The need for quality in pelleting poultry rations

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he pelleting process, created in the 1930s in the United States, has now become widely adopted across the poultry industry.

A number of ways of improving performance and so lowering the production cost are used by the poultry industry, which has to cope with sometimes extreme variations in the supply of the raw materials as well as price fluctuations of the final product.

As nutrition is responsible for 65-70% of production costs, all ways to improve the quality of feed or lower its cost are worth considering.

One option is pelleting, which changes the intake and utilisation of feed eaten by the birds throughout their productive life. Among the advantages are increased feed consumption and nutrient digestibility, reduced contaminants and an increase in the physical density of feed which leads to a reduction in the need for storage space and in transport costs.

The improvement in feed consumption through pelleting is the main advantage to the birds.

This is related to ease of grasping food and so lower energy expended for consumption, less time to consume, less feed wastage, a smaller amount of 'fines' and a more palat-



Comparing pellet quality at the point of consumption.

able ration compared to a mash diet. With respect to better nutritional characteristics, many studies relate the improved digestibility of carbohydrates to the breakdown of the starch granules and amilopectins, facilitating enzyme action.

The improved digestibility of protein is related to the change in the tertiary structures of molecules facilitating digestion. Moist heat – average 82°C (180°F) and 18% humidity – guarantees less pathogens in feed, but the actual reduction varies according to the quality of the process and the degree of contamination in the raw materials and manufacturing line.

Some authors report that the feed's improved nutritional quality would be enough to pay for the investment in pelleting machinery as well as meeting the higher *Continued on page 17*

Pelletising machine in the US.







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Loading into the feed delivery trucks.

A window in the machine shows the quality of the pellets.

Continued from page 15 costs of feed resulting from the operation and maintenance of pelleting plants.

The pelleting process accounts for about 42% of a plant's maintenance costs — much of this through increased spending on electricity — and it is vital that this process is efficient so that such investment pays full dividends.

Pelleting in Brazil

The Brazilian poultry industry has widely adopted the pelleting process, seeking all the potential benefits. But flaws in the process itself associated with growing pressure for superior results have caused failures and doubts have arisen about the whole pelleting concept.

Overall business expansion may be responsible for one of the big reductions in pellet quality. Every feed mill producing pellets has its normal production capacity. Often, due to market pressures or lack of planning, the feed mill is required to increase production capacity without any adaptation or expansion in facilities or personnel.

It should be remembered that there is an ideal duration for the process of pelletisation, varying according to each situation, the equipment employed and type of nutrition. Any shorter time will lead to a drop in quality of the process and the pellet, which may compromise the quality of the birds fed on this ration.

The quality of a pelleted feed is linked, among other factors, to the level of 'fines' which should be no more than 35%. A feed with 'fines' greater than 35% loses proportionately the main advantage of pelleting – improved feed intake and all the benefits associated with this.

A high level of fines may be related to flaws in the grinding, mixing and cooling process, as well as aspects of transportation, storage and use on the farm. It may also be related to the formulation including the addition of fats or the presence of fibres, bonding substances and surfactants.

In analysing the causes of the formation of fines, process failures are responsible for 33% of fines present in the feed. In transporting the feed to the farm this ratio can jump to 59%, and after unloading can be from 63-72% fines – values much higher than the ideal 35% limit, but unfortunately very common in the Brazilian poultry industry. When comparing good or bad pelleting in diets with the same nutritional levels, poorly pelleted rations will be less efficient in achieving the feed conversion and weight gain expected from well made pellets. But the comparison is seldom mentioned

between poorly pelleted rations and mash (non-pelleted) feed rations.

Even when the process does not reach the expected number of pellets, heating the ration does itself improve digestibility and reduce the contaminant load. But do not count on these factors alone as reasons for using the pelleting process, because the greatest benefit is in improved feed intake. Indeed, this could be an excellent reason to keep the process functioning even if pellet quality is dubious.

The strategy needs to be related to each company, since feed mills have very different process and cost structures. Perhaps the greatest challenge is in recognising three basic factors:

- Cost of pelletisation processes.
- Cost (financial and/or nutritional) to
- achieve optimal levels of pellets.

Cost of meal feed.

With this assessment the impact of a good quality pellet on the performance of the company should be computed, recognising that every investment needs to achieve a return.

In general, pelleting is an extremely effective alternative to optimise investment in nutrition, but any failure to achieve consistently high quality pellets should be considered.

Pelleted feed? Yes, but not at any cost.