

# The practical management of free range layers

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The world egg market is dynamic and has grown at 2-3% per year over the last 20 years. In some countries growth is due to population expansion, whereas in other countries with more stable egg consumption, the key trends are increased production for egg processing or increased alternative and specifically free range production. In the EU, recent data suggests 17% of hens are in free range systems representing 50% of the growing alternative sector.

With an increasing number of worldwide production systems, all breeding companies have to demonstrate their breeds can perform under different conditions.

Novogen recognises the need for ease of management and good behavioural characteristics under different systems giving versatility to express performance potential in various production systems.

Despite being viewed as a lower intensity system, maximising profitability in free range production still requires an understanding of key management and technical factors which arguably have greater influence under free range conditions.

Consider the rearing period as a training period for pullets starting at day old. Examples of pullet training include rearing



The Novogen Brown.

on the floor using the same drinking and feeding systems in rearing that are used during the production period to limit stress at transfer.

Likewise, the use of perches or slats from two weeks old to encourage perching and jumping will train hens for entry to nests and help reduce the risk of floor eggs.

Pullets are usually transferred at 17 weeks and this can be a more stressful change of environment. From transfer to peak production, feed consumption must increase by over 40% to provide nutrients for increased egg numbers, egg weight and growth.

Rearing a pullet that is capable of this rapid increase in feed intake and ensuring nothing limits this rise in intake after transfer are the two critical components to consider, in addition to uniformity of sexual maturity at transfer.

Remember that pullets will not achieve their adult bodyweight until they are approximately 35 weeks old (see Fig. 1).

The foundations of the rapid increase in feed intake before peak are built early by following the breed body weight target from day old.

Of key importance is the development of the digestive tract in the first 2-3 weeks and the development of the skeletal frame to eight weeks. Failure to build these foundations will risk failure to achieve the breed target bodyweight at transfer and delayed or variable sexual maturity.

Developing a pullet that reaches target body weight at transfer, but which has a small frame size, also risks lower production after peak.

Lighting programmes for free range production will be affected by external seasonal factors and must be chosen seeking local advice where needed:

1 Season of the year – is there increasing or decreasing natural day length?

1 At day old placement, ensure you know the natural day length at transfer time.

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Fig. 1. Novogen Brown minimum and maximum body weight targets.

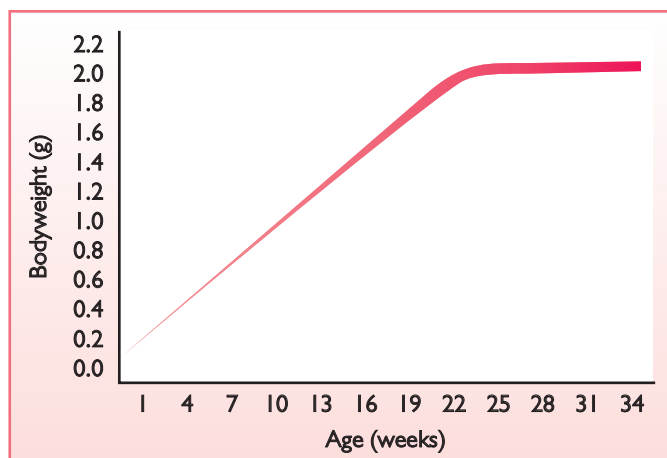
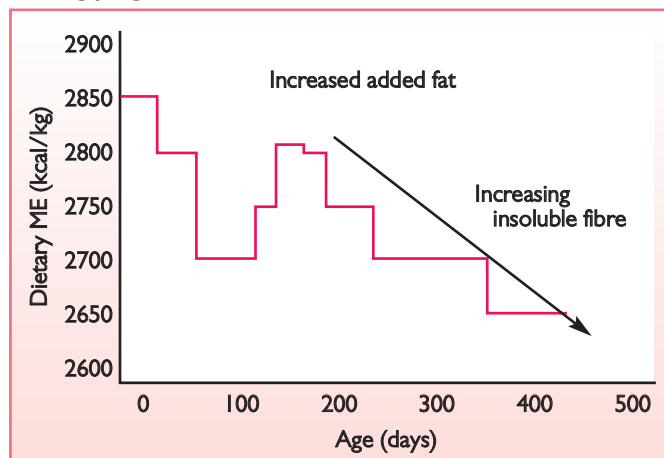


Fig. 2. Example of dietary ME content in a free range phase feeding programme.



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Avoid a big increase of day length on one day causing over stimulation of the pullets.

1 A slow step down lighting programme during the first weeks of the rearing period will encourage feed consumption and frame development during this period.

1 Choose a plateau of day length between eight weeks and time of photostimulation to match when sexual maturity is planned.

1 Time light stimulation according to both the bodyweight at stimulation and egg size required by the market.

1 Ensure a rapid increase of day length after first eggs are seen to avoid risks of floor eggs.

1 Plan the light intensity programme during

rearing to avoid a sudden dramatic increase of intensity at transfer.

## Floor eggs and behaviour

The free range hen has more opportunity to be a floor layer and this must be managed from the very start of lay. The bird tends to look for a quiet safe place to lay – with corners, along walls, slats or under feeders and drinkers being attractive.

Key nesting factors include:

1 Providing hens with well designed nests that are sufficient in number, well positioned and comfortable.

1 Ensuring easy access to nests by using wide

perches and training during rearing.

1 Providing manual nests that can be closed or automatic nests with an ejection system to prevent broodiness.

1 Ensuring even light distribution throughout the laying house to minimise shaded areas under the nests.

1 Manage day length at the start of lay according to how fast production increases aiming to provide 16 hours of light at 60-70% of production

1 Avoid feed distribution during the peak of daily egg production. This creates disturbance and distracts hens from nesting.

Hens will tend to imitate each other so it is very important to collect floor laid eggs frequently from the start of production to prevent them become an incentive for other hens to lay in the same place. Hens seen laying on the floor where possible should be placed in a nest.

Prolapse and cloacal pecking are important reasons for mortality during lay. Ensuring growth follows the body weight target growth during rearing with attention to uniformity of sexual maturity will help reduce the risks of this mortality.

## Feed intake and nutrition

Remember the following equation.

**Daily nutrient intake in mg or kcal/day = feed intake g/day x nutrient percentage in the feed percentage.**

Focusing on feed intake for free range production is perhaps more important because feed intake will be more variable than in controlled housed systems due to factors such as physical activity, variable environmental temperature and variable plumage.

As a rough guide, energy intake at peak production will increase by 20kcal/day due to extra activity while approximately 1.0-1.5% extra feed is needed per 1°C reduction in environmental temperature below 25°C. Feed intake may therefore be 10-20% higher than in other systems so attention to feed intake factors such as physical feed presentation and feeder management are critical. Daily intake requirements for other nutrients such as amino acids must meet typical optimal targets for the stage of production (see Table 1). It is therefore impor-

**Table 1. Typical optimum nutrient intakes at peak egg production.**

Nutrient	Intake
Metabolisable energy (kcal/d)	330-350
Dig. lysine (mg)	800
Dig. methionine (mg)	430
Dig. methionine + cystine (mg)	690
Dig. tryptophan (mg)	180
Dig. arginine (mg)	990
Dig. threonine (mg)	550
Calcium (mg)	4150
Available phosphorus (mg)	475

tant to monitor feed intake and adjust the feed programme provided accordingly.

Feed intake management factors include:

1 Inspect each feed delivery to ensure mash is coarse and grit size has 80% of particles in the range of 0.5-3.0mm in diameter.

1 The feed system should avoid a build up of dust in the track or feed pans. Too many fines will reduce feed intake, while too many coarse particles or pellets will decrease feeding time and gut fill increasing the risk of feather pulling.

1 Distribute feed six hours before lights out during the late rearing period and before 50% production. After 50% production, distribute feed both in the early morning after lights on and again 5-6 hours before lights out to ensure calcium is available for shell formation.

To ensure medullary bone calcium reserves are maximised, hens should always receive an enhanced calcium pre lay diet and the peak layer feed must be used after 2% production at the very latest. Dietary calcium carbonate should be included ideally as 2mm particles. Grit can be introduced during rearing to ensure good gizzard function before birds have outside access, while the provision of oyster shell can aid shell quality at a rate of 2g bird per day.

Many studies show laying hens will adjust feed intake precisely as dietary energy content is adjusted to maintain a constant energy intake.

The optimum dietary energy content can then be varied according to local ingredients and prices. For free range production, the effects of dietary energy content on egg weight and plumage are even more important which means using a phased feeding programme of starter, grower, developer and pre-lay feeds with changing energy content (see Fig. 2).

Energy content increases through the late rearing period to the peak lay diet by increasing the minimum inclusion of dietary fat to ensure peak energy intake and egg size in early lay. Fat addition also aids palatability.

Energy content during lay can be reduced by increasing the inclusion of ingredients with high dietary insoluble fibre content. This increases feeding time and gut fill and limits the desire to eat feathers causing poor plumage condition.

While protein and amino acid levels can be adjusted according to feed intake and level of production, the other key changes suggested during lay are to increase the dietary calcium content to maintain an increasing calcium intake profile while reducing available phosphorus to aid shell quality.

with other flocks via deliveries is still important to prevent infection especially from mycoplasmas and salmonellas that can be major economic problems. E. coli infection can be a challenge due to the greater risk of injury, pecking or prolapsed problems.

Attention to conditions inside the housing such as litter condition, nest box management, access to pop holes and, where permitted, beak trimming procedures are all key factors to prevent injury.

A programme for parasite control should also be developed with the veterinarian focusing on prevention and minimising the build up of a problem, especially worms. Ensuring the birds can dust bathe can aid the control of external parasites.

## Summary

Growing a pullet during rearing that has attained adequate sexual maturity, has a good frame and intestinal development and has been trained are all just as important for free range production as they are for other systems.

The pullet must not be over stressed at transfer as it is important to ensure that feed intake will increase rapidly from transfer to peak production.

Any factor that limits feed intake must be addressed and if feed intake is monitored carefully, the nutrient content of the diet can be optimised to achieve maximum profitability. ■

## Health and biosecurity

It is tempting to relax biosecurity and health controls as free range birds go outside which is a false economy. It is recommended to have a health and biosecurity plan prepared in conjunction with your veterinarian. Minimising visitors and contact