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**ANNOTATIONS TO THE ORGANIC COSTS OF PRODUCTION AND RETURNS
MAY 2024**



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1 INTRODUCTION

ADAS is a consultancy company commissioned by BFREPA to calculate the cost of production and the average price of organic eggs. Data are updated each month. This work has been ongoing now for over 10 years and at present, a small team of specialist poultry consultants, led by Jason Gittins carries out reviews and updates each month. Further information on ADAS is provided at www.adas.co.uk.

Production costs and egg prices are prepared by ADAS, based on information supplied by a wide range of industry stakeholders and from published sources. To maintain confidentiality, we do not share any individual information received with BFREPA, nor do we provide the names of those we gather information from. This ensure that the costs are compiled independently by ADAS.

The purpose of these annotations is to provide clarity on the basis for the calculations, a methodology for the work and an outline of the key assumptions made. These form the basis of the work and for the figures produced. Each cost item is reviewed regularly, details of the normal frequency are given in Appendix 1 but changes may be made at any time if new information is received.

Cost of production calculations are based on what is considered 'typical' for existing organic egg production, but there is substantial variation within the sector, according to the age of the unit, the degree of mechanisation, flock performance levels and other factors. It may therefore be appropriate to modify certain assumptions made here to reflect specific approaches or supply chains. Data for new houses and prospective new entrants to organic egg production will be presented separately.

Stakeholder and published data are gathered from England, Wales and Scotland and so are intended to be representative of Great Britain as a whole. Costs and prices may be different in Northern Ireland.

These costings and annotations will be updated each month and the latest versions can be found in the Members Area of the BFREPA website, www.bfrepa.co.uk.

Any changes made to this month's document will be highlighted in red.

Jason Gittins

These models and the costs and calculations they contain are provided for guidance only, and do not represent any commitment by BFREPA that the costs or returns involved with egg production will accord with these models.

No warranty or other representation is given by BFREPA as to the accuracy or completeness of the information contained in these models or that any transaction entered into will result in the costs or returns indicated by these models.

2 UNIT CHARACTERISTICS

Cost of production calculations are based on a typical unit of 6,000 brown organic laying hens in fixed houses comprising two flocks of 3,000 birds. Information obtained from consultation with the industry indicates that this number of birds is broadly representative of current average flock size for this type of system. Both single tier (flat deck) and multi-tier systems are used for organic production, the former generally being in older buildings.

Since these production costs include capital repayment and interest charges, they are likely to be more applicable to newer existing systems which are typically multi-tier.

Key unit assumptions are as follows:

- Laying hens are brought in as pullets from a separate rearing site at 16 weeks of age and are kept in production until 78 weeks of age. The age at end-of-lay has been checked within this current review by speaking to industry sources who have a broad view across many flocks. The current figure represents a change from the previous estimate of 76 weeks, reflecting the recent trend to slightly extending the length of the laying cycle.
- The unit is registered with an organic certification body and is also part of the BEIC Lion Code of Practice and the RSPCA assurance scheme. Participation in these assurance schemes is voluntary but close to universal.
- All eggs are sold on contract to a separate egg packing company. No allowance is included for any eggs being sold locally (i.e. not to the egg packer) although this may be permitted for some eggs, according to the terms of the contract.

3 FLOCK PERFORMANCE ASSUMPTIONS

3.1 EGG NUMBERS

For free range production, ADAS uses published breed target figures as a basis for our performance assumptions for egg numbers. There are no similar published figures specifically for organic production but it is generally agreed that egg numbers are typically lower for organic than for free range. We have therefore gathered views from producers, packers and breed companies on typical commercial performance for organic production. Estimates vary quite substantially but from responses obtained, we have used an average figure of 341 eggs per hen housed to 78 weeks of age. This is 13 eggs per hen lower than the current assumption for free range.

Not all producers will consistently reach this performance level. Our costings assume that achieving it requires (for example), modern housing, a comprehensive vaccination programme during rearing, high levels of labour input, veterinary involvement and thorough clean-out between flocks to ensure good biosecurity. The assumptions made for these inputs (and others) are set out in more detail within this document.

3.2 EGG WEIGHT AND EGG GRADE PERCENTAGES

Eggs are graded according to class, based on their physical characteristics. The criteria for Class A require eggs to be clean, intact and normal in appearance. Class B eggs include those with intact but unclean shells. Class C is for eggs that fail to meet Class A or B criteria and this typically includes eggs with cracked shells (membrane intact, so not 'leaking' eggs) and various other shell faults.

Only Class A eggs (also referred to as 'first quality') are sold in shell by retailers to consumers. Class B and C eggs ('second quality') are usually diverted to egg processors for pasteurisation and use in food manufacture. Alternatively, these eggs may be used for commercial boiling.

Class A eggs are graded individually by weight at the packing centre, according to egg marketing legislation. The following categories and terms apply:

Very Large	Eggs over 73g
Large	Between 63 and 73g
Medium	Between 53 and 63g
Small	Eggs below 53g

A small amount of weight loss occurs during egg storage because the shell is porous and some moisture is lost. The weights referred to are at the time of grading. By weight an egg is approximately 31% yolk, 58% albumen (white) and 11% shell.

Egg packers typically (although not always) pay a stated price for each weight category of Class A eggs. The price is highest for the heaviest weight categories, with lower prices for smaller eggs. Separate prices are paid by packers for second quality eggs and usually different prices are offered depending on whether seconds are identified and sorted on the farm (farm seconds) or at the packing centre (graded seconds). The price for farm seconds is generally higher, acting as an incentive for farmers to identify seconds before transport to a packer. Eggs which fail to meet the 'Class C' criteria e.g. because they are damaged, with contents leaking from the egg are normally considered a waste and have no value.

For average egg price calculations, we assume the following egg weight categories and classes over the lifetime of a flock (16 to 78 weeks).

Weight or category	Class	Percentage of total
Very Large		3.0%
Large	Class A eggs (92.5%)	40.0%
Medium		48.0%
Small		3.0%
Farm seconds	Class B and C eggs (7.5%)	3.0%
Graded seconds		3.0%

The percentages shown above are based on egg packers' views of what is currently typical for organic production to 78 weeks of age. They represent a rounded average of the responses obtained. **These assumptions have been reviewed and updated this month, based on responses received from industry.**

3.3 FEED USE

As for egg numbers, breed standard figures for feed use which are available for free range are not published specifically for organic production and so we have again sought views from producers, packers and breeders to arrive at a typical current average. Estimates of average feed intake vary from around 120 to over 130 grams per bird per day and from that, we have estimated the weighted average to be 128.4 grams per bird per day.

3.4 WATER CONSUMPTION

For water consumption, ADAS uses published production targets for Lohmann Brown and Hyline Brown in free range or alternative systems. A value for Bovans Brown was unavailable. The values are assumed to be broadly correct for organic production and are based on millilitres per bird per day.

Brown bird strain	Water consumption (ml/bird/day)
Lohmann Brown	210
Hyline Brown	211
Average	210.5

3.5 FLOCK MORTALITY

As for egg numbers and feed use, breed standard figures for flock mortality are not published for organic production. Following discussions with producers, packers and breeders, we assume that the typical current average is 8% to 78 weeks.

4 PRODUCTION COST ITEMS

4.1 AVERAGE COMPOUND FEED PRICE

It is assumed that feed is purchased from a feed compounder, since this is considered typical for the sector at present. It should be noted though that some farms mix their own feeds on-farm and the costs for this type of operation are likely to be different.

A specific diet for a mid-production organic flock at 42 week old is now used as a basis for calculating the average current feed price. The feed used at this age is considered typical for the laying cycle as a whole and the specification has been prepared for ADAS by a commercial poultry feed sector specialist. It is considered typical for organic production at present but we plan to review it again early in 2024. Details of the specification are shown in Figure 1.

This specification is provided by ADAS to a range of feed compounders who are asked each month to provide a current price per tonne. Ideally, all quotes are provided on a particular day but this is not always possible. The price to be provided is inclusive of raw materials, manufacturing costs, typical delivery and margin. If any general supplements or additives are included in the feed (i.e. in more than 50% of the feed produced by a compounder), the cost of this should be added to the price provided. This excludes any products that require veterinary certification, which are considered elsewhere. The issue of supplements (additives) permitted in organic feeds has been reviewed and at present, no additional cost is included.

The responses from feed compounders are reviewed by ADAS so that a monthly average feed price can be calculated. Please note that there is inevitably a gap between feed quotes being provided and publication of the Ranger and compound feed prices may change in that period.

A review of the current feed specification was undertaken for ADAS by a commercial poultry feed sector specialist in February 2024 and changes have been made. The new specification is provided below.

Figure 1 Typical feed specification for free range production for a flock at 42 weeks of age (BFREPA Post Peak (42 week layer diet) - Organic

	Energy (MJ/kg)	11.50	
		Min (%)	Max (%)
	Protein	18.00	
	Fibre	4.25	
Digestible Amino Acids	Lysine	0.74	
	Methionine	0.31	
	Methionine & Cysteine	0.61	
	Tryptophan	0.17	
	Threonine	0.47	
	Isoleucine	0.50	
	Valine	0.60	
	Arginine	0.75	
	Linoleic	1.50	2.00
	Added Oil	0	

Figure 1 Typical feed specification for free range production for a flock at 42 weeks of age (BFREPA Post Peak (42 week layer diet) - Organic

		Min (%)	Max (%)
Minerals	Calcium	4.05	
	Dig Phosphorous	0.41	
	Salt		0.45
	Sodium	0.18	
	Chloride		0.25
		IU	
Vitamins	A	6,000	
	D3	3,000	
Other	DSM Yolk Colour Fan	7-8	Organically approved / Green List materials

This month's average compound feed price is £521 per tonne. On this basis, the following costs are calculated:-

- With average feed intake at 128.4g , each bird eats 55.73kg from 16 to 78 weeks;
- This is reduced by 4.0% to account for half of the total mortality i.e. the average flock size over the laying cycle (53.49kg);
- The feed cost per bird is calculated as £27.87;
- Based on 341 eggs (hen housed average), the feed cost is calculated this month as 98.08 pence per dozen.

4.2 PULLET COST

Prices for 16 week old pullets for organic production are gathered from a range of specialist pullet rearing companies each month. It is common practice for egg producers to buy-in pullets, although some have their own rearing facilities.

As for conventional production, a comprehensive vaccination program is essential during rearing for organic since this helps to ensure the health and welfare of birds throughout their lives. Vaccines provide protection against common and serious diseases of poultry and a broadly standard vaccination programme is followed as a base. Within this though, there are variations in terms of the products used, timing and frequency. In addition, extra vaccines can be used according to veterinary advice, depending on disease risks on the farm and within the local area. As laying units become older, disease challenges typically increase and so boosting infectious bronchitis (IB) protection for example during the rearing period may become more important, so increasing pullet cost.

We ask our panel of pullet rearers each month for their current price for a pullet on a standard vaccination program for organic production, for delivery at 16 weeks of age in the current month. We also include the cost of additional vaccines if these are understood to be used by more than 50% of the sector.

4.2.1 Standard vaccination program

Vaccine protection is generally provided against the same range of diseases, but standard programs vary and different vaccines may be used. As for conventional free range, the most common for organic production are set out in the Table below.

Diseases	Common vaccines (not all may be used)
Mareks Disease	Rispens + THV
Infectious Bronchitis	IB primer, Ma5, Avishield IB, IB 4-91 (variant)
Salmonella Enteritidis & Typhimurium	Avipro Duo (three administrations)
Newcastle Disease	Avishield ND (three administrations), Clone 30
Gumboro	G97, Gallivac IBD, Nobilis D78 (two administrations)
Infectious Laryngotracheitis	Poulvac ILT
Coccidiosis	Evalon, Paracox
Epidemic Tremors	Poulvac AE
ART	Nemovac
E.coli (not standard for all)	Poulvac e.coli (two administrations)

Based on recent discussions with rearers, the current average 16 week pullet price with a standard vaccination programme for organic production is now £6.88.

4.2.2 Additional vaccines

Typical costs of additional vaccines used to provide protection against other diseases or extra protection against those listed above are set out below.

Additional vaccines	Vaccine cost
E.Coli	This is considered a standard vaccine by some pullet rearers but 'additional' by others. The typical cost is around two pence per bird
Erysipelas	This is variously estimated by rearers to cost between nine and 35 pence per bird in total, with some pullets receiving two vaccine doses during rearing.
Mycoplasmas (gallisepticum and synoviae)	Live and inactivated vaccines can be used against MG and MS, typically costing between six and 28 pence per bird
Autogenous vaccines	These are site-specific and are estimated to cost between 11.5 pence and 38 pence per bird

Current information gathered from the rearing sector indicates that the average cost of 'additional' vaccines is 24 pence per bird over and above the cost of a pullet with a standard program. The average cost was reviewed in February 2024 and reported to be still appropriate. This same cost is used for both conventional free range and organic production. Whilst some of these additional vaccines are used for less than 50% of all pullets, others are used for the vast majority of pullets. The price of 24 pence has been determined by dividing a quoted total cost of additional vaccines by the total number of pullets reared to calculate a price per bird.

4.3 PULLET FINANCE

Pullet rearers normally require payment for pullets delivered shortly after arrival and this represents a substantial 'up-front' cost for egg producers. We understand that at present, a significant percentage of producers pay for finance arrangements for the pullets, which are then re-paid over the life of the flock, as financial returns are made from egg production. The current position with finance being required may reflect previous low returns in the egg sector, with an insufficient margin being made from the previous flock to finance pullet purchase for the next one. Finance for pullets may be provided by banks or by a small number of companies specialising in this area.

Pullet finance is generally based on 11 monthly payments, the first payment being required two months after delivery i.e. when the birds are around 24 weeks of age. Interest rate payments are calculated by ADAS from banks and from pullet finance companies. Based on recent discussions, the typical finance cost is now 60p per bird, equivalent to £3,600 for a flock of 6,000 birds. The cost of pullet finance and its use in organic production will be reviewed on a regular basis.

4.4 LABOUR

Calculation of labour cost is based on the amount of labour needed for a typical existing unit of 6,000 birds and the cost of that labour to the business. In practice, some (or even all) of the labour needed may be provided by the business owners and their families on some sites. Where that is the case, these calculations assume that this is costed as equivalent to employed staff.

4.4.1 Labour inputs

The various tasks that must be undertaken have been listed individually in the Table below, together with their frequency and an estimate of the time needed for each one. In some cases, the frequency of inputs is specified in legislation or in assurance scheme requirements.

Time estimates were first drafted by ADAS and then discussed with a range of industry stakeholders to ensure that they are as 'typical' as possible for a 6,000 bird unit of the type set out in section 2. Where changes were suggested, these have been included at ADAS discretion. It is recognised that in practice, labour inputs will vary depending upon the site and the people involved and on the amount of automation and mechanisation in place at the unit.

In practice, staff may be able to combine certain daily tasks listed, undertaking them at the same time. For this reason, an overall reduction of one hour per day is currently applied to the individual time estimates set out in the Table.

Typical Labour Inputs For Organic Egg Production

Key assumptions:

6,000 birds in 2 x 3,000 bird houses

Production cycle from 16 to 78 weeks

Clean-out by contractors (at separate cost)

Rodent pest control by contractor (at separate cost)

On-farm incineration of carcasses (time for farm staff included here)

Egg collection using a farm packer, with tray stacking by hand (i.e. not fully mechanised)

Daily inputs	Man hours per day
Bird inspections (3)	1.5
Routine cleaning (inc. pophole management)	0.5
Egg collection & packing	2
Nest box inspection (inc. floor eggs)	0.5
Equipment inspection	0.25
Time saving by combining daily tasks	-1
Total for daily inputs	3.75

Weekly inputs	Man hours per week
Alarm and back-up check	0.25
Footbath replacement	0.5
Litter management	0.5
Manure cleanout	1
Carcass disposal	1
Out of hours plus sanitising, vaccines etc. (average)	1
Total for weekly inputs	4.25

Other inputs	Time needed (hours)
Pullet unloading	Once per cycle, 2 hours, 6 people
Additional time in house - early lay	Extra 1 hour daily for 8 weeks
Salmonella testing	Five times per flock, 1 hour each time
Official salmonella test	Annual, 1 hour
BEIC Lion Code self-audit	Every 6 months, 1 hour
BEIC Lion Code external audit	Annual, 3 hours total
RSPCA and APHA inspections	Annual, 6 hours total
Liaison with suppliers, packer and training	Monthly, 1 hour per month
Feather cover check	Monthly, 1 hour per month
Old hen depopulation - oversee	Once per cycle, 2 hours
Inputs when house is empty (exc. house clean-out)	Five days a week, 4 weeks, 1 hour per day

Record keeping	Time needed (hours)
Production, welfare, environment, eggs	Daily, 0.25 hours
Feed deliveries / recording	Weekly, 0.25 hours
Feather cover	Monthly, 0.5 hours
Nestboxes and floor eggs	Daily, 0.25 hours
Depopulation plans	Every flock, 2 hours
Biosecurity plan	Every flock, 2 hours
Lion passport	Every flock, 1 hour
Crisis management document	Every flock, 1 hour
Site plan and range plan	Every flock, 2 hours
Emergencies plan	Every flock, 1 hour
Salmonella results	Five times per flock, 1 hour each time
Veterinary health plan (in conjunction with vet)	Every flock, 2 hours

Based on these inputs, the total labour time required for 6,000 birds was calculated in a separate spreadsheet and a summary is provided below.

Inputs	Total man hours for a cycle of 66 weeks (includes four week clean-out period)
Daily (houses stocked)	1,628
Weekly (houses stocked)	264
Other (including turnaround)	142
Record keeping (66 weeks)	256
Total (66 week cycle)	2,290

If the calculated total man hours required (2,290 hours) are divided by the full cycle length in days, which includes a four week clean-out period in addition to a 62 week laying cycle, the average requirement is calculated as 5.0 hours per day for 6,000 birds. When the houses are stocked, the labour requirement is around 5.25 hours per day.

4.4.2 Labour cost

Assessing the typical rate of pay for staff on free range egg production units is complex for the following two main reasons:

- The work is likely to be undertaken by people with different levels of skills and responsibilities who are likely to be paid at different rates.
- Availability of people to work on free range egg production units varies according to location and it is likely that there are significant regional differences. This impacts upon the rates of pay needed to attract and to retain suitable staff.

In assessing a typical hourly rate of pay, we bear in mind national living wage rates **increased to £11.44 per hour for workers aged 21 and over from April 2024**. We have **also** reviewed recruitment websites to assess the current rates of pay quoted for situations vacant and the salary and other requirements for bringing in workers from other countries. We have consulted employers within the sector to identify current pay rates for poultry house operatives and egg collection staff. Furthermore, BFREPA undertook a survey on labour costs in August 2023 and the responses were reviewed by ADAS. On that basis, we assumed an average pay rate of £12.50 per hour at the time.

We have now increased this rate from £12.50 to £13.75 per hour to match the percentage increase in the living wage from April 2024. This covers seven days each week (including weekend staff) when birds are in the house. We also assume that National Insurance and pension contributions are paid in respect of all workers but in practice, this may not **always** be the case e.g. for part-time workers.

To calculate total labour cost for a business, holiday cover and contributions for pensions and National Insurance are also considered as set out below.

- Based on £13.75 per hour, 5 hours per day, five days a week and for 52 weeks; the annual salary is £17,875
- Add 3% for employer's pension contribution on earnings above £6,240 per annum;
- This is calculated as £349 per annum;
- Add 13.8% for National Insurance on earnings above £9,096 per annum;
- This is calculated as £1,212 per annum;
- Total employment cost per person per annum is therefore £19,436 (17,875 + 349+ 1,212).
- Add 11% to cover for holidays = £21,574
- Multiply by 7/5 to cover 7 days = £30,204
- For full cycle, multiply by 66/52 = £38,336 (including period when the houses are empty).

For 6,000 birds, the calculated total cost is equivalent to £6.39 per bird (i.e. 38,336 /6,000).

No allowance has been made for costs associated with absence due to sickness.

4.5 ELECTRICITY (EXCLUDING RENEWABLES)

Modern organic systems can use a considerable amount of electricity, mainly to provide powered ventilation and lighting, to deliver feed, for mechanical egg collection and for belt manure removal in multi-tier systems.

As for free range, the electricity cost here is based on mains supply from the national grid and pricing is based on a current unit price and a daily standing charge. With recent price volatility, account is taken of any available government support in the form of price caps if appropriate.

In recent years, there has been some investment in solar power systems, which can provide a significant reduction in electricity costs. At present, this is not considered typical for a 6,000 bird organic unit.

A recent review undertaken by ADAS estimated that typical electricity use is 4 kwh per bird for conventional free range production over the whole cycle and **the current electricity cost is £1.02 per bird**. At present, we multiply this figure by 1.5 for organic to account for the difference in stocking density between this and conventional free range. **This makes a total electricity cost of £1.53 per bird** this month for organic. For single-tier organic systems and naturally-ventilated houses, electricity use will be considerably lower.

4 For example see www.businessenergy.com

4.6 WATER

This category includes water used by the birds during the production cycle, the amount used for house clean out at the end of production and the cost of dirty water disposal. Mains water supply is assumed although using a local source e.g. a borehole can result in lower costs for some units.

Based on the quantities required per bird as set out in section 3.4, the average water use for a full cycle has been calculated as follows:

- An average of 210.5ml per bird per day, therefore 91.4 litres per bird to 78 weeks;
- Reduce by 4.0% to account for mortality (half of the total mortality for the flock, 8%), so 87.7 litres per bird place for the cycle.

For water use during clean-out, we have considered technical articles (e.g. it has been assumed that 700 litres of water are used per hour¹) and information received from producers and others. In practice, the quantity of water used at clean-out is likely to vary for many reasons e.g. the time allowed, the extent of dry cleaning beforehand to remove physical contamination, the pressure of the washing system, water temperature and the surface / equipment type being washed.

We currently base our costs on an average of 23,000 litres of water used at clean-out for a 6,000 bird unit, equivalent to 7.6 litres per bird place. On this basis, total water use is 95.31 litres per bird for the cycle, with water for clean-out representing around 5% of the total. This percentage is broadly consistent with the findings of previous Defra research studies.

An average business rate cost is calculated from the most recent available business water rates of nine suppliers in England². **The average price is calculated as £2.00 per cubic metre. Based on 95.31 litres per bird, the total cost is 19.08 pence per bird.**

An additional cost is likely in respect of dirty water removal which may be collected for disposal or spread to land, with little or no value. Based on the same nine suppliers (see above) the current **average cost of water disposal is £2.02 per cubic metre and so for 23 cubic metres (23,000 litres), the cost is £35.19 or 1.53 pence per bird.**

On this basis, the total for all water use and for disposal of dirty water is 20.6 pence per bird.

¹ <https://www.fwi.co.uk/livestock/housing/advice-cleaning-free-range-poultry-sheds>

² <https://www.aquaswitch.co.uk/business-water-rates/>

4.7 VETERINARY INPUTS AND MEDICATION

The assumption of average veterinary and medication costs has been based upon typical estimates provided mainly by industry veterinary professionals who specialise in poultry. In practice, there is likely to be considerable variation between units and therefore we have included what is considered typical to maintain target flock performance levels. The main inputs included here are listed below:

- Veterinary visits – **two visits per flock are assumed to be typical**. An allocation of **£720** per unit has been included, which includes the preparation of a veterinary health plan and miscellaneous inputs over the laying cycle;
- Salmonella test analyses at a cost each time of £140, so £840 for six tests over the laying cycle (including pre-housing) and £1,680 for two houses (6,000 birds total);
- IB vaccination whilst the birds are in lay is assumed six times during the laying cycle and is likely to cost **£132** each time, so **£792 in total** for the flock.

Based on these inputs, the estimated typical cost for existing units is **53.2** pence per bird. In the event of a disease outbreak or significant health challenges, the fee would be higher.

Unlike conventional free range, it is assumed that there is no use of Exzolt to control red mites in organic production, since a veterinary prescription would be required which in turn would have implications for egg marketing. **Red mite control using other methods is set out in section 4.11 (pest control)**.

4.8 LITTER

RSPCA Standards specify a litter depth of at least 5cm for the first two months after placement, with litter depth of at least 10cm thereafter.

Typically producers purchase wood shavings or chopped straw as a litter material and distribute this onto the concrete floor prior to arrival of the birds. Some additional litter may be added during the life of a flock but the quantities required are unlikely to be substantial. Based on recent discussions with producers and others, we assume the use of 80 bales of wood shavings for 6,000 birds at a price of £9 per bale, making a cost of 12.0 pence per bird.

4.9 ENRICHMENTS

Assurance scheme requirements include the need to provide environmental enrichments to the birds to meet their behavioural needs and to reduce the risk of pecking problems developing. For example, within the RSPCA scheme:

- For every 1,000 birds there must be at least two items of environmental enrichment inside the house, which must:
 - a) be permanently available to the birds;
 - b) include some destructible forms of enrichment.

Additional facilities, or designated existing natural elements, must be provided for dustbathing/perching/foraging or a combination of these behaviours:

- a) in at least one area per 2,000 birds
- b) in a minimum of two areas.

Examples of environmental enrichment include hanging knotted rope/string, pecking blocks, vegetables and plastic bottles and provision of dustbathing boxes, straw bales or wood shavings.

The BEIC Lion Code of Practice states that to reduce the risk of feather pecking and cannibalism, but particularly in non-beak trimmed birds, producers are recommended to be aware of and implement appropriate intervention strategies from the list produced by the Bristol University Feather Pecking Project.

It is reported by the industry that more enrichments are typically used in organic houses than in conventional free range systems. As for free range, we have assumed that pecking blocks and lucerne bales are used as the destructible forms of enrichment, these being priced at £20 per block and £14 per 20kg bale respectively. With one block per 600 birds and a duration of 8-10 weeks, the cost would be 23 pence per bird for the laying cycle. For lucerne bales at one per 1,500 birds and replacement every 10-14 days, the price is around 34 pence per bird. Taking an average of these two, the total comes to 28.5 pence per bird.

Assuming that non-destructible enrichments are also used (see examples above) and that these are free of charge, expenditure on destructible enrichments could be reduced. At present, we assume a 33% reduction on that basis, making a total for enrichment of 18.8 pence per bird. This is broadly in line with recent producer responses for total expenditure on enrichment items. Assumptions for this cost have been reviewed and are still in line with producer responses from last summer for total expenditure on enrichment items.

4.10 RANGE MANAGEMENT COSTS

The main range management costs include grass and hedge cutting and tree and general land maintenance. In practice, these inputs may be done by farm workers or by contractors. Precise figures are difficult to obtain but costs are generally low.

Average range management costs for grass topping and hedge cutting were calculated using John Nix Pocketbook, 2023, 54th Edition³. Published NAAC rates were also reviewed for comparison for hedge cutting and the costs were similar.

Costs assume 2,000 birds per hectare of land (3 hectares in total for 6,000 birds) and a hedge running around the perimeter of a square shaped range, averaging a length of around 700 metres, with one cut per year for a well maintained hedge.

Based on published figures (see above), the cost of grass topping is £28 per hectare (farmer) and £48 (contractor). We have assumed the higher contractor rate in these costings on the basis that this includes an allowance for other range-related work. For 3 hectares of land, the cost of grass topping is therefore £144 or 2.4 pence per bird each time. We assume that the land would be topped twice each year, thus the total cost is 4.8 pence per year. For hedge cutting, an hourly rate of £48 is assumed for a contractor and a total of two hours input is assumed, including travel to the site and an average speed of two miles per hour. The total of £96 per year is equivalent to 1.6 pence per bird per year.

The total for range management costs is therefore estimated as 6.4 pence per year, equivalent to 8.1 pence per bird per cycle.

³ John Nix Pocketbook 54th Edition

4.11 PEST CONTROL

Poultry houses and their surrounds are at risk of pest infestations because of the availability of feed and shelter. Farms also have legal and quality assurance scheme responsibilities to control pests. In some cases, suitably trained, experienced farm staff are able to undertake pest control activities but the use of a specialist contractor is assumed in these costings.

Typical costs for the control of rodents (rats and mice) have been collected from contractors and producers, based on a typical contract for a 6,000 laying unit. This includes an average of one contract visit per month as part of an annual agreement. These visits would include removal and disposal of caught rodents and checking and replacing traps, with costs including traps, disposal and contractor time. Only products and traps authorised within the organic standards can be used.

An average annual cost for a pest control contract for a 6,000 bird laying unit of £900 was calculated based on the above assumptions and prices gathered. For a 66 week flock cycle, this is equivalent to £1,142 or 19 pence per bird.

In addition, it is assumed that a separate contractor is employed twice during the life of each flock to control red mites at a cost of 15 pence per bird each time. This brings the total for pest control up to 49 pence per bird for the flock.

4.12 DISINFECTANTS AND BIOSECURITY

Foot dips must be placed at the entrance to each poultry house for use when entering and leaving. These should be fitted with a lid or cover to prevent rainwater, debris or UV exposure, which affects the efficiency of the disinfectant.

We assume that for each flock of 3,000 birds, there is one foot dip for the indoor bird area and one at the access point to the range. In addition, two dips are assumed around the egg room, one at the farm gate and that there is a separate vehicle wheel sprayer (equivalent to two foot dips). In total, this means nine foot dips in total for a unit with two flocks. It is assumed that these are replaced weekly.

For a typical disinfectant (e.g. Virkon S), we have assumed an average of £63 for a 5kg tub, with a dilution rate of 1g to 280ml. Assuming an average volume of 15 litres for a foot dip, one tub would provide approximately 92 refills, costing 68 pence per refill. It would cost an average of £42.46 for each foot dip to be refilled for a full flock cycle and an average of £382 for nine foot dips or 6.3 pence per bird.

An allowance is also included for protective clothing for staff as follows:

- Boiler suits for poultry house staff – two at £30 each;
- Wellington boots for poultry house staff – two pairs at £50 each;
- Overalls for egg collectors – two at £20 each.

The above, which totals £200 is considered a reasonable budget for each flock and therefore equivalent to 3.3 pence per bird.

In addition, an allowance is added for disposable PPE, mainly for use by visitors and officials. This is based on a box of disposable boiler suits (50) at £65, dust masks for poultry workers (125) at £256 and over-boots (50 pairs) at £26. This totals £347 which again is considered a reasonable flock budget, equivalent to 5.8 pence per bird.

Adding together these three components, the total is 15.4 pence per bird. This figure excludes the cost of products used during the clean-out period which are considered separately. To include an allowance for other products such as cleaning materials for the farm packer and egg room, hand sanitisers and insect control products (such as attractant strips), this figure has been rounded up to 15.5 pence per bird.

4.13 EGG PRINTING CONSUMABLES

Egg printing is required to be done on farm for proof of origin, under the Egg and Chick Regulations (2009) England (SI 2009/2163) and equivalent legislation in Wales and Scotland.

For a unit with 6,000 birds, a stamping machine is assumed and based on discussions with equipment companies, the average current capital cost is around £3,500 to £5,000. This is estimated to last up to 10 years with regular servicing and cleaning and it is assumed that this is included in the separate capital cost figure.

Consumables are in the form of stamping units which contain ink. The price of 12 stamps (normally bought together) is up to £250 and these are expected to be sufficient for 2.5 million eggs (208,000 dozen).

This equates to a price of 3.4 pence per bird.

4.14 DEAD BIRD DISPOSAL

The cost of dead bird disposal has been calculated on the assumption of on-farm disposal with an approved incinerator but off-farm disposal may be more appropriate in some cases. Based on discussions with a supplier, the typical price paid for an existing LPG-fuelled incinerator suitable for a 6,000 bird unit would be around £9,000 (the cost of a new incinerator is currently around £12,000.) It is assumed that this is not included within the overall capital cost of the unit.

Supplier estimate is that the incinerator would use 8 litres of LPG fuel per hour and assuming 25kg of carcass incinerated per hour, the cost is around 8.7 pence per kg based on LPG at 27.08 pence per litre.

On this basis, the cost of dead bird disposal is calculated as follows:

- Capital cost for incinerator of £9,000 over 10 years is £900 per year;
- For a flock cycle of 66 weeks, this is equivalent to £1,142;
- At 8% mortality, 480 carcasses would be incinerated for a 6,000 bird unit;
- At an average of 1.9kg per carcass, a total of 912kg is incinerated;
- The fuel cost for this is 79.34 (912×0.087);
- Adding capital cost makes a total of £1,221 for the cycle ($1,142 + 79$);
- Annual maintenance and certification combined is estimated to add a further £500 per flock, making a total of £1,721.

The cost of on-farm dead bird disposal, spread over the initial 6,000 birds is therefore 28.7 pence per bird housed ($1,721/6,000$).

4.15 HOUSE CLEANDOWN COSTS

Terminal cleanout of houses is an important aspect of the production cycle and a vital biosecurity safeguard. For that reason, producers allow time to carry out the required work (and any necessary repairs) thoroughly. After discussions with producers and packers, we assume that an empty period of four weeks between flocks is typical but this is being kept under review given the need now for pre-housing salmonella testing.

Some producers choose to clean houses themselves, using farm staff but the majority are assumed to use a specialist contract cleaning company. In many cases, operations may be shared between farm and contract staff, with for example manure and litter removal and blow-down of dust being undertaken by farm staff. Contractors then begin with house washing operations.

Cleaning out costs are based on averages from companies specialising in poultry house cleaning and from producers. Key inputs of washing and cleaning for a 6,000 bird unit may take around 4.5 man days in total. **When the cost of chemicals is added**, current industry information **and feedback from cleanout contractors** suggests that the total is likely to be **82** pence per bird. This figure excludes the disposal cost of clean-out water, which is considered in section 4.6.

4.16 REPAIRS / MAINTENANCE

These costs are highly variable, generally being higher in units with older housing and equipment than in modern systems. Relevant standard figures from published sources are limited and where provided (e.g. in farm business surveys and Defra statistics) they appear not to be applicable to organic egg production.

Costs of repairs and maintenance could be linked to the replacement asset value percentage of buildings and equipment and references suggest that this should be in the region of 2-5% of the initial capital investment. If this approach was adopted, the annual cost could be up to three pounds per bird which appears excessive.

Information gathered for comparatively new free range units puts actual costs at around 10 pence per bird but in our costs, a figure of 20 pence per bird is retained at present to account for higher costs for older units. On that basis, we are also retaining our current figure of 30 pence per bird for organic at present.

4.17 INSURANCE

This is an important issue at present, because of the increased risk of avian influenza outbreaks which have increased the need for and the cost of insurance. In addition, availability of insurance for disease cover has also become an issue. For clarity, insurance costs are presented here in two separate sections, with information based on recent discussions with insurance specialists and producers.

4.17.1 General insurance for buildings, liability etc.

This is considered a standard item requirement for all units. Whilst prices will vary, the current average cost is assumed to be 27 pence per bird per year. On a 'per cycle' basis of 66 weeks (including clean-out period) this equates to 34.3 pence per bird.

4.17.2 Insurance for disease outbreaks

This mainly provides cover for avian influenza and salmonella. At present, some producers without existing cover are likely to find it difficult to get insurance and whilst this represents a saving in costs, it is a significant business risk. At present, it seems likely that just over 50% of the organic sector has disease insurance and therefore it is included as a cost in these figures. The current insurance cost for organic is estimated to be around 45% higher than conventional free range so on a 'per cycle' basis of 66 weeks (including clean-out period) the cost is given as 92.1 pence per bird. .

4.18 VEHICLE AND FUEL

We assume that these costs are low on the basis that manure is collected by the recipient but that a vehicle is required for collection of goods, sample deliveries, attending meetings etc. In practice though, this vehicle is likely to be used for other purposes as well so the costs should be attributed accordingly. Fuel is required for testing the generator but it is assumed that there is no long-term use of the generator (e.g. in the event of power failure).

On that basis, we have included £250 as a monthly vehicle lease cost, £42 per month for fuel and £300 (annually) for insurance. For a 66 week cycle, the total is therefore calculated as £4,828. We have then assumed that 50% of this cost is attributed to the organic poultry enterprise and so this is equivalent to 40.2 pence per bird.

4.19 OFFICE EXPENSES

We have included the cost of business essential items here such as a computer and printer replaced every five years, office software and broadband and mobile phone contracts. Typical annual costs included are £150 for the computer, software and printer and a total of £45 per month for broadband and mobile contracts (£540 per year). An additional allowance is made for consumables (mainly printer ink, paper, couriers / postage) at £15 per month (£180 per year). The annual total is therefore £870 which equates to 18.4 pence per bird for a full cycle. As above, we have assumed that 50% of this cost is attributed to the organic poultry enterprise and so we have included a cost of 9.2 pence per bird.

No time is included here for labour since this is considered elsewhere e.g. in record keeping and in accountancy costs.

4.20 ACCOUNTANT FEES AND BANK CHARGES

Accountancy fees are very dependent on the size and structure of a business. Generally, fees are lower for sole traders and partnerships than for limited companies. Based on discussions with producers, accountants and with ADAS farm businesses specialists, an annual accountancy cost of £2,000 is included for a typical unit of 6,000 birds, which includes annual accounts and tax-related issues. This could be reduced if more on-farm input is assumed but no allowance is currently included for the time needed for this or for the purchase of accountancy software.

We have assumed a basic annual bank charge of £120 per year (although in some cases, this may be higher) and together this makes an annual total of £2,120. This is equivalent to 35 pence per bird for a full cycle.

4.21 TRAINING AND MEMBERSHIPS

The costings assume that all workers are members of the Lion Training Passport scheme. Annual membership for the Lion Training Passport costs £20 per person. The scheme training requirements differ depending on role.

Under Lion Code requirements, all personnel working on egg production sites must hold a current food safety / hygiene certificate, which must be renewed every three years. Other training requirements may include biosecurity, poultry health and welfare, health and safety, and modern slavery awareness. It is expected that personnel will take one training course a year until all training is completed and renewed as required. Training courses typically cost approximately £50 depending on the training provider; therefore, the costings assume an annual cost of £70 per person (£20 + £50) and a total of two people, making an annual total of £140.

Where there is little turnover of staff, the cost is therefore modest but where new staff are frequently employed, this becomes a larger consideration. A nominal time allowance for training activities is included in the labour calculations.

The annual cost for RSPCA Assured membership for 6,000 birds is £300 and organic certification is included at £700 per year. These figures assume that fees are paid by the producer although in some cases the packer may bear the cost. The total for this category is therefore £1,140 per year (£140 + £300 + £700).

This is equivalent to 19.0 pence per bird per year or 24.1 pence per bird for a full cycle.

4.22 LAND RENTAL EQUIVALENT

A land rental equivalent figure is normally included in costings such as these to indicate the income that may be obtained if the land required for poultry was instead rented for other purposes.

Rental values vary according to land type, location and other factors and we currently use a published figure⁴ of £177 per hectare to calculate the annual land rental equivalent. No specific figures are included in this publication for organic land.

Based on 2,000 hens per hectare, 3 hectares of land are needed for 6,000 birds. The annual rental value (£531) is therefore equivalent to 11.2 pence per bird.

⁴ *John Nix Pocketbook 54th Edition*

5 CAPITAL REPAYMENT AND INTEREST COSTS FOR BUILDINGS AND EQUIPMENT

5.1 EXISTING UNITS

Since this costing is for existing rather than new units, the current new-build price has not been used here. Typical capital cost for existing units is determined mainly by their age, which in turn indicates the likely design and levels of automation. No allowance is included here for the purchase price of the land required for the enterprise.

The average capital cost for existing units is difficult to estimate because of the range of building ages and specifications. A further issue is that in some cases, existing houses have been re-equipped internally following the removal of the original equipment. In some cases, very old existing units may have been built at comparatively low cost but compared to our estimates, more resource may now be spent on repairs and maintenance and on veterinary inputs, in order to maintain performance.

At present, the average capital cost for existing units is assumed to be £59 per bird, which is unchanged from the figure used in the Ranger in recent months. However, this figure will be reviewed if more detailed information can be gathered on unit costs and ages.

To calculate capital and interest repayment costs, it is assumed that buildings are repaid over 20 years and account for 37% of the investment. Equipment is repaid over 10 years and accounts for the remaining 63%. The current Bank of England interest rate plus 3% is used as a basis for calculating interest charges although we appreciate that in practice, a range of different rates will apply. In **April 2024**, the interest rate was unchanged at 5.25% , making a total of 8.25%. Interest rates are next scheduled for review on 9 May 2024.

An amortisation table and loan calculator is used to determine costs on a 'per bird' basis. This is done in the following stages:

- Assume a capital cost of £59 per bird and a current interest rate of 8.25%;
- Repayment cost of buildings at £21.80 per bird (37% of total) over 20 years is £1.09 per year or £1.38 per production cycle (66 weeks);
- Repayment cost of equipment at £37.20 per bird (63% of total) over 10 years is £3.72 per year or £4.72 per cycle.
- The total interest cost for building investment is £22.78 over 20 years, equivalent to £1.14 per year or £1.45 per cycle; (total cost of loan – repayment cost)
- The total interest cost for equipment investment is £17.55 over 10 years, equivalent to £1.76 per year or £2.22 per cycle.

5 <https://www.bankofengland.co.uk/monetary-policy/the-interest-rate-bank-rate>

The overall total per cycle is therefore as follows:

Building repayment	£1.38
Equipment repayment	£4.72
Building interest	£1.45
Equipment interest	£2.22
Total per bird per cycle	£9.77

Since capital cost per bird and interest rates varies, the following table shows the effect that changed assumptions would have on the total cost per bird (£ per cycle). The current assumption of £59 capital cost and 8.25% interest is highlighted (£9.77 per cycle).

Capital cost (£ per bird)	Interest rate (%)			
	4.25	6.25	8.25	10.25
53	7.05	7.89	8.78	9.71
56	7.76	8.64	9.58	10.57
59	7.85	8.78	9.77	10.82
62	7.95	8.92	9.96	10.97
65	9.03	9.05	10.14	11.30

5.2 NEW BUILD COSTS

The capital cost for new buildings and equipment has increased significantly in recent years, due to increases in materials, manufacturing and labour costs. However this has come at a time when there has been relatively little new investment in organic egg production.

The typical cost for a new-build development is believed to be in the region of £90 per bird for a 6,000 bird organic house.

This figure is inclusive of the following main cost items:

- Planning application and associated professional fees;
- Groundwork and site preparation;
- Electricity and water supply;
- Building construction;
- Poultry house internal equipment;
- Egg collection and packing equipment;
- Electrical work;
- Generator;
- Fencing and other range work.

Note that the cost of an incinerator is excluded here but included within the 'dead bird disposal' category in section 4.14.

Capital and interest repayment costs for a new-build unit costing £90 per bird are calculated below, using the same methodology as in section 5.1 (existing units).

- Assume a capital cost of £90 per bird and a current interest rate of 8.25%;
- Repayment cost of buildings at £33.30 per bird (37% of total) over 20 years is £1.67 per year or £2.11 per production cycle (66 weeks);
- Repayment cost of equipment at £56.7 per bird (63% of total) over 10 years is £5.67 per year or £7.19 per cycle.
- The total interest cost for building investment is £45.15 over 20 years, equivalent to £2.26 per year or £2.87 per cycle;
- The total interest cost for equipment investment is £34.16 over 10 years, equivalent to £3.42 per year or £4.34 per cycle.

The overall total per cycle is therefore as follows:

Building repayment	£2.11
Equipment repayment	£7.19
Building interest	£2.87
Equipment interest	£4.34
Total per bird per cycle	£16.51

The difference between this figure for a new unit (£16.51) and the equivalent one for an existing unit (£9.77) is £6.74 per bird per cycle. Assuming the same egg production of 341 eggs per bird (28.4 dozen eggs) and that all other costs stay the same, this would add 23.7 pence per dozen to the cost of production for a new build unit. It should be noted though that some costs for new and existing buildings are likely to be different.

6 FINANCIAL RETURNS

6.1 REVENUE FROM EGGS

An average organic egg price is calculated by ADAS each month. This is based on all eggs being sold on contract to an egg packing centre, with no local sales included. The price is based on discussions held each month with industry contacts. As far as possible, the same ones are used each time so that there is consistency from one month to the next and trends can be identified.

The responses provide information on the current prices being paid by a range of different egg packers and these are then 'weighted' according to the approximate throughput of organic eggs for each packer. Certain speciality lines are excluded from the calculations, so that the average is for standard brown organic eggs.

The average egg price calculated this month is 229.38 pence per dozen.

Periodically BFREPA undertakes a separate survey of organic egg prices, based on voluntary responses from members. When this is done, we can compare results from two different methodologies to check for consistency.

6.2 REVENUE FROM THE SALE OF END OF LAY HENS

End of lay prices are gathered from a range of companies processing old hens in GB each month.

The EOL price included in the costings is for a hen at the end of lay (78 weeks and 1.9 kg liveweight).

The average end of lay hen price has stayed the same this month at 21 pence per bird.

6.3 VALUE OF POULTRY MANURE

Over the course of a 62 week laying cycle, a flock of laying hens will produce a substantial amount of poultry manure. In organic systems, this consists of a mix of solid manure (collected on belts in multi-tier systems and within a mini-pit for flat deck systems) and used litter (a mix of manure and wood shavings or chopped straw etc.). The total weight depends on moisture content which in turn varies according to the feed and due to the amount of spillage of water from drinking systems.

Poultry manure is not considered a waste in legislation and there are controls in place to determine the way in which it is stored and utilised. The most common means of utilisation is spreading onto agricultural land but some manure and used litter also goes for other uses e.g. for fuel production in anaerobic digestion.

Organic egg producers who have additional land available (outside the range area) typically utilise poultry manure on their own land as an important source of nutrients. Those without additional land may provide poultry manure as a fertiliser for neighbouring farmers.

The theoretical value of poultry manure can be calculated based on its nutrient content of nitrogen, phosphorus and potassium and the current purchase of bagged fertilisers containing these nutrients. In February 2024, the value was estimated at £42 per tonne based on a dry matter of 50%.

In practice, poultry farmers seldom receive this calculated price, partly because manure may need to be collected and then stored until it can be used. Regional variations are also likely with more demand for poultry manure in arable than in grassland areas.

Nevertheless poultry farmers typically receive some value of manure, whether it goes to their other farming operations or for other uses. Following a review of typical prices received by conventional free range poultry units, we now include the same value of £10 per tonne for manure from organic units on the basis that this is collected from the farm by the recipient (no transport costs included for poultry).

Based on a typical output of 115 kg of fresh manure produced each day by 1,000 birds, the total for a 62 week production cycle is 49.91 kg per bird. Data from the UK Inventory of Ammonia Emissions from Agriculture⁶, currently indicates that this should be reduced by 20% to account for manure deposited directly onto the range land. The amount available is therefore around 40 kg per bird and the value is given as 40 pence per bird per cycle.

⁶ https://uk-air.defra.gov.uk/assets/documents/reports/cat09/2307061001_UK_Agriculture_Ammonia_Emission_Report_1990-2021_Final.pdf

Appendix 1 – Cost items routine update frequency

Unit characteristics and flock performance	
Flock size	Annually
Egg grading assumptions	Quarterly
Performance (egg numbers, feed intake, water intake, mortality)	Quarterly
Cost items	
Feed	Monthly
Pullet – standard vaccination programme	Price (monthly) Quarterly (standard vaccinations)
Additional pullet vaccines	Quarterly
Pullet finance	Quarterly
Labour	Every 6 months (and in line with any government changes to wages)
Electricity	Monthly
Water	Quarterly
Veterinary and medication	Quarterly Every 6 months (Vet charges)
Litter	Quarterly
Enrichments	Every 6 months
Range management costs	Every 6 months
Pest control contractor	Every 6 months
Disinfectants and biosecurity	Every 6 months
Egg printing	Every 6 months
Dead bird disposal	Every 6 months Monthly (Gas cost)
House clean-down costs	Every 6 months
Repairs and maintenance	Every 6 months
Insurance (buildings etc.)	Every 6 months
Insurance (disease, AI, salmonella)	Quarterly
Vehicle and fuel	Quarterly
Office expenses	Annually
Accountant fees and bank charges	Annually
Training and memberships	Annually
Land rental equivalent	Annually
Capital and interest repayments	Reviewed monthly in response to any changes in bank interest rates
Income items	
Egg price	Monthly
End of lay hen	Monthly
Manure price	Quarterly

Researched and independently produced by ADAS for the British Free Range Egg Producers Association.



National Egg Marketing Association Limited