

Meat Yield Assessment

Aviagen Turkeys Ltd ®



Introduction

The aim of a successful grower and processor is cost effective production of meat. This cannot be achieved simply by attention to liveweights but must also include factors such as feed efficiency (FCR) and maximising meat yield. Breast meat yield (BMY) can be below goal even when good liveweights are achieved as it can be strongly influenced by many environmental factors including nutrition, growth rate, and more specifically when the growth occurs (see article on breast meat yield). A commercial producer/processor who does not monitor meat yield at the processing plant, is missing out on vital information that could help to improve performance and ultimately profits.

Objectives

Collecting detailed information on a small group of birds on a regular basis will prove valuable in building up a picture of performance across the company/farms and can help in identifying where improvements to growth/nutrition could be made. The most useful meat yield data is that which relates to the individual, rather than estimates from bulk weighing. Individual yield data allows average performances to be calculated and gives an estimation of variation within a flock. This provides greater flexibility in terms of what type of analyses can be carried out. Data of this nature can be used primarily for agricultural purposes:

- To create standards
- To compare performance of the birds against these standards
- To compare the performance of individual farms
- To monitor performance over time
- To assess trial work such as changes in nutrition or growing practices.

Data could also be used to assess plant performance, for example, assessing the efficiency of automated machinery for deboning compared to a manual process.

Procedure

There are many ways to measure meat yield in the plant and the method employed will depend on the individual plant set-up, personnel available, space to carry out the work and time. It would be impossible to outline one procedure that would be suitable for all processing plants, however, the aim of this advice sheet is to give the key points that should be considered when designing a protocol:

Determine the reason for collecting data. Decide on a protocol including detail of data to record, regularity of recording (e.g. daily sampling), how birds will be selected (e.g. identifying which flock/farm, identifying which lorry load, identifying a module/crate, etc.) and how many birds to select. Ensure the protocol is not changed without noting what and when. If possible assemble a permanent team who are skilled at deboning and can be trusted to work efficiently and consistently.

Selection of Birds

- For most plants it would not be possible to measure precise yields on every bird so it is recommended that a farm/flock should be identified and a representative sample of birds selected.
- Yield assessment on samples of birds should be repeated on a regular basis (e.g. daily) to be able to compare performance across the company over time.
- The number of birds in a sample will depend on the capabilities of the plant, the greater the sample number the more robust the data will be for analysis.
 - For example, a sample of at least 60 birds would provide a good estimate of flock yields and plenty of data for analysis, however, even a sample of around 30 birds per day should be sufficient to build up a good database.
- Selection of birds should be random, however, it may be necessary to have some criteria in place to ensure the sample is representative of the flock mean, particularly if sample size is small, for example:
 - Ensure that missex, poor, thin etc. birds are not sent to the factory or go into the last lorry load from the farm.
 - Avoid selecting birds from the first or last lorry load from a farm.
 - If the plant normally selects carcasses for 'whole market sale' and 'cut-up sale' from same farm it is necessary to ensure a random sample is taken from both groups, otherwise the sample will be biased according to selection of carcasses.

Type of Yield Assessment

Meat yield can either be related to the liveweight (BM_Y%liveweight) or to carcass weight (BM_Y%carcass):

Meat yield related to Liveweight:

This method enables collection of all data relevant to meat yield assessment, including evisceration losses. However, the procedure requires more work, as the live birds need to be weighed and marked with a unique identification (ID) prior to slaughter. Whatever marking system is used needs to be visible after the birds have been killed and plucked. It must be possible to ID the birds at all stages from weighing, through slaughter, evisceration, and chilling, and to ensure that the weights of all the parts can be identified back to the original bird.

Meat yield related to carcass weight:

The advantage of relating meat yield to carcass weight is that the method is slightly easier, as the selection of birds can take place after evisceration or chilling. The disadvantage of this method is that evisceration losses cannot be calculated and so cannot be included in any cost analysis.

Cutting Up Process

- To ensure consistency and to avoid the meat getting mixed up on the general processing line it is recommended to have a separate workstation and team of personnel (ideally 3-4 individuals) to do the work (see fig.1).
- One of two methods can be adopted for how the team operates compared to the rest of the plant.
 1. The sample cutups replicate exactly what is done on the processing line whereby any changes to the way the line operates must also be adopted by the sample team.
 - a. If this method is chosen then it may not be possible to compare yields over long periods of time, as changes in the way the birds are deboned will make previous comparisons invalid.
 2. Develop a technique for the deboning team and then maintain this standard even if there are changes to the processing line.
 - a. This will enable long-term comparisons of performance and the comparison of different trial work over time as there will be consistency in methodology between the trials.
 - b. It will be important to monitor how the processing line and assessment yields compare.
- The easiest system for weighing the parts is to have a balance connected to a PC, which automatically downloads weights into an Excel spreadsheet.



Figure 1. Examples of a cut-up procedure: 1) Removing the breast. 2) Separating breast, shoulder trim and skin. 3) Separating thigh and drum. 4) Cut-up team and weighing parts.

Conclusion

There are immense benefits to be gained from tracking performance on a daily basis, including establishing internal standards for liveweights and yields, monitoring changes in procedures, monitoring individual farm performance and performance across farms over time, monitoring the effects of changes in nutrition etc. and carrying out trial work on growing, nutrition, factory equipment etc.

Aviagen Turkeys are committed to providing a wide range of services to help our customers achieve the best performance and profits possible. Helping customers to collect and analyse data enables us to advise our customers on an individual basis and also provides feedback on how our product is performing commercially, so that we can look at improving the genetics of the birds. It is Aviagen Turkeys goal to establish a two-way exchange of information and data with all our customers whilst guaranteeing complete confidentiality. Please contact us if you would like advice on how to set up meat yield assessment in your processing plant or indeed, help with the analysis of an existing database.

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