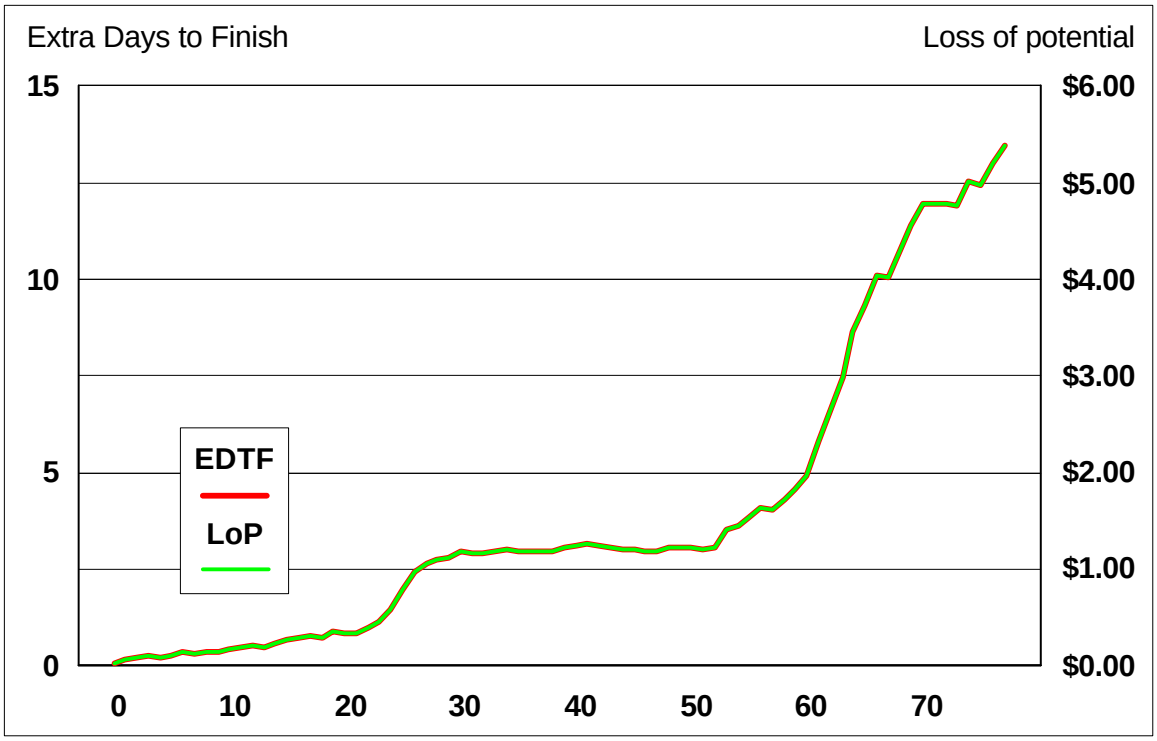
In practice, what you'll see is periods of steady progress - feed and water increases steadily day on day. That's exactly what you want to see, because it means the pigs are growing. Sure, they might be able to do better than they are during these periods, but for the moment let's leave these alone. Let's suppose that, left to their own devices the pigs will do as well as they can.

But, these steady periods are interrupted - more or less often - by a dip. The dip is like the traffic delay that increases the total journey time. Let's describe its effect as simply as possible.

Suppose - at a particular size and age - they need 1 lb of feed to live (i.e. maintenance ration). And suppose they normally eat 2 lbs. So 1 lb is to live, one lb is to grow. Now, suppose there a dip of 25% in feed intake for a couple of days. Now they only eat 1.5 lbs. They still need 1 lb to live, so each day there is only half the feed for growth, so they only grow half as much. Two days where they lost half a day's potential growth, that's a day's loss of growth potential. An extra day on the journey.

Even a minor loss of feed intake and growth would be hard to make up because of this multiplier effect of the maintenance ration. To make up for those two days of 25% feed intake, you would need 5 days of 10% increase in feed intake. This just doesn't happen, because pigs are already eating as much as they're prepared to in the first place. Just like extra time on your car journey, you never really make up for lost time.

Missed feed is missed growth is extra days to finish weight is worse FCR. This is illustrated in the following chart.



What I've done here is to take a reasonable estimate of how much the pigs are prepared to eat - as shown by auger running time in "normal" circumstances. (We don't know exactly how many pounds of food this is, but the pigs are telling us their potential performance.) Then we're looking at the dips - the traffic delays. BY comparing the actual with the potential we can get a reasonable idea of when, and with some reasonable estimation, how much it is costing in monetary terms. Along the bottom of the chart are days relative to the chart as a whole (it covers 75 days).

Up to about day 20, it was reasonably Ok, and quite possibly they were really doing as well as they were capable.
From day 23 to 27, we've got a significant hiccup, amounting to 60 or 70c per pig. This was mostly due to a breakdown in the borehole pump. The breakdown didn't last three days, but the effects did.
Things were ok for a while, but from 50 to 60 it was a bit irregular. The real losses were from Day 62 to 70, where it just got worse and worse. This was down to hot weather.

Ok, so you couldn't have predicted the bore hole pump going down. But seeing that it was costing around $100 an hour in lost production on this site, you might think it worth keeping a spare, or you might have decided the 200 mile round trip to get a new one was worthwhile.

Sure, you can't avoid hot weather, any more than you make all cars ahead of you at the traffic lights disappear. But could you reduce the cost? Could you delay the onset of feed reduction, or hasten the pigs ways of tolerating it? Are you using foggers to best advantage? Would adjusting feed formulation be worthwhile?

No simple answers, but at least a new way of looking at it.
If this different approach has any value, maybe we can move on from the method to tackling the problems of production delays.