REDUCING GROWER-FINISHER FEED COSTS

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To what degree, in practice, do we actually meaningfully analyse and then manipulate feeding programmes to meet the growth potential of finishing pigs? To my mind, the answer is seldom and usually ineffectually. To find out why, we need to ask how the cycle of intended successful progress, as it relates to the subject matter of this presentation, pans out.

Thus, faced with the feed-on-farm challenge, this practical nutritionist utilises the thought processes and strategies as I have laid them out in the earlier presentation at this conference. The result is The Diet Plan which is then agreed with the producer. If it is deemed to be practically capable of being enacted, it is agreed and then The Plan is put into practice for a set period of time. After that time period has elapsed, any relevant data are accumulated and The Evaluation takes place and from whence The Outcome is assessed. This forms The Review which leads to The Revised Plan. This is the simple rotational approach.

You will note that I have not included the word "monitor" or the couplet "statistically significant" in that process! Experience in the UK tells me that monitoring is not something that takes place with accuracy or regularity and is usually approached in the same way that laying concrete in a farm yard often is – "it won't earn me any extra money so I'm not doing it!" More recently, quality, skilled labour has become a prized possession and hence a rarity on pig units, generally, let alone on the more simplified and less labour-intensive growing-finishing enterprises. Thus, weighing crates lay idle. However, an absence of accurate monitoring means that the rotational approach can never succeed other than by chance effect. To my mind, there is insufficient financial slack in the pig industry to allow decision making to be based on the chance effect.

If inadequate monitoring takes place then any observed apparent change in productivity is highly unlikely to reach a level of statistical significance!!! I'm no statistician, but this tends to mean to me that we are once again relying on chance!

The repeated absence of the valued numerical judgement upon which to base revised nutritional strategies or, more broadly, overt pig management strategies, has led to the little firm of Harbro Limited, from the North East of Scotland, investing in the search for "Tools of the Trade" to correct this irregularity. As a company with long-standing nutritional technical roots, the need for informed decision making was very much the key to Harbro's motivation to push for change in this state of affairs.

The basic requirement was for "the most to be made out of the least", to see if we could use what data might currently be being generated by the enterprise or could be produced with

minimal farm inputs to the greater good of the partnership between nutritionist and pig producer.

The outcome of this search, which began shortly after the start of this millennium, has been the production of two pieces of software that now regale under the titles of *qboxanalysis* and *qscan*. The key element is the first letter that they have in common, "q", for quality, which should be the watchword of all pig production systems that are striving to reduce costs.

It is common practice in the UK for the accepted performance measure on growing/finishing enterprises to be the weekly grading returns sheet. This sheet contains a mass of figures for the batch or batches of pigs submitted to the abattoir(s) in question covering pig type, hot and cold weights, backfat thickness, lean meat percentage, condemnations, price per kg, price per carcass and the more detailed raft of information should the AutoFom or similar be in use. These sheets, whilst regularly being proffered at any visiting technician that asks to see them, are rarely studied in detail by the producer recipient and normally have a deep desk drawer or dusty box file to reside in. However, these are valuable, if under-utilised, pieces of data that potentially say much about that enterprise and can aid in monitoring the impact of management change.

The first element to come from within the stable of Innovent Technology, a Harbro sister company, was *qboxanalysis*. This piece of software utilises the on-line data capture facility in the abattoir to assess the grading of pig carcasses against the precise demands of various contract specifications and, with automatic upload, makes the information visible, real-time, over the internet in a form that is easy to assimilate and manipulate. The use of web browser technology retains secure, confidential data reporting.

qboxanalysis enables the user to:

1. Target production for maximum profit – the system quickly identifies the potential for improving profit by fine tuning your pig output
2. Graphical reporting of product quality – you can receive daily/weekly updates highlighting changes to grade, weight and proportion of pigs achieving quality returns
3. Instant output and efficiency monitor – constantly monitoring pig output and reporting on changes as they happen. The meat output can be combined with feed usage to give an accurate and progressive monitor of feed conversion efficiency
4. Benchmarking against similar producers – the system offers a unique opportunity to benchmark against production sites or against similar producers over a wide range of parameters including genetics, feed type and health status
5. Improved pig management and marketing – the system offers an unrivalled focus on carcass quality and targets production to maximise profit on the available slaughter contracts
6. Trend analysis – the program reports detailed trends in production output allowing rapid responses to any change

The program allows you to select your own data by date, site or slap (farm ID) mark.

The program allows full graphical analysis of pig output plus financial modelling. This enables identification of the proportion of pigs hitting premium grades and calculates the net margin impact of changing sale weight.

The program enables full bench-marking between your production sites or against a pool of similar data. This enables the identification of the impact of health, management, genetics and region.

The *qboxanalysis* process can also provide the processor/packer with advantage in the form of:

1. Improvement of product quality
2. Greater achievement of contract specifications
3. Manageability of producer supply chain
4. Accurate fault analysis and reporting
5. Benchmarking of supplier performance
6. "High visibility" contract management
7. A producer awareness programme = pro-activity

The facets of the program, some of which are featured below, will be demonstrated during the course of the break-out session but more information can be gained by accessing the web-site, www.*qboxanalysis.*com.

Figure 1.   *qbox* chart of average batch and back fat probe over time.
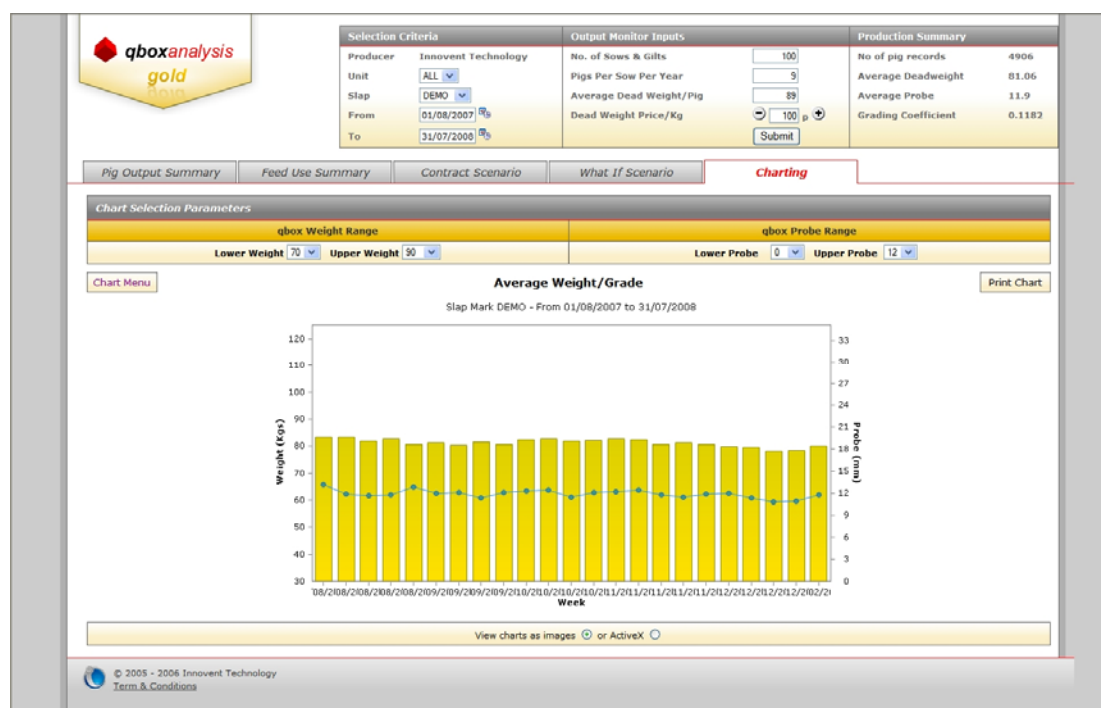
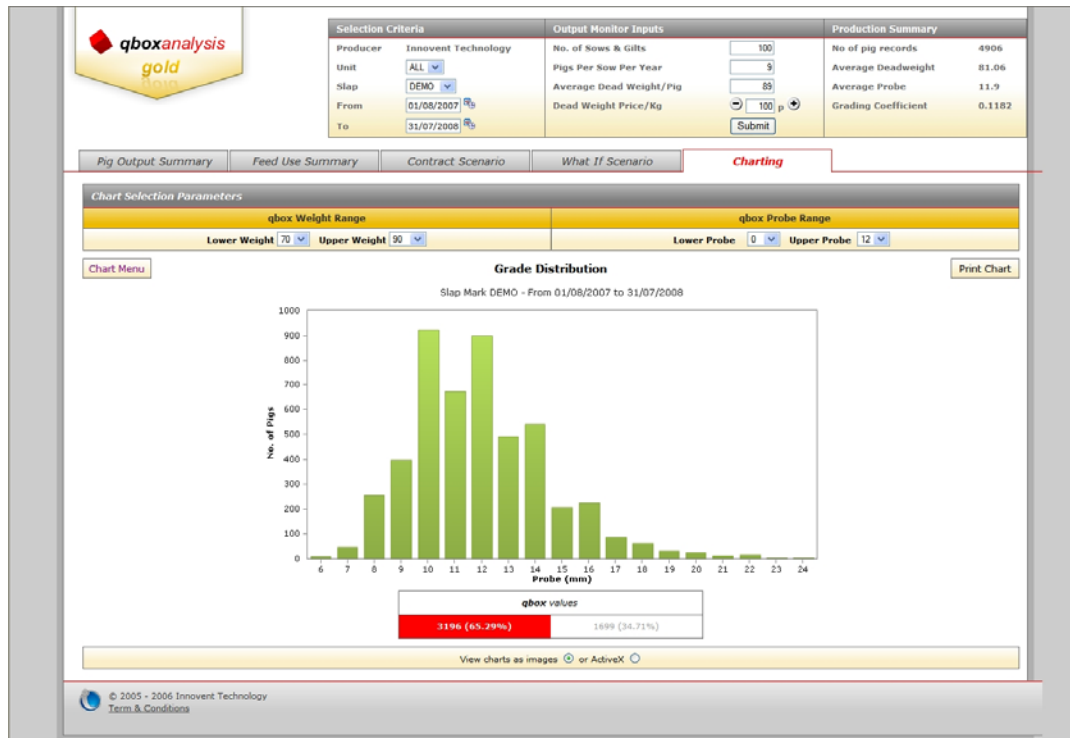**Figure 2.** *qbox* **histogram of back fat distribution per batch or time period.**

Figure 3. *qbox* **basic chart showing degree of fit with contract specification per batch or time period.**
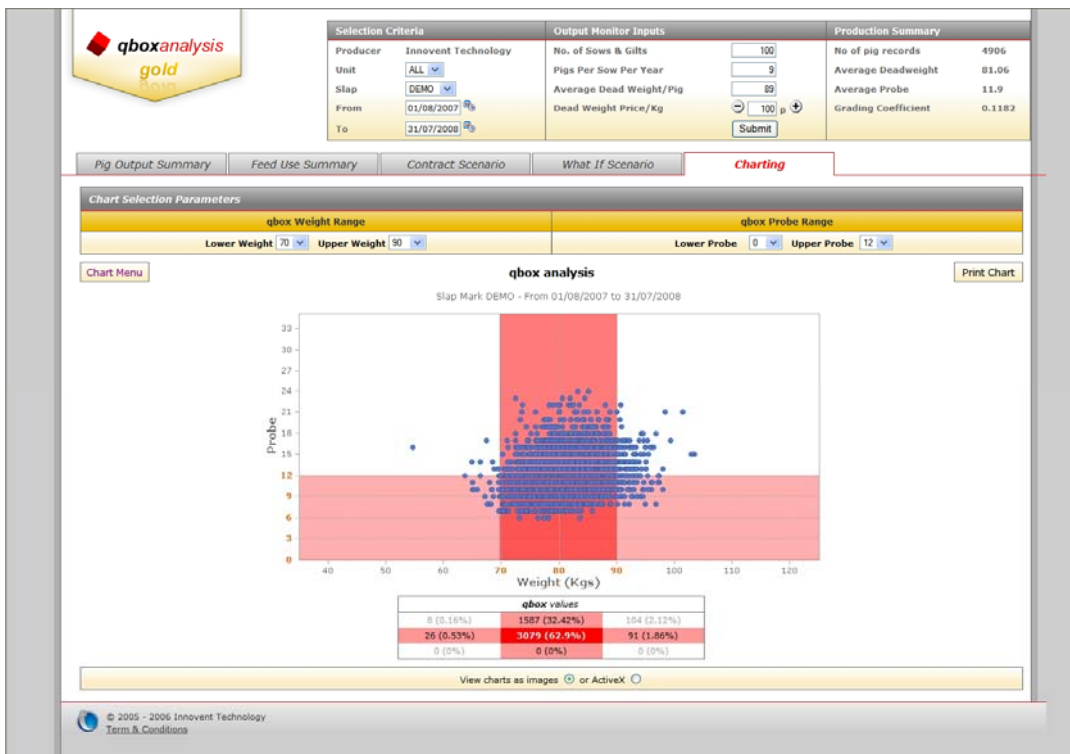
Figure 4. *qbox* contract comparison outcome.

The output of *qboxanalysis* and its technical interpretation should perhaps be viewed as a toe dipped into the water of the performance monitoring pool and was always intended to be the basis upon which more detailed enterprise assessment was to be founded. Yes, the programme will indeed open up the arena of greater degrees of confidence of cost reduction both in actual performance and also in the variation in those values but only in a macro sense.

This then leads us nicely on to the more recent innovation – *qscan.*

In this regard, the background to this initiative is, in part, the paucity of computerised herd recording that now takes place in the UK. Speaking as a past exponent of the Easicare herd recording bureau service through another technically-based commercial nutritional company, from a "former life" in the UK, it is notable that good recording, where it can be found, seems to exist numerically confined within the scope of the digits on the hands and toes on the feet of the party that is interested in such recording! Thus, we find that breeding herd productivity has a history of being very well recorded and yet the repository for up to 80% of the feed spend, the feeding herd, comes a very poor second.

I jokingly remark at this juncture that what we know about the performance of the finishing herd is often a growth curve that is made up of two points, a contradiction in terms, I hear the mathematicians amongst you say. These two points can also often be of interesting derivation when you dig more deeply. The first, the start point, is either a single digit whole number of kilogrammes or one with the figure 5 after the decimal point – it's the weaning weight – often a guess at a roughly rounded value! The point at the other end of the growth "curve" is often taken from the grading sheet, ie the average cold slaughter weight, with a killing out percentage (KO%) factor being used, conveniently positioned at 75%! If any of you have

checked out the KO% of your finished pigs, and you certainly should do if you are paid on a dead weight basis, you will find that it is not static, rarely predictable and certainly is not absolutely 75%! The end point of the "curve" then is an estimate. As technical assistants, we are wont to rely on this information and rarely have the temerity to ask for it to be provided with accuracy, ie without the guesswork or estimation.

Not only is such information that we glean unreliable but it also usually merely reflects nothing more than an unreliable average and fails to tell us anything about the variation about that mean figure. The one thing that we know for sure is that the modest variation in birth weight that we know occurs in the farrowing house is many times greater 22 to 25 weeks later into that pig's life and it is this that is the Achilles Heel of profitability in pig production systems around the world.

With *qscan*, the progressive user of data can start to accumulate valuable information about growth on a day-by-day basis for individual pigs in batches.

In the early 1990's my research browsing led me to note that there were rumblings about the existence of a relationship between various two dimensional spatial measurements of the pig and its live weight.

Figure 5.   2-D spatial measurements used.

Figure1
Linear shape and area measurements from the VIA system
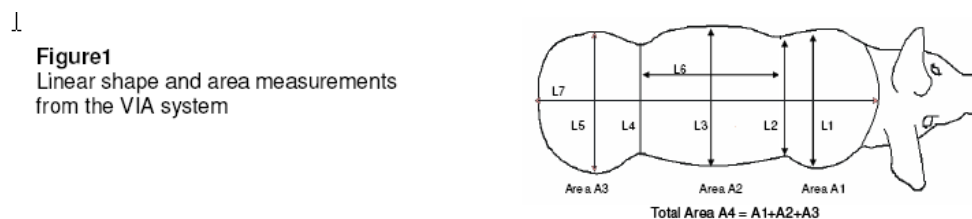
However, other distractions got the better of me and I thought nothing more of this concept until about 4 years ago when I had had time to think, an able computer-attuned colleague accompanying me and the chance to get sight of a failing visual imaging system in need of commercialisation. Cutting a very long story short, thus, *qscan* was borne.

What is *qscan*?

It is a complete solution to providing accurate growth recording within pig production units. It has been extensively tried and tested on pig production units across the UK and now is commercially available from Innovent Technology.

How does *qscan* work?

Cameras are located above a point of congregation (feeder or drinker) in each pen and they record the movements of pigs within that pen. Each camera can capture up to four framed images per second. Captured images are processed in seconds and appended to the

accumulating *qscan* database. Captured data is then displayed locally as easy to interpret reports and charting details.
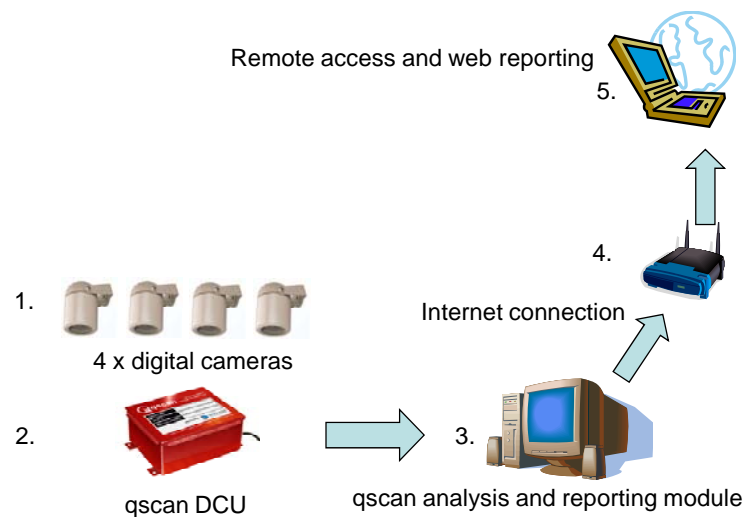
The information that is retained is daily growth performance per pen, actual weights of "captured" pigs, actual growth curves achieved over the monitored period and some behavioural analysis of each 24 hour period. This database can be used by anyone wishing to study performance across different batches of pigs exposed to differing medication/vaccination regimes or, of course, nutritional programmes.

Data is then uploaded on a routine basis, using industry standard file transfer protocol (FTP). This enables collaborative analysis of available data by multiple users located anywhere in the world. Nutritionist, veterinarian, geneticist and producer alike can evaluate performance from their own respective offices without having to routinely set foot on the actual unit – a huge plus for bio-security.

What makes up *qscan*?

The standard format is either a four or 8 camera arrangement displayed in a crude sequence as indicated below:

Figure 6.   *qscan* – The set-up.

Remote access and web reporting
5.

4.
Internet connection

1.
4 x digital cameras

2.
qscan DCU

3.
qscan analysis and reporting module

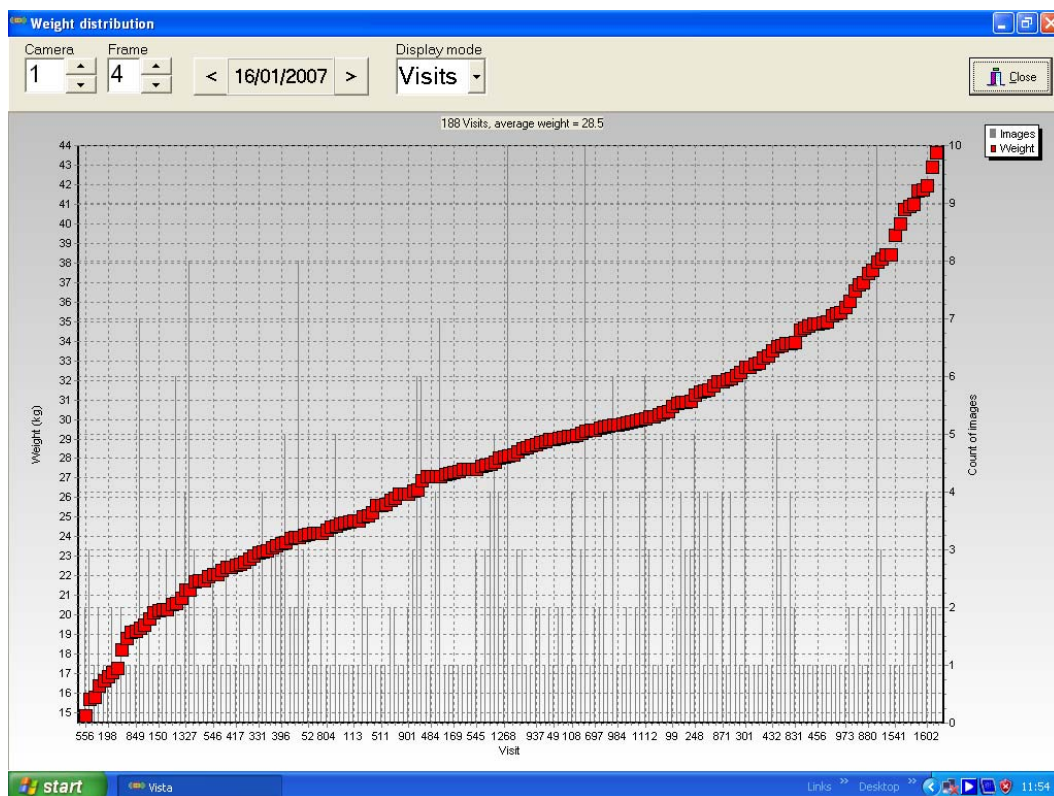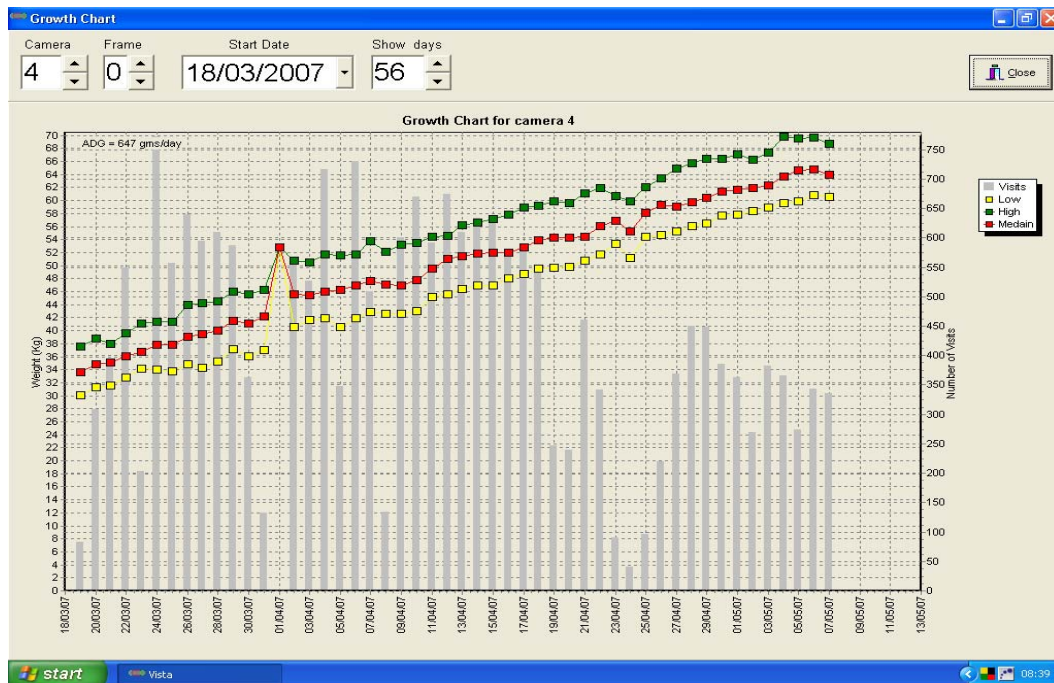What does the *qscan* camera see as the live still image?

Figure 7.   *qscan* – **What the camera sees – slats or straw-based.**

What sort of *qscan* data can be made available locally?

Figure 8. *qscan* – **Locally available data – daily weight distribution and overall growth curve plus quartiles.**

These features of the program will be demonstrated in much more detail as will other elements of the system during the course of the break-out session but more information can be gained by accessing the web-site, www.*qscan*.co.uk.

It takes but little imagination to see how powerful this tool of the trade is to either the supportive technician or the progressive producer. This really is a bottom line solution which is what you need when your stated and necessary aim is to reduce grower/finisher costs, whilst also reducing variation.