



Cobb500™ Broiler

Broiler Management leaflet

2011

The Cobb 500 Broiler

The Cobb 500 Broiler provides with its genetic potential the possibility to achieve maximum growth rates as well as improved feed conversion.

To fully utilise this potential birds should be under control from the first day of their life. Therefore attention should be paid to different management factors.

Please follow the laws and regulations of your country.

The table on the right shows our weight recommendation for the healthy growth of the Cobb 500 broiler. Therefore it is important to distinguish between broilers with a heavy live weight at slaughter and broilers with a light weight.

This growth development together with an adjusted feeding and lighting programme forms the basis for optimal animal health, production costs and feed conversion.

Day	Weight in g for heavy broilers	Weight in g for light broilers
0	41	41
7	167	177
14	424	453
21	837	895
28	1348	1428
35	1910	2061
42	2550	
49	3177	

This booklet should be used as a guide in order to give you an orientation on how to manage the Cobb broiler. To optimise your results and the economic performance do not hesitate to ask your local Cobb technical representative.

Depending on the environment, the used feeding programme and the management programme broiler performance can vary tremendously. Therefore it is difficult to publish only one table or list with data of weight and performance which takes account of each individual situation.

Broilers are fast runners - sprinters need a good start

The starting period (brooding) can be described as the critical phase in the life of a broiler. If the chick misses a part of its development in this period, it will have a strong negative effect on the final flock performance.

Already at the start you can by avoidance of stress provide a good vascular structure at the yolk sac, which helps the absorption of antibodies and nutrients.

Avoiding of stress is furthermore a necessary condition for a normal water and nutrients intake of chicks.

At the same time the resistance against infections and the development of the organs is supported.

These conditions are essential for a better feed conversion, daily gain and even uniformity of a flock.

In the following table you find some key points which are based on our own practical farm experiences which have a great influence on broiler performance

A good chick start

- Clean and evenly spread litter with adequate temperature
- sufficient and uniform lighting
- enough feed on paper and in the feeding pans, 50 - 65g feed per bird on paper, paper should cover 25% of the floor, full pans with easily accessible feed
- starter feed with a crumbly texture
In the following morning after placement 95% of the chickens should have a full crop, which feels not too hard and not too soft. If this is confirmed, the chicks have successfully found the feed and water.
- drinkers at the correct height (at placement at eye level - afterwards birds should drink with a stretched neck), adjust water pressure at placement so that chicks can see a drop of water on the nipple, chicks should find water without any effort
- small distances between feed and water
- minimum ventilation before and at placement using slow air speeds over birds
- preheat the house at correct temperature
- place chicks without any delay, without any additional stress and with enough personnel

Compensatory growth

As mentioned above the brooding period plays a crucial role for the optimal and healthy development of the chicks. It is advisable to influence the speed of growth (growth curve). In the appendix a table describes the optimal growth pattern.

Compensatory growth means that the growth curve should be flatter during the first 3 weeks. The birds grow slower than they are able to in the first three weeks.

Why compensatory growth?

1. Skeleton and organs have sufficient time to develop naturally and strongly. This is a condition for effective meat production and creates metabolism with a high efficiency.
2. The limbs develop a capability of bearing a load. The bird will have no problems with equilibrium and locomotion.
3. The metabolism develops according to the need of the final body weight. Losses which are caused by metabolic failures or rejects by ascites at slaughtering will be minimized or prevented.
4. The genetic potential of COBB 500 after day 21 can be fully utilised. This means that during this period a healthy growth can be produced with an inexpensive feed compared to high density rations. This is the basis of a low feed conversion.

Aids for this kind of broiler growing are:

- 4-phase feeding with limited feed quantities according to bird's need
- Flexible and correct lighting programme
- Feed change adapted to the need of the bird
- Feeding of whole wheat on top of the feed.

With a correct growth curve the bird's health and liveability is improved, the uniformity is better and also the feed conversion will be positively influenced.

Conclusion - the economical result will be more positive due to a correctly controlled growth.

Climate

From the day of placement until the day of processing the temperature plays an important part in the bird's life.

Due to the fact that a broiler chicken cannot regulate its own body temperature during the first week of its life, the temperature control, especially in the beginning of brooding, is very important.

Temperature

The normal body temperature of broiler chickens range between 39.4°C and 41.1°C.

In a too cool environment a chicken has to use a part of its consumed feed to stabilize its body temperature. In other words: in this case a part of the feed is burned to keep a correct body temperature and this feed quantity cannot be used for growing.

Adverse environment means stress for the birds, which needs to be prevented.

Therefore it is important to take note of the points below:

Preparation for chick arrival

- litter temperature at placement time 30°C (max. 32°C)
- ideal relative humidity 50 - 70%
- preheat the house 48 - 72 hours before placement (warm up the floor sufficiently)
- minimum ventilation is on (oxygen and carbon dioxide level is under control)
- thermometer is checked (the displayed value correlates with the real temperature in the house - calibration if necessary)
- temperature sensor at chick level (if connected to the drinker line, it is always placed at the right height)
- creation of a thermo neutral zone

All these factors, namely temperature, the relative humidity and air speed, play a major roll in achieving an ideal climate in the house. These factors determine the „effective temperature“ (the temperature which we, or the birds, really feel).

Thermo neutral zone

describes the optimal environment temperature. Within this temperature range the animal needs no additional energy to regulate or stabilize its body temperature.

The accurate monitoring of the chicks distribution and behaviour is an essential condition for optimizing the environmental temperature. Too high temperature makes the chicks inactive and creates problems later on. Heart attacks, ascites and a drop in feed conversion can be a result from too high early brooding temperatures.

Never keep birds too warm, avoid panting and spread wings

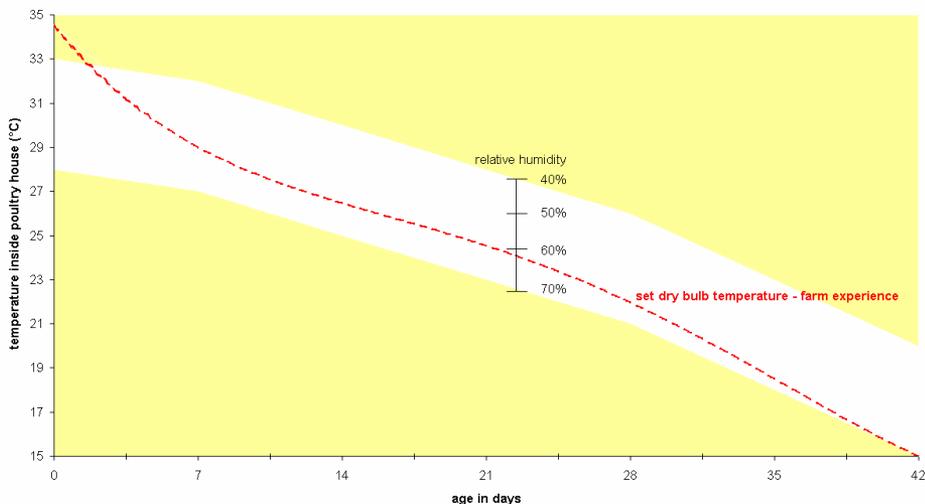
Chick behaviour and chick body temperature are the best indicators of a correct brooder temperature and the correct preparation for chick arrival.

Body temperature can be easily measured with a children's fever thermometer in the chick's cloaca.

A very quick impression of the correct temperature can be achieved by checking the feet of the chicks. Just press the feet against your neck or cheek and you will feel the temperature. If feet feel too cold, it means that the floor and / or air temperature is / are too low. Of course such a quick check can not replace the required and accurate temperature measurements.



Suggested practical temperature graph (dependent on atmospheric humidity)



Also later on the body temperature regulation plays an important role, especially in terms of daily weight gain and feed conversion. In case the chicken has either to produce heat or has to cool down its body, it has always to use energy from the feed. This energy is not available for meat production. An accurate observation of the chicks' distribution, activity and vitality as well as the control of body temperature are essential for an accurate temperature management. Control of house temperature means at the same time measuring the relative humidity and air speed!

The following table shows the relation between relative humidity, air speed and effective temperature.

house temperature	relative humidity	effective temperature					
		0 m/s	0,5 m/s	1,1 m/s	1,5 m/s	2.0 m/s	2,5 m/s
C°	%						
35	50	35	32	27	24	23	22
35	70	38	35	31	29	26	24
32	50	32	29	26	24	23	21
32	70	36	33	29	27	26	23
29	50	29	27	24	23	21	20
29	70	32	30	27	26	24	23
27	50	27	24	22	21	19	18
27	70	28	26	24	23	21	19
24	50	24	23	21	20	18	17
24	70	26	24	23	22	20	19

The relative humidity should range between 50 - 70 %.

Ventilation

The ventilation is still the decisive tool for regulating the climate of a chicken house. With ventilation you can influence many crucial factors:

- oxygen level
- harmful gases
- humidity
- temperature

Indirectly some other factors, such as litter quality and effective temperature are influenced by the ventilation.

To be able to achieve the superior growth potential of Cobb 500 the „minimum ventilation“ has proven itself to be vital in livestock production. The minimum ventilation is controlled by a timer and works totally independently from the temperature control system.

Due to the intensive metabolism of the bird, carbon dioxide is permanently produced. As carbon dioxide is heavier than oxygen it falls down toward the ground. So without proper ventilation the carbon dioxide concentration in the living space of the chickens increases tremendously.

A higher carbon dioxide level than 3000 ppm is unhealthy for the chickens, especially in the first 5 days of their life. High carbon dioxide levels damage the respiratory organs. Therefore the oxygen intake is not optimal. Impairment of metabolism, vitality and activity are the undesirable consequence. It can result in lower daily weight gain.

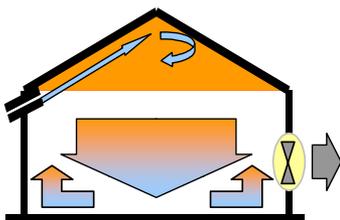
More growth means simultaneously: higher carbon dioxide and humidity output.

Optimal air quality is the main condition for the ideal development of the Cobb 500 broiler.

Minimum ventilation

Minimum ventilation works under a negative pressure system. Inlets are opened in such a way that air enters at high speed. Less air comes in than the fans can pull out. Therefore:

- air achieves a high speed, which brings air up to the apex of the house, air warms up and expands
- due to expansion and warming up humidity is absorbed, fresh warm air drops toward the floor
- down at floor level it mixes with old air and dilutes harmful gases, oxygen level increases and remaining humidity is absorbed
- used air is eliminated and pulled out of the house.



Minimum ventilation runs on a cycle timer. Fans do not run permanently, but at certain intervals. Thereby energy is saved, because fresh air gets more time to warm up and to expand.

The frequency of running the ventilation system depends on the performance of the fans, air volume and air quality. Fans should always be either 100% on or off.

Minimum ventilation rate for 10.000 Cobb 500 broilers

age in weeks	0-1	2	3	4	5	6
m ³ /s per 10.000 broilers	0,50	1,00	1,75	2,50	3,25	4,00

Lighting programme for optimal broiler performance

With the use of a short day lighting programme you will see many advantages:

- Birds are living in accordance with a natural rhythm
- Skeletal, cardiovascular and immune systems develop before the peak demands of lean tissue growth
- During the darkness the activity and also the oxygen intake of the birds are reduced. The birds save energy. This saved energy can be used for meat production. Lower costs.
- Less heat production
- Higher levels of melatonin (immune system)
- Higher levels of alkaline phosphates (skeletal growth)

- Better uniformity, less mortality, less rejects
- Once the birds “knows” the lighting programme, they will fill their crops before the dark period starts
- Improved feed conversion
- In case of working with a lighting programme, increase the temperature during the dark period by 1 - 1.5 °C, because the birds are less active and produces less heat. Flocks which are too cold in this period will compensate the lack of energy with higher feed intake which results in lower daily gain and higher feed conversion.
- A lighting programme gives you the option to create a farm specific and performance related broiler management regime.

To work with a lighting programme means much more attention and care to the whole process of growing broilers.

However it is necessary to use a lighting programme in order to support the birds health and achieve the desired growth rates.

When using a lighting programme pay attention to the following:

- Systematic working with implementation of a lighting programme.
(see recommendation *Cobb technical focus - lighting programme*)

- The length of the dark period depends on the live weight at processing

Under our conditions in Central Europe a lighting programme with a dark period of 6 hours for light birds and 9 hours darkness for heavy birds has been seen to work extremely well.

- Practical experience shows, that after allowing birds to get used to period of 3 days (with birds from relatively young parent stock at achieving 100 g body weight) with 1 hour darkness, it is possible to start with a dark period of 6 or 9 hours. This is more natural for the broilers, whereby the digestion in the intestines and the skeletal growth are positively influenced.
- Use always 1 block of darkness.
- Start the dark period always at the same time.
- During the dark period keep the house as dark as possible. Pay attention to the inlets and the outlets. Light infiltration can make the birds nervous.
- During hot weather reduce or stop the dark period, because of low feed intake.
- Darkness always during periods where nobody has to enter the house.

The best time for a dark period is during the night.

- The point in time when the decrease of the dark period starts depends on the time of depletion.

	1 day	from day 3	From day 5	from day 20
Dark period in hours				
Light broiler weight	1	6	6	6
Heavy broiler weight	1	6	9	6
Light intensity in LUX	20 - 60	20	20	20

(Detailed information you find also in our *TECHNICAL FOCUS Lighting programme and Cobb 500 Broiler performance*)

Feeding

The Cobb 500 Broiler shows its best performance with a specific diet, which is lower in some nutrients than the diet which is fed to some other breeds.

The broiler diet should be specific to the growing objectives and should suit the bird.

In this way it is possible to influence growth rate and daily gain in order to set the precedent for good performance. The result will be that the skeletal, cardiovascular and immune system will develop at an earlier stage.

After a well controlled growing period till the 4th week of age, the birds will show a compensatory gain and will grow even more.

Due to the fact that birds can store vitamin D3, they are able to use it later in case they are in need of it, provided that they have received sufficient of this vitamin during the first week of their life.

A strong and supporting skeleton are the conditions for a stable, healthy growing and finishing period.

One dose of vitamin D3 at 1,250 I.U. / bird per day, administered in the drinking water on day 3 and 4, is therefore advisable.

On day 5 the flocks receive a calcium and available phosphorus preparation.

The amount of vitamin D3 in the feed should be high enough (currently in EU at a maximum of 5,000 I.U. /kg). Also calcium and phosphorus should be in the right ratio (see our feed recommendation).

Four phases feeding programme

To influence the development of a flock, it is recommended to use different diet specifications. This gives following advantages:

- Protein level is reduced step by step from feed phase to feed phase
- Energy level increases from phase to phase (controlled growth rate, improved feed conversion, high daily gain at the end of the growing period)
- Improved leg and skeletal health (bird is not overstressed and in connection with a certain lighting programme, bird gets always the right amount of minerals and vitamins)
- = Better development of cardiovascular system due to a controlled daily gain. Moreover the intestinal digestion of feed is improved.

Feeding and drinking equipment

In order to give the broilers optimal access to feed and water the following standards are recommended:

- Distance between drinker lines 3 m
- Distance between feeding lines 4 m
- Number of birds per nipple 10- max. 15
- Number of birds per feeding pan 70

(With bell drinkers - per kg total body weight 0.66 cm usable periphery)

Summary:

Essential for the success of the Cobb 500 broiler is the use of an appropriate diet according to the Cobb Germany recommendations in order to obtain a correct growth. This interacts with the following management factors:

- Lighting programme
- Ventilation
- House preparation
- Water management
- Temperature regulation (thermo neutral zone, bird distribution)

Please contact your local Cobb technical representative to help develop a programme designed specifically to suit your own local conditions, based on the advice and information contained in this Broiler Management booklet.

You will find a quick overview in the enclosed

Check List





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