SM3

GROWER
MANAGEMENT
HANDBOOK

Cherry Valley®

This Handbook

Cherry Valley has invested for many years in a research and development resource covering all aspects of duck production. This handbook is based on that research, along with more than 50 years' experience of integrated duck production and the benefit of working with customers in all of the World's important duck markets.

The modern duck industry is an international business, with production in many countries and varying climatic and environmental conditions. This handbook is not designed to provide definitive information on all aspects of duck management in every scenario. It is a guide to best practice, aimed at helping customers produce the maximum yield of first quality meat at the least cost, from their **Super M3 (SM3)** growing stock, whilst maintaining flock health, vigour and wellbeing.

Much of this technology is unique. It is important not to rely on previous experience of other ducks, but to apply **Cherry Valley** management to **Cherry Valley** ducks. Users must be aware of local legislation, which may influence the management practice that they choose to adopt. **Cherry Valley Farms** cannot accept any liability for the consequences of using this information as it does not control the detail of its application.

Performance Objectives

A high standard of management and husbandry is required to maintain growing ducks in good condition. Careful management of environmental conditions, especially during brooding and close attention to detail are needed to help the flocks reach their potential liveweight with the least amount of feed.

This management handbook should be used in conjunction with the 'Technical Data Sheet' relating to the specific breed being used.

The performance on actual flocks, grown and managed in UK conditions, is used to set the objectives given in the technical data sheet. Comparative data from around the world shows that the objectives can be achieved in other climates, with different feed and husbandry systems, providing the basic principles are accurately applied.

Technical Support

Additional information on specific issues is available from **Cherry Valley Farms'** Technical Department. The Technical Desk is maintained to provide a technical service to Cherry Valley customers worldwide and can be contacted as follows:

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SM3 General Information

The SM3 is a range of two commercial duck products that have different growing characteristics. They are all robust, fast growing, very feed efficient and with a high yield of saleable meat. The various variants of the breed are all designed for good carcass quality, but at different target liveweight and carcass weights. All Cherry Valley ducks benefit from continuous genetic gain in important performance traits that is guaranteed by the fully pedigreed selection program.

The SM3 Medium commercial duck matures quickly with respect to breast deposition and sternum calcification and is designed for slaughtering at ages of up to 42 days and carcass weight of approximately 2.075 kg.

The SM3 Heavy commercial duck will mature more slowly than the Medium and maintains an efficient feed conversion throughout the seventh week and beyond, to be ready for slaughter at about 49 days.

SM3 Commercial Duck Performance

The management principles for the SM3 breeds are common to all. Full details of the performance for each are given in the relevant performance objectives, but a summary at typical slaughter ages is given in the table below.

	Medium	Heavy
Age (days)	41	47
Liveweight (kg)	3.202	3.656
FCR	1.98	2.19
Carcass Weight (kg)	2.027	2.347
Carcass Yield (% liveweight)	63.3	64.2
Liveability (%)	97.5	97.0
Breast Meat (% EV)	16.5	17.6
Breast Fillet (% EV)	23.6	25.1
Leg Yield (% EV)	19.1	17.7
Skin & Fat (% EV)	30.1	29.5

SM3 Life Cycle

The life cycle of SM3 commercial stock can be divided into 3 basic stages:

Brooding / Nursery - 0 to 18 days
Growing - 18 days to slaughter
Slaughter - 42 to 56 days depending on specific market requirements

In some situations slaughter age may be as late as 70 days. Such a killing age is unusual and good results can be achieved with specific adjustments to flock management and nutrition.

In order to optimise performance of Cherry Valley growing ducks it is important that they are housed in suitable accommodation. To minimise the risk of the spread of disease, ducks are ideally accommodated on single age farms but with good management practices they can achieve excellent performance on multi-age sites. They can be accommodated in different houses according to their stage of development or in a single house throughout their life. The accommodation used for the growing ducks must be capable of providing a safe and comfortable environment.

The following fundamentals should be taken into consideration:-

Accommodation Organisation

To minimize the possibility of disease transmission, growing ducks should be located as separately as possible from other production areas. A minimum distance of 3 km is a reasonable guide. Within any farming operation the best biosecurity, the maximum level of isolation and disease protection is achieved when each farm accommodates only one age of duck. It is recognised that this is not always practical but with appropriate management, ducks can perform well on multi-age sites. Within a farm, houses can be used for different purposes; for example, nursery and finishing, with each stage being carried out in a different house or, the ducks can be accommodated in the same house from day-old to death.

Suitability of Accommodation

A wide variety of house designs are used to house ducks according to the differing climatic and hence environmental conditions worldwide. The housing used must be capable of accommodating the ducks comfortably, providing protection from predators, adverse weather conditions and contact with potential pathogens. It must provide adequate floor space and ventilation according to the number of ducks to be accommodated, as well as having the ability to control the day length and light intensity using an adjustable time clock and dimmer. It is important that all finished surfaces of the housing are appropriate to ensure effective terminal cleaning and disinfection.

Environmental Comfort

In situations of extreme or very variable ambient temperatures, specific ventilation requirements, with cooling facilities or 'combi-tunnel' ventilation, systems may be required to keep the ducks within their thermal comfort zone (8-23°C). Adequate heating is essential in the brooder areas of day-old to death housing and nursery buildings, but may not be needed in finishing houses except in the most severe winter conditions. Details are available from the Cherry Valley Technical Dept.

Water Availability and Floor Condition

Unless a particular location has very specific circumstances, concrete floors are fundamental to allow effective cleaning and disinfection and to maintain good litter condition. Being waterfowl, ducks enjoy access to water and will create very wet conditions if the water is not properly managed. To maintain good litter condition the drinkers will ideally be located (after the brooding period) on an elevated slatted drinker area, called a drinker island. A drinker island will allow wastewater from the drinkers to drain away instead of soaking into the litter and making it wet. To avoid foot problems, only good quality plastic slats should be used. Access to the drinker island should be by gently sloping ramps and the drinking island area should be bordered by a low solid fence in order to stop water being splashed from the drinkers on to the litter.

In littered houses, it is recommended that slatted floor areas should not exceed 30% of the total floor area.

Grower houses with fully slatted floors are becoming more common, especially in situations where litter is expensive or of poor quality. Ducks grow very well in such buildings and providing that the slats do not have rough edges, the risk of damaged feet is minimal. Experience shows that feed conversion may be improved and that the birds will be cleaner.

Maintenance

Routinely check and maintain the houses in order to avoid failures in the electrical or water supply that can limit growth rate and feed conversion, or in extreme cases lead to mortality. Check regularly for damage to drinker islands, access ramps and slats in order that any sharp edges are repaired quickly and before they cause injury to the duck's feet.

Good stockmanship is key to the success of any livestock business, but poultry farming is one of the most demanding. The job of the stockman is to take care of the animals in his charge. He or she must be conscientious, observant and committed to the small details of flock management. In case the full time stockman is not available, perhaps due to holiday or illness, a suitably qualified relief stockman should be provided. Ducks respond positively to routine. Make sure that the working day starts at the same time every day and that the tasks of feeding, inspection and bedding are always done in the same way. Any changes should be made slowly, one area at a time and in a calm and careful manner. Keep a daily record of when key tasks have been completed and any observations or changes that have been made to feed allowance, etc. and remedial action that has been taken.

Placement of day-olds

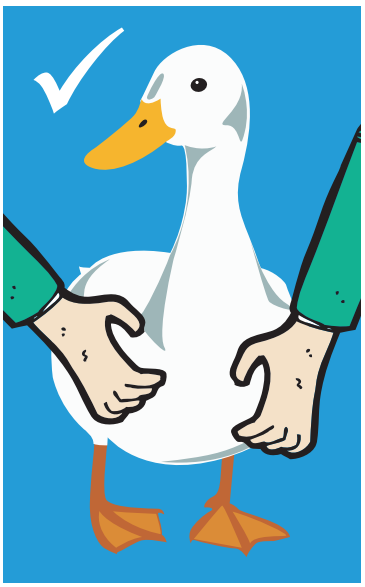
Day-old ducklings will usually arrive from the hatchery in reusable, plastic boxes.

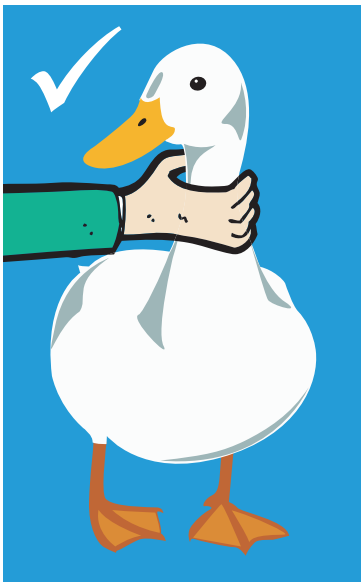
A Good Start

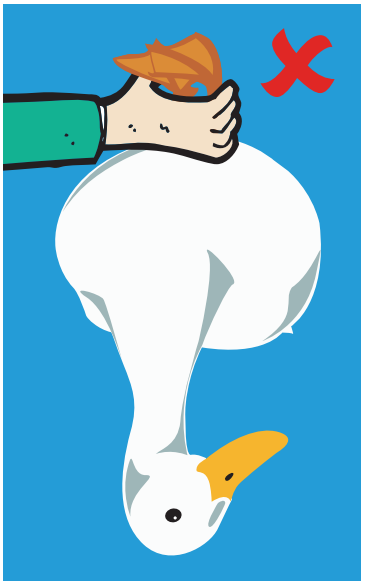
Day-old ducklings sometimes travel long distances and may arrive at their destination dehydrated. To avoid any long-term disease it is important for them to find water as soon as they have been tipped from the boxes. Supplementary feed and water, provided in the brooding area until the flock is 3-4 days old, will ensure that the ducklings eat and drink within 6 hours of placing. The investment of time and effort in the first days will pay dividends when the flock comes to slaughter. Every additional gram of bodyweight that the birds gain at 7 days will increase slaughter weight by 8-10 grams.

Catching and Handling

Catching ducks for routine weighing and sorting requires the use of a catching frame. Frames can be made from plastic or wire mesh, fixed to three timber frame sections 2.5 m x 0.7 m connected with 2 sets of hinges. They need to provide a flexible, easy to move pen in which the ducks can be held tightly together. Carry day-olds either by their necks if holding 3 or 4 ducks, or by gently gripping their whole body if handling individuals. Young and adult ducks can be lifted by the neck and held by the wings, taking care to support the body.







- Do not catch, lift or hold the ducks by their legs, which are easily damaged.
- During the rearing period always carry out any jobs involving handling ducks before feeding.
- In hot climates, carry out tasks that involve handling or moving ducks during the coolest periods of the day.
- Use a raised area to support the duck when lowering it back onto the floor after catching.

Mortality and Culls

Liveability is higher for ducks than for most other poultry, but it is normal for a small number of individuals to develop some physical injury or other abnormality that results in death or requires culling. All losses must be recorded and the size of the flock adjusted accordingly. If the losses from mortality and culling are consistently above 0.1% per day, the reason should be investigated to establish the cause.

Pay special attention to damage to, or localized infection in, the ducks' feet and legs. This can be an indicator of poor quality or badly maintained drinker islands, outside runs and litter condition. Ducks that are limping will lose condition fast and ultimately require culling.

The use of hospital pens is not recommended. Experience shows that ducks placed in such pens rarely recover and they provide a reservoir of disease that is a risk to the rest of the flock. Cull sick ducks as soon as possible and record their condition or injury.

Mortality and culling levels must be reviewed every day. Adjust the feeding level if several ducks are removed from a rearing pen at the same time.

Uniformity & Selection

A uniform flock is easy to manage and will produce the best and most consistent results. The work needed to produce a uniform flock begins when the chicks arrive and the first job is to make sure that they find feed and water quickly. Key points for good uniformity include:

- Maintain high standards of cleaning and disinfection to keep the challenge from infectious disease at a low level.
- Ducklings will not grow if they have insufficient access to water. Make sure that the flow rate of water through the drinking system is sufficient to match the flock's peak demand.
- Good feed distribution is essential – each individual duck must get an equal feeding opportunity every day. Take care to ensure that the feeding system can match the demand of the flock and that feeder pans are kept equally full.
- Use good quality litter material. Ducks are particularly susceptible to aspergillosis, so do not use litter material that may be contaminated.
- Cull the flock properly and do not send weak or sick individuals to the slaughterhouse.

Ducks are very hardy with a strong immune system and are resistant to many of the diseases that affect other types of poultry. They are most susceptible to disease when they are young (the first 35 days). Maximum effort must be made to protect them through this period to help ensure an ongoing disease free status and hence subsequently good production performance.

The Disease Challenge

Maintaining biosecurity in Grower farms is a challenge due to the speed of turnround, the number of animals on the site and the pressure of vehicle movements delivering feed and taking the birds to the slaughterhouse. The cost of medication on grower farms can be very high, so effective cleaning and disinfection is essential.

There are 3 major diseases of ducks that can be effectively controlled by vaccination; they are, Duck Viral Hepatitis (DVH), Duck Viral Enteritis (DVE) and Pasteurella Multocida (Cholera). If any of these diseases is endemic in the area where the stock is accommodated then a suitable vaccination program should be applied. Duck Viral Hepatitis strikes ducks between 0-5 weeks, but ducklings originating from properly vaccinated parents will normally carry sufficient maternal resistance to a local DVH challenge.

Other important diseases of ducks associated with commercial duck growing enterprises are Pasteurella Reimerella (Anatipestifer) and E. Coli. The incidence of both conditions will be markedly reduced in 'All-In-All-Out' housing systems with good cleaning and disinfection. Vaccination and medication can reduced the severity of the disease, but good biosecurity is a more effective treatment for both conditions.

Additional details are given in the Cherry Valley 'Biosecurity and Health Handbook' and are available from the Cherry Valley Technical Desk.

House Cleaning

At least 1 week before the ducks arrive on a farm the house in which they are to be accommodated and the equipment which they will use should have been thoroughly washed, disinfected, and, if possible, fumigated. Ideally the houses and equipment should be swabbed and tested between washing and disinfection to provide a check of the effectiveness of the cleaning process. Full details of house cleaning procedures can be provided by the Technical Dept. The houses and equipment must be dry before the ducks arrive. It is very important to ensure that all the water lines, drinking and feeding equipment are flushed and rinsed with clean water after disinfectant chemicals have been applied in order to avoid inadvertent poisoning.

Isolation

Allow only essential visitors. Any visitors who must enter the house should not have been in contact with other live ducks for 24 hours and must be provided with clean protective clothing and footwear which is dedicated to the facility. Personnel who visit, or who are working with young ducks, must not have any contact with other poultry, and especially other ducks, either at work or at home.

Litter

Small quantities of clean, dry litter should be spread on the floor at regular intervals in order to keep the ducks clean and dry - daily if necessary. Although ducks are waterfowl they do not like to be kept in a wet environment and will quickly lose condition.

Ventilation

Ventilation is a vital factor in keeping the environment around the ducks clean. Good ventilation removes dust, ammonia and foul air, as well as reducing relative humidity and litter moisture. Regular adjustment of ventilation

equipment to keep the house environment fresh and clean is therefore very important. Ammonia levels should be kept below 10 ppm. Measurements can be made using a small manual gas detector. Detailed ventilation recommendations can be obtained from the Cherry Valley Technical Desk.

Vaccinations

Vaccination programmes vary according to the disease situation in different countries and the availability of vaccines. Local veterinary advice should be obtained when developing a vaccination programme. All vaccines should be obtained from a reputable vaccine manufacturer and applied under veterinary advice. Parent ducks in different countries will be subject to different vaccination programmes and therefore the ducklings that they produce will have different levels of parental immunity, the Cherry Valley Technical Desk will advise on this.

Medication

Medication should only be applied to ducks in relation to a specific problem and under veterinary advice. Local legislation needs to be considered when using medication, in particular antibiotics. Conditions such as coccidiosis or intestinal worms do not normally affect ducks so no routine medication need be applied.

Vitamin, mineral and electrolyte preparations may be used and can be beneficial to ducks during periods of stress; for example prior to and following handling and movement. Under normal management circumstances, it should not be necessary to use them on an ongoing basis.

General Management

- Keep the houses and surrounding areas clean, tidy and free of vegetation.
- Maintain an effective and ongoing vermin control programme.
- Keep wild birds out of the houses.
- Use good quality clean, mould free litter and feed materials.
- Provide wheel dips, foot dips, showering and changing facilities and clean protective clothing on entry.
- Disinfect and clean equipment to ensure that the hygiene programme is properly supported.
- Provide training, and display signs and notice boards, to ensure that all personnel are fully aware of, and understand the potential disease risks.

Site Health Plans

A 'Site Health Plan' should be prepared for each site. These plans should include:

- Site address and contact details
- Disease alert procedures
- Biosecurity procedures
- Flock monitoring procedures
- Flock vaccination programmes
- Farm sanitation procedures
- Egg Handling and washing procedures
- Medication usage

Floor Space

Stocking density has a fundamental effect on the output of duck growing farms and determines equipment requirements, ventilation rate and litter condition, in addition to many other aspects of production. Business managers will be keen to maximise stocking density to achieve higher output from the available floor area. Worldwide, customers grow ducks at densities that range from 1 bird/m^2 in unsophisticated housing to 10 birds/m^2 or above in houses equipped with the most modern systems.

The Cherry Valley straw based system is stocked at 5-6 birds/m^2, which gives about 25 kg liveweight/m^2 at slaughter. Studies carried out in similar conditions show the effect of increasing density from 4 to 10 birds/m^2 on growth between 17 and 46 days. Figure below illustrates not only how growth may be limited as stocking density increases, but also how output (kg liveweight/m^2) increases. The calculation does not take, however, account of the increased risk of higher losses due to disease and limitations on product quality that may reduce the throughput of the slaughterhouse.

The amount of space provided for each duck at each stage of its life will have a significant effect agricultural performance, growth rate and feed conversion.

Day-old to 7 Days of Age

Either 'Spot Brooding', which has a localised heat source allowing duckling access to cooler areas of the house or 'Whole House Brooding' can be used. Please refer to the section of this manual on 'Heating' for further reference.

With Spot Brooding, on arrival, the ducks should be placed in an elliptical brooder surround in order to keep them close to the sources of heat, water and feed. Surrounds normally start with an average dimension of 4 x 7m and are constructed of sections of flexible board 0.5m high, each surround will hold 1,000 ducklings. From the end of the 2nd day the brooder surround should be made slightly larger each day. On the 7th day the brooder circle can be removed allowing the ducks access to the whole pen area.

With 'Whole House Brooding', surrounds are not normally used and the duckling are allowed free access to larger areas of the house.

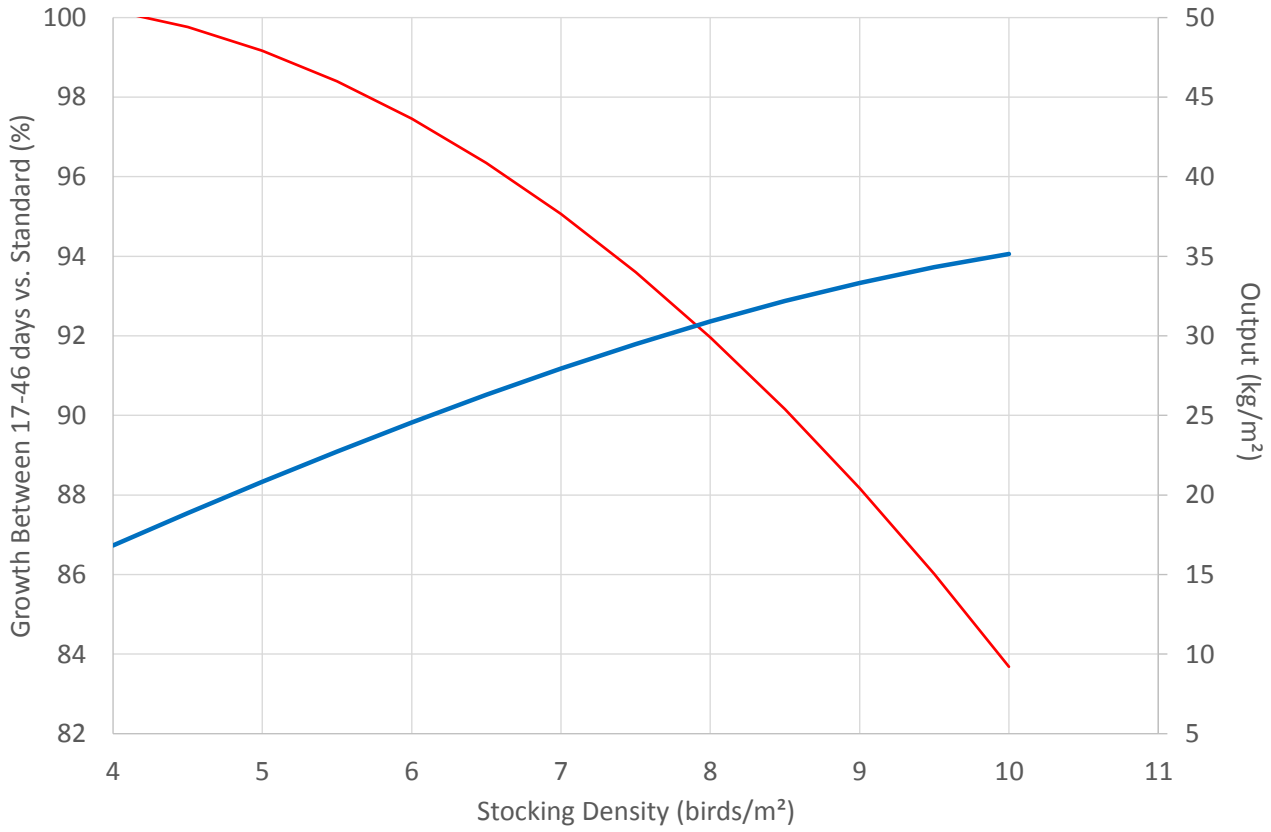
7 Days to 18 Days of Age

Provide a minimum space allowance of 0.1 m^2 per duck for the remainder of the nursery period.

Semi-Intensive Accommodation

In situations where a combination of housing and outside run area is used, then the inside space allowance can be reduced to 0.1m^2 per duck, together with an allowance of 0.2 m^2 per duck of outside run area.

The Effect of Stocking Density on Growth (index 100) and Output (kg/m²)



Available Floor Space

It is important to remember that calculations on house area are normally based on the assumption that the whole floor area of the house is available to the ducks. Materials such as litter and feed or equipment should not be stored on the floor of the house taking up space which has been allocated as part of the floor space for the ducks. The house design and equipment layout should ensure that all the floor space is accessible and suitable for the ducks.

As with other types of poultry, young ducks are homoeothermic (having a body temperature that is constant and largely independent of the temperature of its surroundings), but they must be kept warm for the first few days. The level of heating and duration of the brooding (heating) period will depend on the ambient temperature, which can be affected by the seasonal changes and hence where the farm is located. Heating equipment provides either Spot or Whole House brooding and both systems can provide good conditions for ducks. The most commonly used is Spot Brooding, because it provides the opportunity for the ducks to stay in their temperature comfort zone by moving either closer to, or further away from the heat source. Space heating does not allow this behaviour, but it may be more effective in cold climates.

Duck Comfort

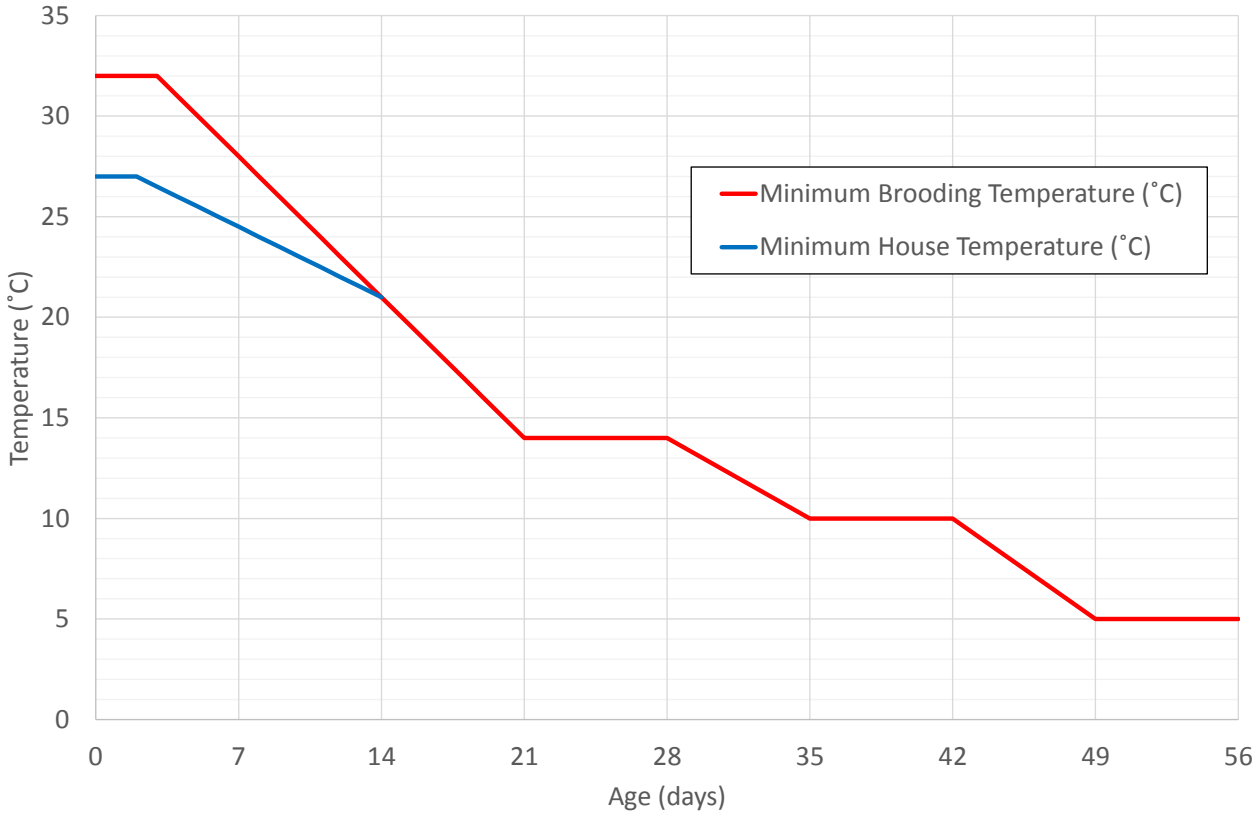
In hot, tropical climates, heat will normally be needed for only 7 days, whereas in cold, temperate climates the brooding period may extend to 28 days. Duck behaviour will tell stockmen whether the temperature is too hot or too cold. When the temperature is correct the ducks will be active, feeding and drinking and evenly spread around the pen. Although ducks are gregarious animals and like to sit in groups, experienced stockmen will be able to distinguish typical hot and cold behaviours.

It is important to spend time watching the ducks as a flock kept at the correct temperature will have periods when many of the ducks are resting. Stockmen should allow themselves time to make an assessment and if adjustments are made it is important to watch the response of the ducks. The use of thermometers to measure the temperature of the air and the floor is a valuable aid to management, but the ducks will tell you whether it is correct.

Once the ducklings are fully feathered (older than 28 days) no further heat will be required unless house temperatures drop below 5°C. At temperatures below 1°C the water supply may freeze which will dramatically affect the growth rate and feed conversion of the flock. Houses in cold climates may need to be fitted with a background heating system, which will help to reduce feed consumption, maintain production and improve litter condition. Houses in hot climates will benefit from the installation of an evaporative cooling system.

Hot Behaviour	Cold Behaviour
Sit away from the heat, often close to the edge of the pen	Sit close to the heat source and huddle together
Quiet, little movement among the flock	Quiet, although sometimes there may be distress calls, little movement among the flock
Adopt a 'Hot' posture, sitting or lying with wings and/or feet outstretched	Adopt a 'Cold' posture to conserve heat
Panting in more than 75% of the ducks	No panting
Low feed consumption	Low water consumption
Wet backs from trying to get into the water	

Environmental Temperature for Ducks



Equipment

In hot, tropical regions, the heat from four ordinary 60 Watt incandescent light bulbs mounted on a wooden frame and suspended half a metre from the floor in the centre of the brooding area is often sufficient. The target temperature when the ducklings are placed is 32°C, so it is easy to make the ducklings too hot in these conditions. It is not necessary to switch the brooders on if the ducklings are comfortable, but even in hot climates some extra heat may be needed during the night time.

In cold climates, especially during the winter, the capacity of the heating system is an important consideration. If the ambient air is close to zero Celsius, it will be necessary for the system to have sufficient output to raise the temperature in the brooding area by at least 30°C; while maintaining the minimum ventilation rate, keeping the whole structure warm and preventing the water from freezing. In these conditions, a combination of hot air heaters, to maintain the background temperature and canopy brooders is the best option.

In temperate climates, use gas or electric brooders with a heat output of around 5,000 Kcal. A 0.5m high, 4 x 7m, elliptical, solid brooder surround with two brooders is used to protect the ducklings from

draughts and keep them within a pre-defined area close to the heat source, food and water during the first few days. It is important however that the ducks have the opportunity to move away from the heat source. One surround with 2 brooders per 1,000 growing ducks is recommended.

Procedure

Set up the required number of brooder surrounds and brooders in the brooding area. Locate thermometers at various points in the house and place one on the litter directly below each brooder. It is important to stabilize a temperature of 35°C directly under brooders before the ducklings arrive on the farm. Depending upon climate conditions, it may be necessary to have the brooders operating up to 48 hours before they arrive to ensure that the brooding area and house floor is up to temperature. The temperature profile illustrated in the graph is suitable for most conditions, but it is a guide and temperature must be adjusted according to the behaviour of the ducklings.

In very cold climates it may be necessary to provide some additional space heating to maintain room temperature as described.

Provide adequate minimum ventilation during brooding, especially when gas or oil fired heaters are used. The carbon monoxide that they produce is poisonous to both staff and ducks. Carbon monoxide levels can be checked using a small manual gas detector and further details are available from the Technical Desk.

Use the minimum amount of brooding heat:

- Provide the ducklings with plenty of space to move away from the heat.
- Remember to make allowances for ambient temperatures falling at night.

Check thermometers on a regular basis.

In order to reduce the volume of air heated for brooding, a section of the house can be partitioned by means using a plastic curtain. Depending on the design of the house and the climate, however, it may be necessary to provide background heating in the empty area. It is important that any partitioned area has adequate ventilation.

The ventilation system must be capable of providing sufficient fresh air to maintain air quality, to replenish the oxygen used by the birds and to remove noxious gasses and excess humidity; it must keep the ducks warm in cold weather and cool when it is hot. Temperature should be maintained with the ducks' thermo-neutral zone, which is between 15°C and 25°C for post-brooding birds, with ideal humidity in the range of 50-70% RH.

The following table shows the tolerable limits for air quality in duck houses. Exceeding these limits increases the risk, in particular, of damage to the ducks' respiratory system that may lead to ascites or other cardio vascular disease.

Temperature	15°C and 25°C post brooding
Humidity	50-70% Relative Humidity
Oxygen	More than 19%
Carbon Dioxide	Less than 0.3%
Carbon Monoxide	Less than 10 ppm
Ammonia	Less than 10 ppm
Inspirable Dust	Less than 3.4 mg/m^3

The amount of air needed to maintain these limits, the minimum ventilation rate, can be estimated by reference to the ducks' bodyweight. 0.7 m^3 of air per hour per kilogram of bodyweight is a reasonable approximation. The minimum ventilation rate must be increased as the ducks grow and if the air quality deteriorates. The following table indicates the amount of air needed by ducks at different bodyweight (based on a flock of 5,000 as-hatched growing ducks).

The amount of air needed to prevent heat stress in hot weather is the maximum ventilation rate, which is determined by the heat output of the birds and an assessment of the risk of heat stress. In temperate conditions, a ventilation rate 10 times the minimum rate will provide acceptable control of heat stress. In the hot conditions of the tropics, the multiplication factor may need to be 20 times the minimum ventilation rate.

- Minimum Ventilation Rate - 0.7 m^3 of air per hour per kilogram of bodyweight
- Maximum Ventilation Rate, Temperate Climate – 7.0 m^3 of air per hour per kilogram of bodyweight
- Maximum Ventilation Rate, Tropical Climate – 14.0 m^3 of air per hour per kilogram of bodyweight

There are many different concepts of ventilation design for poultry houses, ranging from low-tech, naturally ventilated buildings to sophisticated, controlled environment systems. Any system should be capable of delivering the amounts of air described above and maintaining the quality of the environment. The following principles for air distribution apply to all systems.

- Airspeed at bird level should be less than 1 m/s for day-old ducklings and during brooding.
- Cold air must not be allowed to fall on the floor.
- Increasing airspeed up to 3.0 m/s for birds in hot conditions will help to control heat stress.

Tunnel ventilation and evaporative cooling systems are very effective tools for the control of heat stress in hot climates. Advice concerning the design and management of such systems are available from the Cherry Valley Technical Desk.

Age	Average Bodyweight (males and females)	Minimum Ventilation Requirement (m^3 of air/kg/hr for 5,000 ducks, as-hatched)
Week 1	210 g	735
Week 2	680 g	2,380
Week 3	1.433 kg	5,016
Week 4	2.284 kg	7,994
Week 5	3.055 kg	10,693
Week 6	3.662 kg	12,817
Week 7	4.100 kg	14,350

Longer day lengths provide more feeding time and tend to give better growth and feed conversion, but a period of darkness in every 24 hours may promote better leg health and protect ducks against metabolic disease.

Lighting Programme

- Day length - A long day length is important in the early stages to ensure that all ducks find feed and water quickly; it will reduce early losses and promote growth and uniformity.

- Light Intensity – Provide a minimum light intensity of 20 lux throughout the growing period. Between day-old to 7 days the light intensity over the feeding and drinking area should be increased (up to 40 lux) to ensure that all the ducklings eat and drink. It may be necessary to reduce intensity during the later stages to control activity.

Age	Hours of Light	Intensity of Light
Day 1	23	20 lux
Day 2	23	20 lux
Day 3	23	20 lux
Day 4	22	20 lux
Day 5	21	20 lux
Day 6	20	20 lux
Day 7	19	20 lux
Day 8	18	20 lux
Day 9	18	20 lux

Equipment

A light intensity of 20 lux can usually be achieved by an allocation of 7 watts/m^2 of conventional incandescent light bulbs.

Lighting points should be distributed within the building to provide good illumination, especially over feed and water.

The lighting system should include a 24 hour programmable clock and a dimmer to control, respectively, day length and light intensity.

Fluorescent and LED sources are also suitable for lighting in duck houses. The increased output from these new lighting systems means that less than 25% of the standard wattage is required per square metre, with a corresponding saving in running costs. Light spectrum and the uniformity of light intensity are important considerations, so the light source must be capable of providing an environment that does not have bright or dark spots.

Ducks should be provided with an easily accessible supply of clean drinking water. Being water fowl, ducks tend to use significant amounts of water, much of which is not drunk. The allowances made for the supply of water are therefore very important and should take account of a total usage of between 1.5 litres per duck per day in cool climates and up to 5 litres per duck per day in hot climates. Water meters should be installed in all houses and daily water usage recorded.

There are various types of drinkers and systems that can be used for ducks and each drinker type and system have different levels of water usage. The main systems used are:

Trough Drinkers

- One 2 m trough for 250 ducks, or at least 13mm of trough space per duck (taking account of access to both sides where applicable).

Automatic Bell Drinkers (45 cm diameter)

- 0 days to slaughter - 1 / 100 ducks

Nipple Drinkers (high flow rate)

- 0 days to slaughter - 10 ducks / nipple

Swimming channels are sometimes made available from which the ducks will also drink.

In order to avoid wastage and poor litter conditions, drinkers should be checked twice per day to ensure they are working correctly and not leaking. Drinkers should be cleaned daily.

With nipple drinker systems it is important to avoid the build-up of biofilm within the nipple lines. Biofilm contains various pathogens that can affect the ducks. A routing sanitation programme should be implemented, using disinfectants that will effectively penetrate the biofilm and control any pathogens present.

Day-old to 7 Days of Age

During the initial days of brooding the recommended minimum allowances for drinking spare are: for bell drinkers, 150 birds per drinker of 45 cm diameter (approximately 9.5 mm per duckling); for nipple drinkers, 10 ducklings per nipple. For the first 2 days, water plus a vitamin / mineral preparation (from a reputable manufacturer) can be provided in chick fount drinkers in order to help the flock get off to a good start. Provide Chick founts at the rate of approximately 1 per 100 ducklings; they can normally be withdrawn after 48 hours.

7 Days to 18 Days of Age

Move the drinkers to one side of the pen, or onto the drinker island if one is provided. It is important that the drinkers are moved a short distance at a time, thereby allowing the ducks time to get used to the new position before moving them once more. Take especial care when moving drinkers onto a raised drinker island, it may take the flock a little longer to get used to using the ramps.

18 Days to slaughter

Clean all drinkers at least once each day and check that they are working correctly twice per day. Ensure that drinkers are always positioned so that the ducks have access from all sides.

Swimming Channels

Where the ducks have access to a swimming channel either: ensure that there is a steady flow of water through the channel at all times, in which case empty and clean at least once each week; or if there is no water flow, empty and clean the channels each day.

Various types of feeding equipment are suitable for growing ducks.

Supplementary Feeding

Supplementary feeding is recommended for ducklings during at least the first 48 hours after placing, encouraging feed intake at this stage will promote growth and uniformity. Supplementary feed can be given on paper or in trays, make sure that it is evenly spread and kept fresh.

Tube Feeders

- Day-old to 14 days of age - Provide 1 tube feeder (0.95m feed bowl circumference) per 100 ducks (9.5mm of feeding space per duck) during the nursery period. Ensure that feed is always available.
- 14 days to slaughter – reduce the number of ducks to 60 birds per feeder (approximately 16 mm feeding space per bird).

Trough Feeders

- Day-old to 14 days of age – provide a minimum of 9.5 mm of feeding space per duckling during the nursery period.
- 14 days to slaughter – provide one anti-waste feed hopper 2.0 m long per 250 ducks (approximately 16 mm feeding space per bird). Details of the Cherry Valley anti-waste feeder are available from the Technical Desk.

Automatic Pan Feeders

- Day-old to 14 days – use a maximum of 80 ducklings per feeder pan, depending on house layout.
- 14 days to slaughter – provide at least one feeder pan for 40 ducks (approximately 25 mm feeder space per duck).

Feed Delivery Systems

Feed may be delivered to the growing farm in bags or bulk, but it must be kept fresh and protected from the environment and infestation by vermin. Take care to maintain pellet quality, do not use systems that result in significant pellet breakdown.

6 Hours Prior to Slaughter

Remove access to feed six hours before the ducks are due for slaughter.

Between Flocks

Thoroughly clean feeding equipment between flocks.

Any feed remaining in the feeders should be destroyed. Any feed remaining in the silo or other feed stock should be transferred immediately to a neighbouring flock. Do not hold feed on the farm between flocks.

Cherry Valley SM3 commercial progeny grow and gain weight rapidly and efficiently. The feed provided for the ducks is one of the most important factors in ensuring that they achieve their potential.

Feed Types

All feed must be of good quality. A separate handbook 'Cherry Valley SM3 Nutrition' is available from the Technical Desk which provides advice and feed specifications.

The number of feeds required to maximise efficiency will depend upon the scale of the growing operation.

Large Scale Production

Starter 1 = 0 to 9 days (a consumption of approximately 500 g/duck)
Starter 2 = 10 days to 16 days
Grower = 17 days to 42 days
Finisher = 43 days to slaughter

The value of a Finisher may be limited if the birds are slaughtered at less than 45 days. In such circumstances the Grower formulation may be suitable from 17 days to slaughter.

Small Scale Production

Starter 1 = 0 to 14 days
Grower = 15 days to slaughter

Changing the feed specification regularly during the growing period allows the nutrient intake to be matched more closely to the ducks' requirements. Ducks fed in this way will waste less nutrient and achieve better growth and feed conversion. Frequent changes of formulation will, however, incur the additional cost of maintaining and managing additional feeds and are only cost effective in large scale operations. A simple, 2 stage program will be most suitable for a small scale producer.

All duck feeds should be pelleted and good pellet quality is important. If pelleted feed is not available commercial ducks can be fed with mash feed, but this is not recommended as feed wastage will be high and feed conversion will be poorer than expected.

Accurate and complete record keeping is key to successful flock management. It is important to understand how flock performance compares with Key Performance Indicators (KPI) and problem solving is impossible without good information.

Growing Records

The key information is the average as-hatched duck bodyweight, feeding levels and mortality and culls. Feeding, mortality and culling data must be recorded every day and the ducks should be weighed every week.

Recording Systems

Assessing the performance of growing stock begins on the farms. Record cards located in each pen or house are the means of collecting the data and allow stockmen to make an immediate assessment of a flock's progress. Graphing the performance data allows easy review of historical performance and an outline prediction of what may happen to performance in the future. Computer based recording systems bring an added level of sophistication and allow quick and easy compilation of results. The Cherry Valley Technical Desk can provide a range of pen record cards and standard graphs that will provide the basic requirements.

It is essential that everyone in any organisation has the same understanding of what should be recorded for each item.

Grower Management Summary

Topic	Brooding/Nursery	Finishing
ACCOMMODATION	Good isolation, fresh clean environment, avoid drafts.	Protect from adverse weather conditions, good environmental comfort with sufficient ventilation at all times.
FLOOR SPACE	Up to 10 ducks per m^2 depending on management system.	Maximum 0.2 m^2/duck on straw-based systems from 18 days. Up to 10 birds per m^2 depending on housing design.
HEAT	35°C directly under the brooder and minimum of 27°C background temperature at day-old, reducing to ambient within 28 days.	Only provide heat if the house temperature falls below 5°C.
VENTILATION	Ensure environment clean and fresh, without draughts.	Provide plenty of fresh air.
DRINKING EQUIPMENT	1 bell drinker to 100 ducks to 14 days (9.5 mm per duck) plus 1 chick fount per 100 ducks. 10 birds per nipple.	For bell and trough drinkers provide 16 mm/duck drinking space. 10 birds per nipple.
FEEDING EQUIPMENT	Supplementary feeding at day-old. 1 tube feeder per 100 ducks to 14 days (9.5 mm per duck) then change gradually to one 2.0 m hopper feeder per 250 ducks (16 mm per duck).	For trough drinkers provide 16 mm/duck feeding space. 40 birds per feeder pan.
FEED	Starter 1: 0 to 9 days Starter 2: 10 to 17 days	Grower: 18 to 42 days Finisher: 43 days to slaughter.
LIGHT	23 hours of bright light reducing to 18 hours and 20 lux by 1 week old.	18 hours and 20 lux.
LITTER	Spread clean litter as needed.	Spread clean litter daily to maintain litter conditions.
RECORDS	Daily: mortality, culls, feed.	Daily: mortality, culls, feed Weekly: liveweight.
GENERAL	Thoroughly clean each house before housing the ducks. Investigate and arrange any treatments before the chicks arrive.	Immediately investigate the cause of any depression of performance or increase in mortality.

Age	
Day-old	Ducklings are considered to be day-old when they arrive on the rearing farm. This means that at the time of arrival they will be zero days old, the first day, or part day will be Production Day One and they will be one day old on the following morning.
Production Week 1	Many companies have accounting weeks that may run, for example, from Monday to Sunday (7 days). To avoid confusion it is recommended that the fraction of the first week following delivery be regarded as Production Week Zero. In this way the ducklings will be 7 days (1 week) old during Production Week 1.
Point of Lay (POL)	The flock reaches Point-of-Lay when it has finished rearing and starts production. At this time the cost of rearing will be capitalised, to be repaid from egg production. At Cherry Valley the flock is regarded as Point-of-Lay when it reaches 168 days, 24 weeks of age.
Hatch	
Fertility	The percentage of fertile eggs produced by a parent flock, recorded by careful examination of clear eggs.
Hatch of Set (HOS)	The number of first quality ducklings hatched as a percentage of the number of eggs placed in the incubator.
Hatch of Transfer (HOT)	The number of first quality ducklings hatched as a percentage of the number of eggs transferred from the setter to the hatcher.
Hatch of Fertile (HOF)	The number of first quality ducklings hatched as a percentage of the number of eggs remaining after candling (excluding incubator clears).
Setting	Loading eggs into the setter.
Candling	Examination of the eggs to remove clear eggs, normally done around 10 days of age. The eggs removed are often referred to as 'Infertile', but should be remembered that these eggs may include fertile eggs in which embryo death occurred in the very early stages of incubation.
Transfer	The process of transferring eggs from the setter to the hatcher, normally done at 24 days of incubation.
Take-off	The removal of hatched ducklings from the hatcher, grading and packing them in boxes ready for dispatch.
Setter	Incubator.
Growing	
Feed Conversion Ratio (FCR)	The amount of feed consumed to produce 1 kg of bodyweight.
Average Daily Gain (ADG)	The amount of weight gained per day by a duck over a given period of time.

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