Finnish experiences with diluted feeds

Aviagen recently hosted their European Technical Symposium and International Hatchery Practice was there. In this article we bring you some of the salient observations and recommendations from one of the speakers – Dr Eija Helander from Finland – who reported on Finnish experiences with the use of diluted breeder feeds and the benefits they brought to the broiler breeder flock and its owner.

Dr Eija Helander from Suomen Rehu Ltd addressed the subject of low density breeder rations and, in so doing, gave some background information and an insight into fibre in poultry nutrition before going on to consider her company's low density breeder feeding programme and practical experiences with diluted feeds.

The benefits of feed restriction on broiler breeder performance is well known (Table 1). However, we need to recognise that feed restriction can be associated with welfare problems, such as hunger, stereotypical behaviour, hyperactivity and other welfare issues, and so broiler breeder nutrition is very much a case of balancing the birds' welfare against their performance.

	Ad libitum	Restricted
Mortality (%)	31.10	6.10
Egg output (g per hen per day)	33.50	50.30
FCR (feed per egg output)	5.80	3.30
Settable eggs (%)	78.42	85.98
Abnormal eggs (%) 18-40 weeks	15.25	6.15

Table 1. The benefits of feed restriction to broiler breeders (Modified from Heck et al 2004, Poult. Sci. 45 695-703).

Research in the 1990s has shown that diluting the nutrients in the feed causes feed consumption to increase in rear and in lay and that this is accompanied by an increase in the time spent feeding.

In addition, a 15% dilution of the feed significantly increases egg production (from 151 to 164 to 56 weeks of age), whereas a 30% dilution has no noticeable effects (152 eggs).

	Control	15% dilution	30% dilution
Fertility (%)	89.0	89.4	89.1
Hatchability (%)	80.3	82.0	82.6
Chicks (%)	71.9	80.6	73.6

Table 2. Effect of feed dilution on fertility, hatchability and chick numbers (Research by Zuidhof et al).

	Starter	Grower	Pre-breeder	Breeder
Minipellet size (mm)	2	2.50	3.50	–
Crude protein (%)	19.00	13.80	14.30	14.50
Crude fibre (%)	3.50	6.60	6.10	7.00
Calcium (%)	1.10	1.05	1.52	3.00
Available phosphorus (%)	0.45	0.35	0.38	0.36
Lysine (%)	1.02	0.67	0.67	0.77
AME (MJ per kg)	11.40	9.90	10.4	10.00

Table 3. The rations in Suomen Rehu's range.

Feed dilution at the 15% level affects the number of resulting chicks (Table 2).

When it comes to fibre, insoluble fibre modulates gut development and digestive functions such as gizzard efficiency, efficiency of lower gut processes and birds tend to be quieter as they are satisfied by a full gizzard.

So, chickens appear to have a natural requirement for coarse, insoluble fibre.

This is accommodated in Suomen Rehu's feeds by providing 7-14% of oat hulls.

Since the beginning of 2005 Suomen Rehu have operated a feeding programme for Ross broiler parent stock based on a starter, a grower, two pre-breeder and a

Continued on page 13

Fig. 1. Egg laying rate of Ross 508 flock grown with diluted feeds.

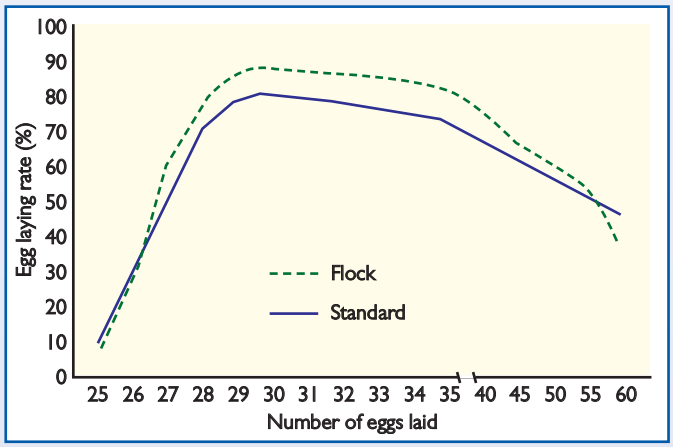
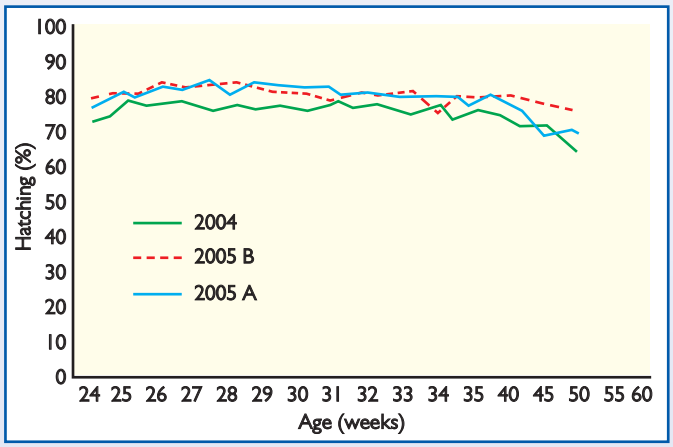


Fig. 2. Hatching results for 2004 (normal feeds) vs 2005 (diluted feeds) fed to Ross 308 birds.



Continued from page 11
breeder diet. The breeder starter is a 2mm minipellet that is fed up to five weeks of age. It has 19% crude protein and 3.5% crude fibre and an available metabolisable energy of 11.4 MJ per kg. It is based on wheat, barley, dehulled oats, SBM, soya expeller, minerals, vitamins, enzymes, salts, formic acid and Progut. Progut is a yeast product which agglutinates E. coli and salmonella strains in the gut, thereby removing them.

The remaining rations are similar and are summarised in Table 3. This feeding programme has been used for some time and Table 4 compares 2004 (normal breeder feed) with 2005 (diluted feeds).

Feedback from flocks suggests that the daily portion of feed must be kept at a high level for longer than was done with traditional feeds if egg output is to be maximised and it is important that the breeders stay on live weight target weights all the time.

Interestingly, two thirds of flocks had drier litter and some 60% of flocks had an improved laying performance in a survey of users of the diluted feed. Half of the flocks had a noticeably better livability.

In bringing the paper to a close Dr Helander highlighted the following pertinent points:

- The FCR of the Ross bird is continually improving and this needs to be taken into account when developing breeder feeds.
- Pellet quality is an important issue.

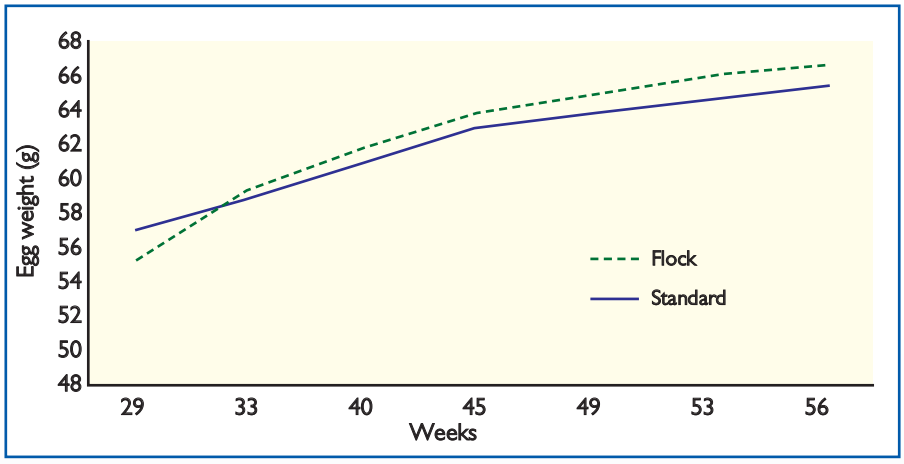


Fig. 3. Egg weight compared to standard 29-56 weeks.

- It should be possible to dilute feeds even further.
- These feeds have lower energy levels and a lower total cost for the breeder.
- The birds are happier, more satisfied and calmer on diluted feeds.
- Bird health and livability is better.
- The litter is drier.
- It is easier to control egg weight on diluted feeds and egg weight is more uniform.
- Fewer rejected eggs. ■

Table 4. Comparative results for all breeder flocks.

	2004	2005
Feed	Normal	Diluted
Eggs per hen housed	100	103.4
Chicks per hen housed	100	105.3
Average hatchability (%)	100	102.6
Mortality	100	68.0