“CHICK QUALITY AND LIVABILITY”

Scott Gillingham DVM DACPV

GIVING CHICKS THE BEST START POSSIBLE BY PROVIDING THE CORRECT BROODING SET UP IS KEY TO SUBSEQUENT FLOCK WELFARE, UNIFORMITY AND PERFORMANCE

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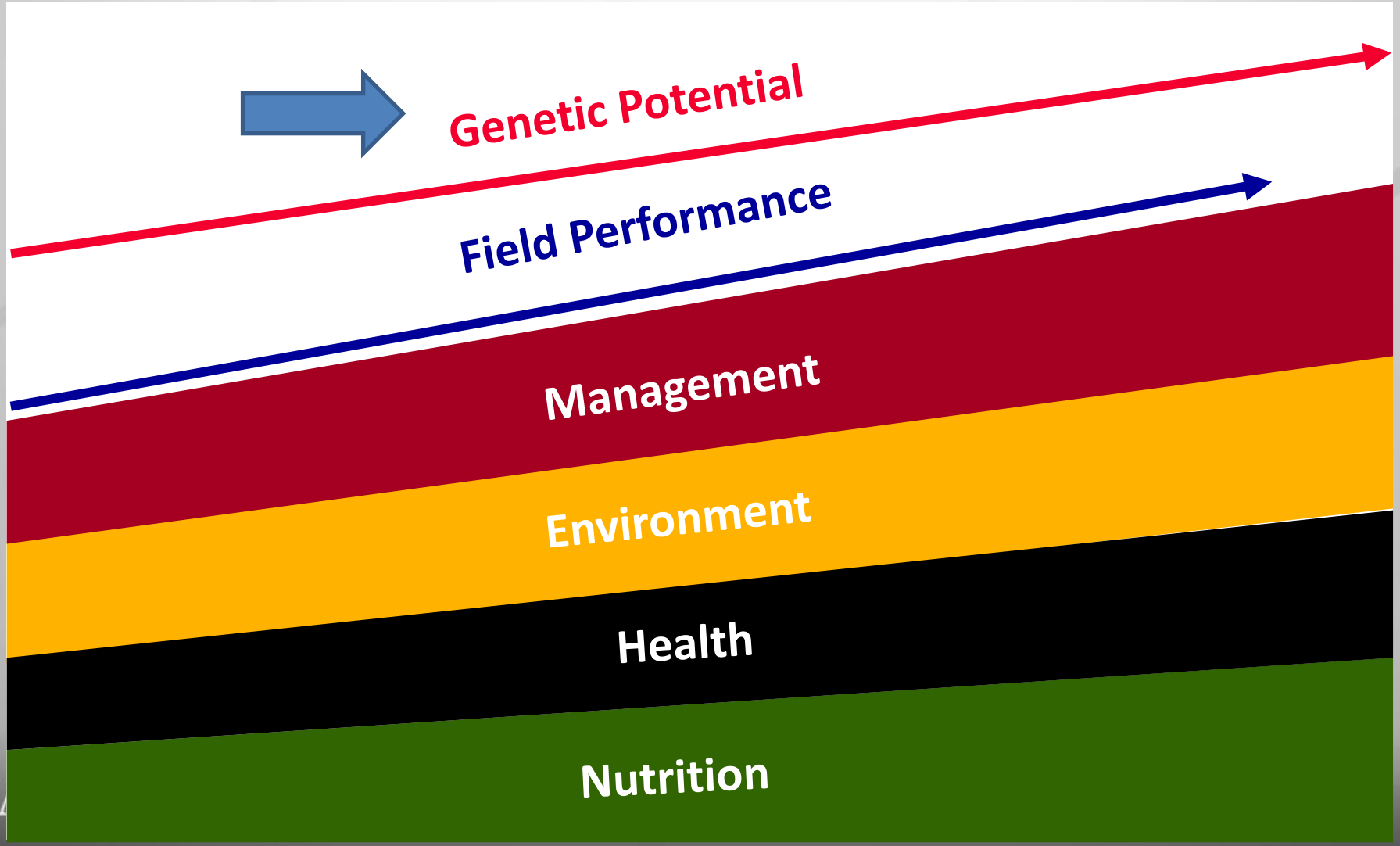
Translating Genetic Potential into Field "BROODING" Performance




TEACHER

""WE NEED TO BE THE TEACHER

"TAKE ***LEADERSHIP***""

- ***DATA***
- ***AUDIT THE PROCESS***
- ***YOU CANNOT MANAGE WHAT YOU DO NOT MEASURE***
- ***ETC***

"CHARITY STARTS AT HOME"

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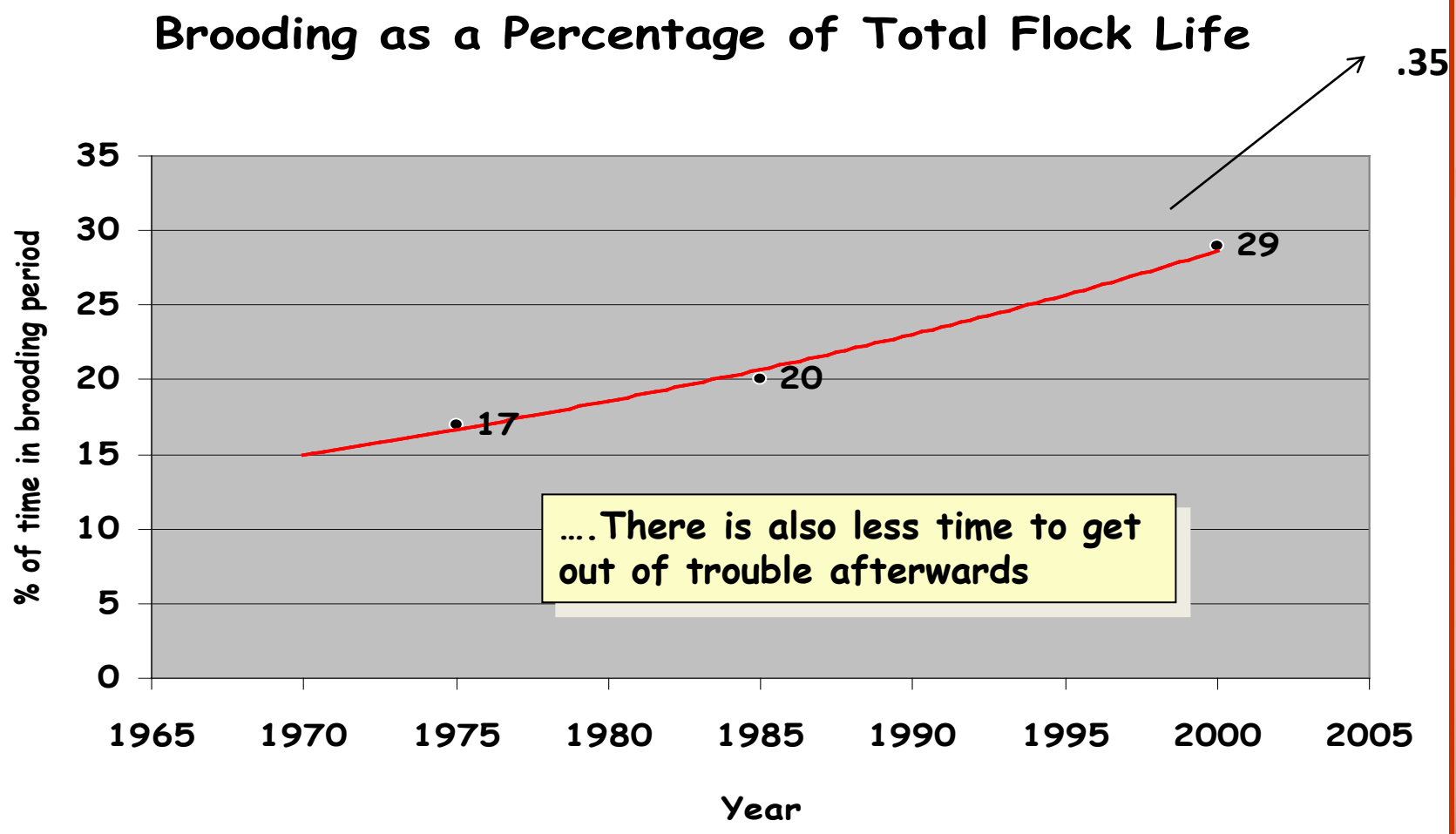
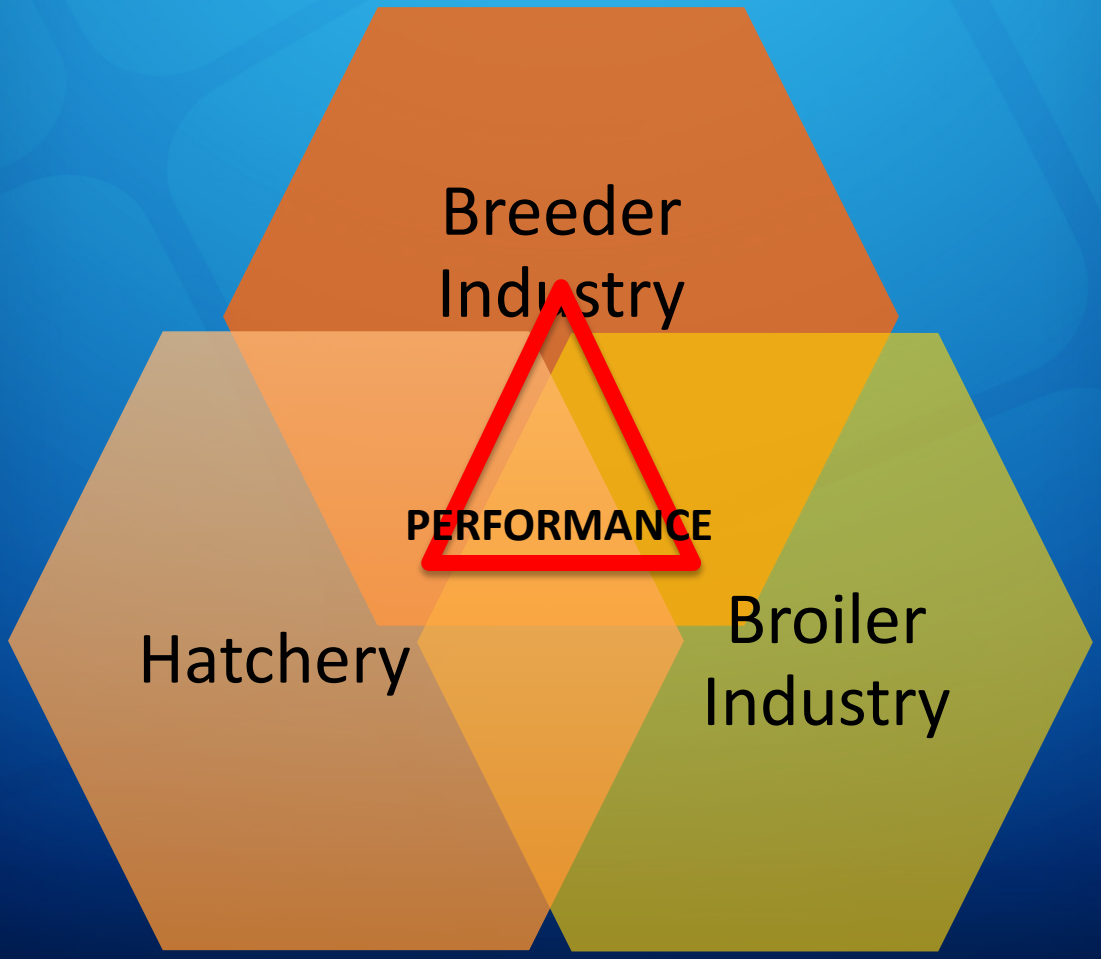
Genetic improvements mean the first 10 days is steadily increasing as proportion of total flock life…



THE PRESENT
Triangle of Interaction



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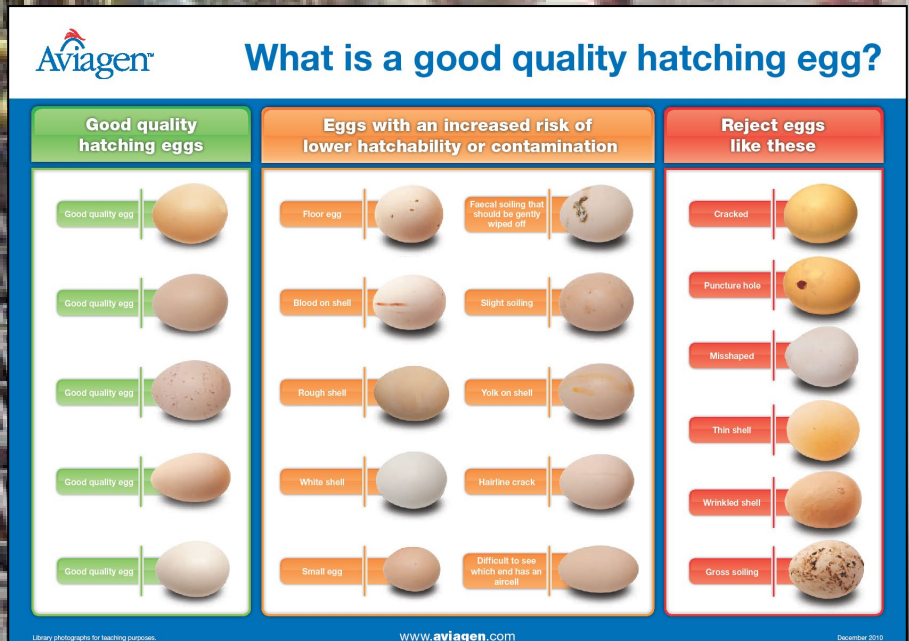
35% of the growing life of the bird is during the incubation!

(39 day growing period)

BREEDERS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What is a good quality hatching egg?
Good quality hatching eggs
Eggs with an increased risk of lower hatchability or contamination
Reject eggs like these
Good quality egg
Good quality egg
Good quality egg
Good quality egg
Good quality egg
Floor egg
Faecal soiling that should be gently wiped off
Blood on shell
Slight soiling
Rough shell
Yolk on shell
White shell
Hairline crack
Small egg
Difficult to see which end has an aircell
Cracked
Puncture hole
Misshaped
Thin shell
Wrinkled shell
Gross soiling
Library photographs for teaching purposes.
www.aviagen.com
December 2010

Chick Management

Multiple feeders and drinkers are in accessible locations.

Farm Preparation

- Clean & disinfect farm prior to chick arrival
- Spread **litter** evenly to depth of 5-10cm/2-4in
- Pre-heat house for a **minimum** of 24 hours prior to chick arrival
  - 34°C / 93°F air temp *****
  - 32-34°C /89-93°F litter temp *****
  - 60-70% Relative Humidity*****
- Make feed & water available immediately
  - Nipples; 12 birds per nipple
  - Bell drinkers; minimum of 6 per 1000 birds
  - Feed; dust free crumble/mini pellet on feeder trays (1 per 100 birds) or paper (80% cover)

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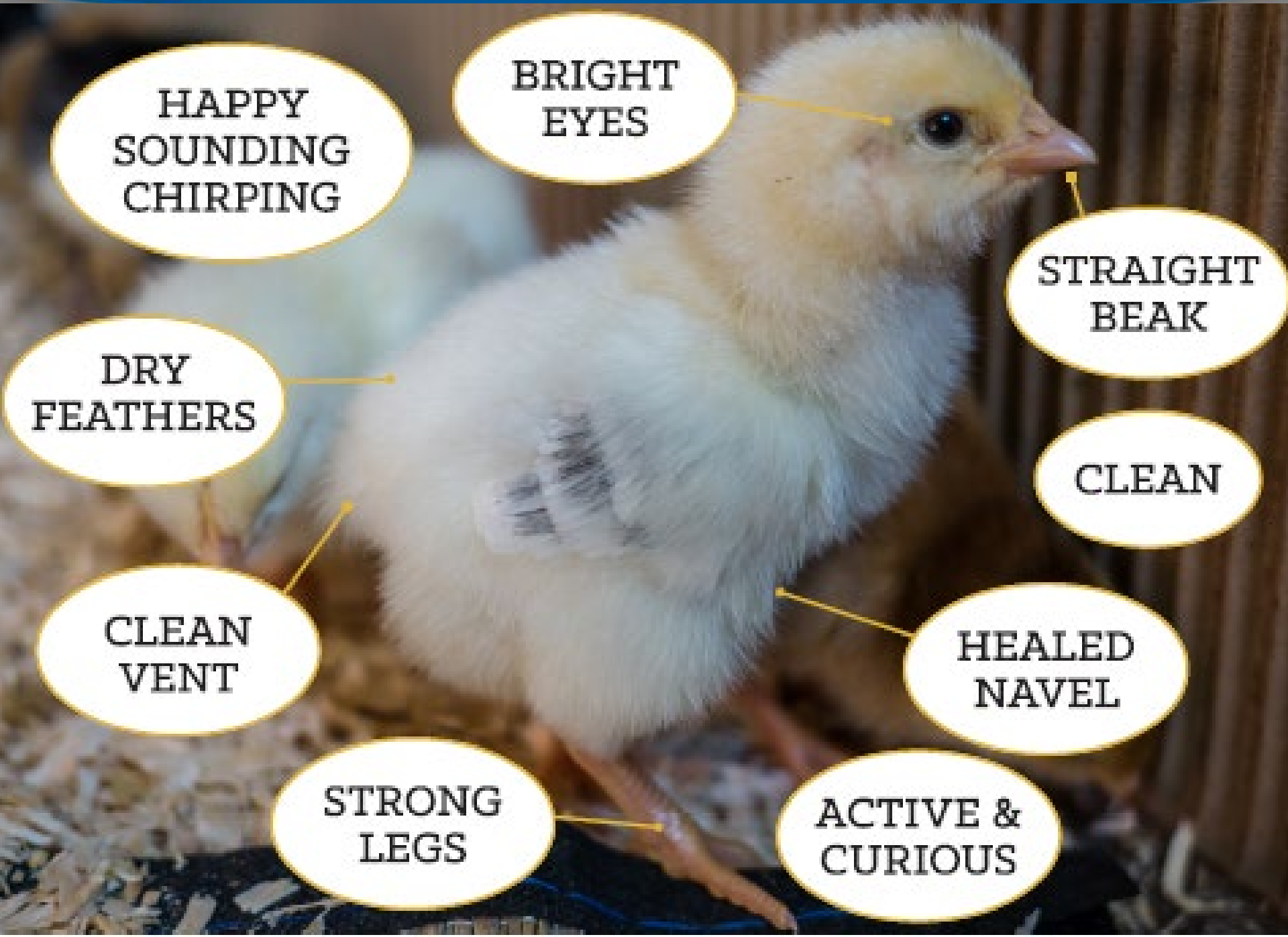
What is a Quality Chick


HAPPY SOUNDING CHIRPING
BRIGHT EYES
STRAIGHT BEAK
DRY FEATHERS
CLEAN
CLEAN VENT
HEALED NAVEL
STRONG LEGS
ACTIVE & CURIOUS

FLAWS

Brooding Phase

The basis of a good flock is a good start

- Feed
- **L**ight
- **A**ir
- **W**ater
- **S**pace
- **S**ecurity
- **S**anitation

REMEMBER

- WHEN CHICKS ARE PLACED THE **HEART** AND **LUNGS** ARE FUNCTIONING
- WHAT IS NOT WORKING IS THE:

GUT!

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Focus on Feed Management

- The % of a nutrient in the diet is only half of the equation
- The other half is the feed allocation
- **The product is “daily nutrient intake”**

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Feeding chicks within 6 hours

- Increase the rate at which yolk is utilised. **Mab!**
- Improve crypt formation and villus growth to increase food absorption. **GUT Integrity!**
- **Increase immune system Potential. RWA!**
- Improve growth to marketing age and breast meat by up to 10%. **$$!**


No feed
Feed available 8 hours later
Feed available at start
Two days old chicks

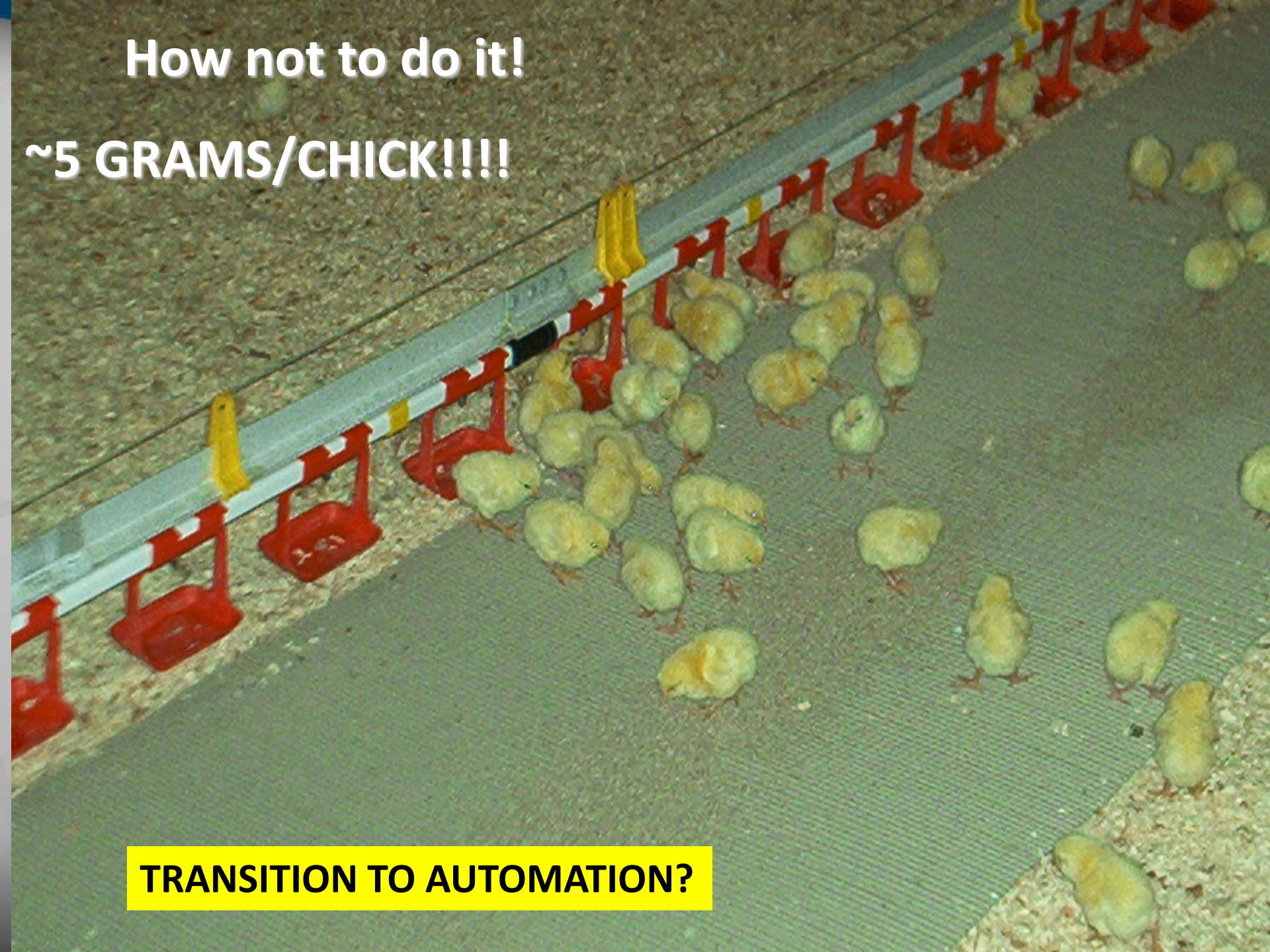
INTEGRATED FEED MANAGEMENT


Get the chicks pulled, processed
delivered & fed as quickly as possible


The importance of a good start in life
PRESENTATION OF FEED

Feed birds as soon as they arrive on farm
Tip the chicks onto feed area, not on litter


~50 Grams per chick dispersed onto
Paper for the first week


How not to do it!
~5 GRAMS/CHICK!!!!
TRANSITION TO AUTOMATION?


FEED ALLOCATION, GETTING IT TO THE CHICKS
31 5 2005


4 10:19

AS EACH DAY PROGRESSES ASSESS HOW YOUR CHICKS ARE DOING AND RESPOND TO THEIR ACTIONS BY MODIFYING THEIR FEEDERS

“Review how feed is placed and distributed based on chick behaviour”

See the feeding uniformity?


I can’t reach!
18 11:14 AM

Management of Feed Availability


MANAGE FEEDERS CORRECTLY

The Early Brooding Period

- Feed – Immediate access
  - amount
  - placement

Brooding Management

- **Remove feeding paper** from 3 days onwards
  - ??
  - Depends on transition to automation
- **Top up feed** regularly during first 3-4 days in feed lids. Focus on transition to automation
- Chicks should be on **main feeding system** 6-7 days of age

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Feed Management Key Points
INTEGRATED FEED MANAGEMENT

- Insufficient **feeding space** will reduce growth rates and cause poor uniformity
- Incorrect **feeder adjustment** can increase feed spillage and availability will affect growth and FCR
- Uneven **feed distribution** can result in poorer performance and increased competition at the feeders

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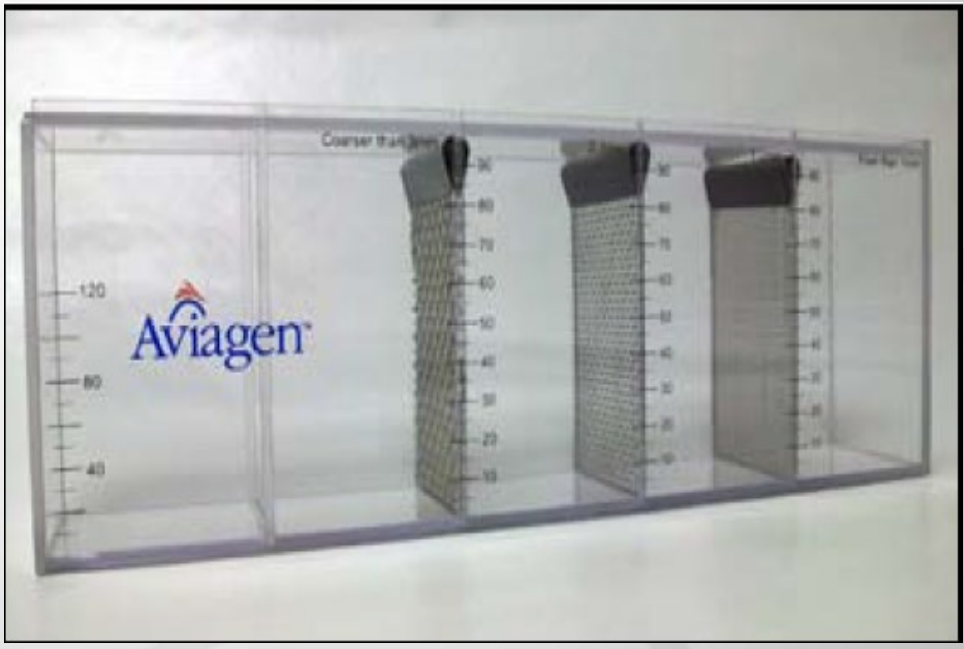
Feed Form



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Feed Form

Age	Feed Type	Feed Form and Size
0-10 days	Starter	Sieved crumble 1.5-3.0 mm diameter or Mini-pellets 1.6-2.4 mm diameter; 1.5-3.0 mm length
11-18 days	Grower (This is normally the first delivery of grower feed.)	Sieved crumble 1.5-3.0 mm diameter or Mini-pellets 1.6-2.4 mm diameter; 4.0-7.0 mm length
19-24 days	Grower	Pellets 3.0-4,0 mm diameter; 5.0-8.0 mm length
25 days to end	Finisher	Pellets 3.0-4,0 mm diameter; 5.0-8.0 mm length

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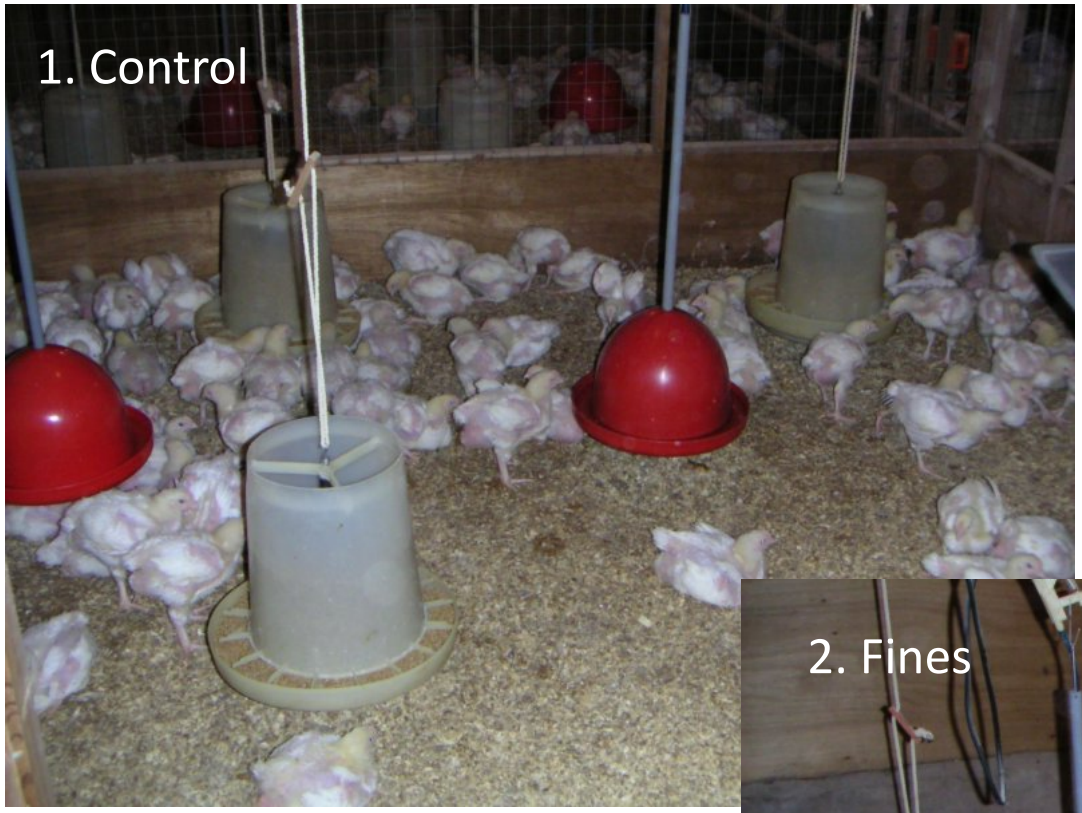
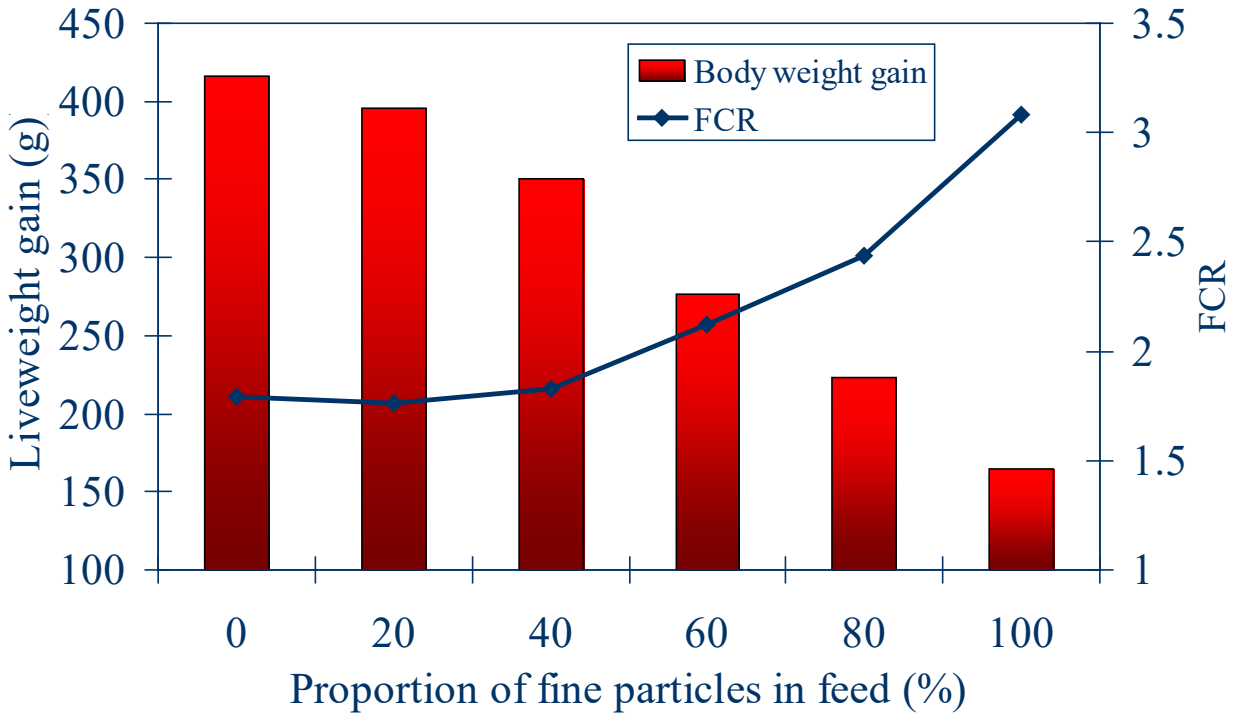

1. Control


2. Fines



Quentin *et al.*, 2004

FLAWS

Brooding Phase

The basis of a good flock is a good start

- Feed
- **L**ight
- **A**ir
- **W**ater
- **S**pace
- **S**ecurity
- **S**anitation

Light Management Key Points

- Correct lighting programs are critical for growing broilers
  - Light distribution
  - Light Intensity: Brood min 4fc/ Grow-out .50fc
  - Duration of light and dark period: 4 hours (SB/TP) and 6 hours (BB)
  - Check animal welfare regulations
  - Work with nutritional package/farm management
  - Wave length now in question
  - LED; intensity / Flickering

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Have Targets: Customer Lighting Program

• **Day 1-7**	**Full Light**	**100% Intensity (?)**
• Day 8-20	8hrs. Dark (10pm-6am)	70% Intensity **(?)**
• Day 21-52	8hrs. Dark (10pm-6am)	40% Intensity **(?)**
• Day 53-Kill	1hr. Dark (12am-1am)	40% Intensity **(?)**

- **Differences or Age of Dimmers**
- **Differences between new/old/dirty bulbs**
- **Differences between type of bulbs**
- **Differences between starting points w/o a goal**

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-Goal to have over 3-4 FC at chick level.

-***Uniformity*** and ***consistency*** across brooding chamber

First Week


DAWN: DUSK
Less crowding at Feeders

FLAWS

Brooding Phase

The basis of a good flock is a good start

- Feed
- **L**ight
- **A**ir
- **W**ater
- **S**pace
- **S**ecurity
- **S**anitation

TEMPERATURE

- Poikilothermic vs Homoeothermic
- Litter temp 88-94F / 31-34 C
- Vent temp 103-105F / 39-40.5C
- Goal is the thermo-neutral zone
  - **COMFORT ZONE**
- Monitor chick behavior for optimal environmental temperature
- A draft is unplanned, while proper ventilation is planned.
- Ideal brooding chamber RH 55 – 70%

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Air Quality

Ammonia	Ideal level <10 ppm. Can be detected by smell at 20 ppm or above. >10 ppm will damage lung surface. >20 ppm will increase susceptibility to respiratory diseases. >25 ppm may reduce growth rate depending upon temperature and age.
Carbon Dioxide	Ideal level <3,000 ppm. >3,500 ppm causes ascites. Carbon dioxide is fatal at high levels.
Carbon Monoxide	Ideal level 10 ppm. >50 ppm affects bird health. Carbon monoxide is fatal at high levels.
Dust	Damage to respiratory tract lining and increased susceptibility to disease. Dust levels within the house should be kept to a minimal.
Humidity	Ideal level 50-60% after brooding. Effects vary with temperature. At >29°C (84.2°F) and >70% relative humidity, growth will be affected. Relative humidity <50% particularly during brooding will affect growth.

Ross Broiler Manual 2018

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Environment

Age (Days)	Dry Bulb Temperature °C (°F)			
	40 RH%	50 RH%	60 RH%	70 RH%
Day-old	36.0 (96.8)	33.2 (91.8)	30.8 (84.4)	29.2 (84.6)
3	33.7 (92.7)	31.2 (88.2)	28.9 (84.0)	27.3 (81.1)
6	32.5 (90.5)	29.9 (85.8)	27.7 (81.9)	26.0 (78.8)
9	31.3 (88.3)	28.6 (83.5)	26.7 (80.1)	25.0 (77.0)
12	30.2 (86.4)	27.8 (82.0)	25.7 (78.3)	24.0 (75.2)
15	29.0 (84.2)	26.8 (80.2)	24.8 (76.6)	23.0 (73.4)
18	27.7 (81.9)	25.5 (77.9)	23.6 (74.5)	21.9 (71.4)
21	26.9 (80.4)	24.7 (76.5)	22.7 (72.9)	21.3 (70.3)
24	25.7 (78.3)	23.5 (74.3)	21.7 (71.1)	20.2 (68.4)
27	24.8 (76.6)	22.7 (72.9)	20.7 (69.3)	19.3 (66.7)

Ross Broiler Manual 2018

- Monitor temperature and RH% regularly
- Check automatic measurements with manual measurements
- Calibrate automatic equipment at least once per flock
- Make sure sensors are in the correct spot and correct height

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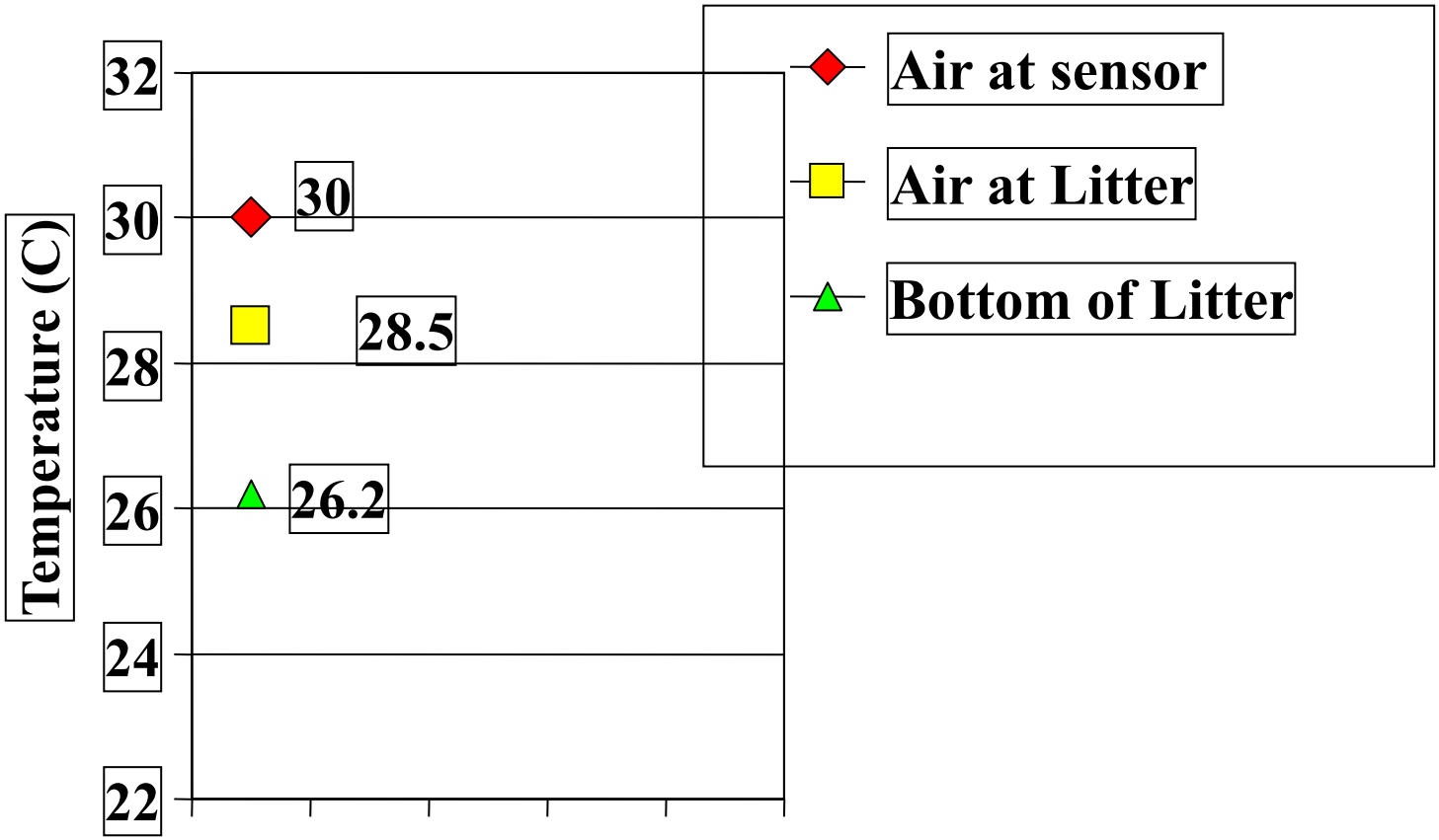
FLOOR
32 – 33 degrees C
20 – 4 0 % RH

Temperatures in a Broiler House - Day Old



(Van Beek & Beeking 1995)

Probes in the Present

- Inside temp
- Outside temp.
- Inside Humidity
- Outside Humidity
- CO_2
- NH_3
- Wind Speed
- Static Pressure
- ***Litter probe***
- Lux probe
- Water meter
- Water Pressure

Interaction of Temperature and Humidity

- Variation in humidity will influence the effective temperature experienced by the chicks
- High humidity increases the apparent temperature
  - **Decrease temps**
- Low humidity decreases the apparent temperature
  - **Increase temps**

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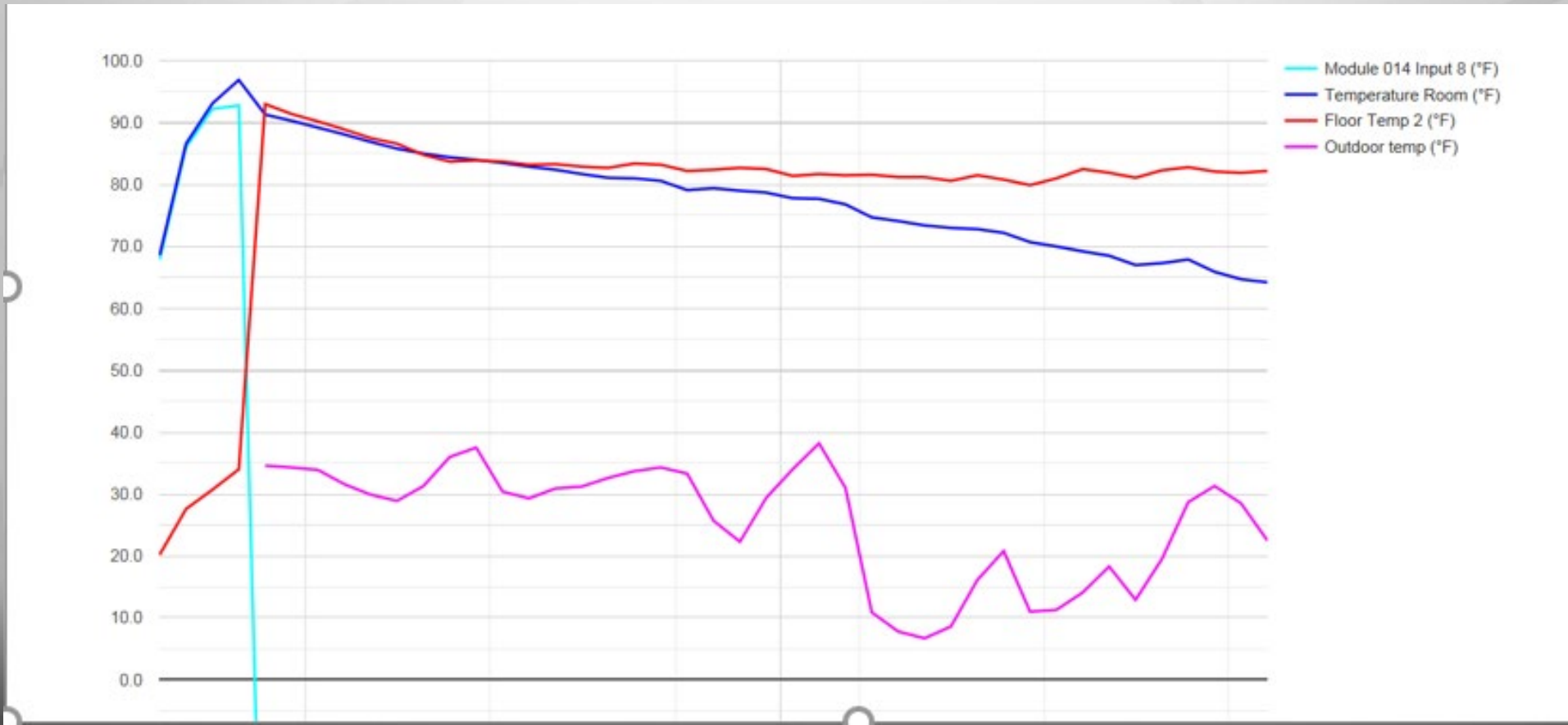
MAXIMUS
LITTER PROBE

LITTER PROBE.



Successful brooding

- One research study compared broiler chicks reared at 27C with chicks reared at 32C
- After 10 days
  - 32C BWT was 90 gms and FCR 1.14
  - 27C BWT was 75 gms and FCR 1.42
    - **Dozier & Donald PT 08/03**

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STRESS

Impac ...oiler

Cool Ch...

- Vent ter... ...6°C)
- Will hav... ...h will depress or wrist) ...ption in the first 7 days (lower 7 – day bodyweights)
- Will huddle near heat source (if they can find it)
- Use nutrients to warm themselves rather than to grow
- Even short periods of cooling will cause long-term loss of growth
- Uneven cooling (chilling) negatively affects uniformity
- Cooling can result from not only low temperatures but also from drafts which will cause 'wind-chill' as well as humidity effects

- Excessively high Vent temperatures can result in damage to the intestine, impairing the bird's ability to utilize nutrients as well as possible microbial leakage out of the gut
- Uneven overheating will have a negative effect on flock uniformity
- Overheating can also result from humidity effects

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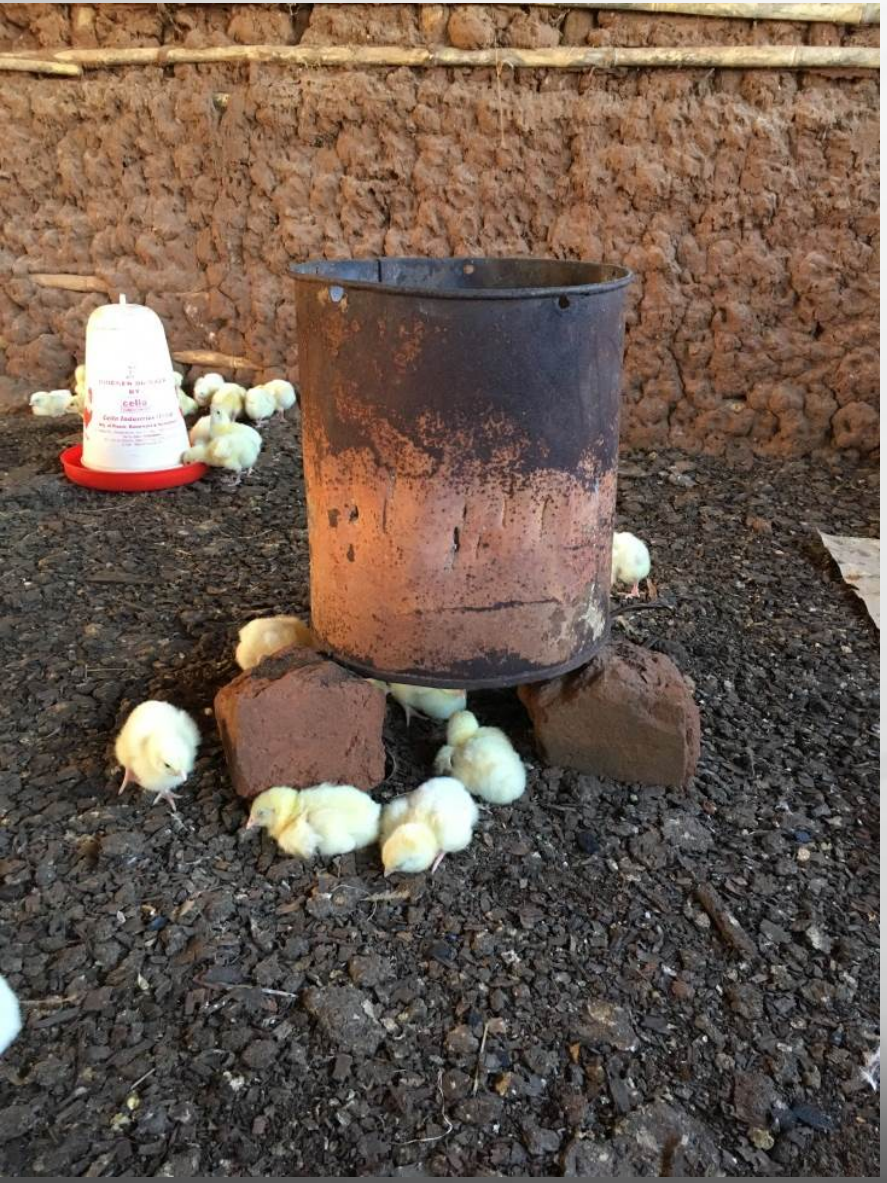
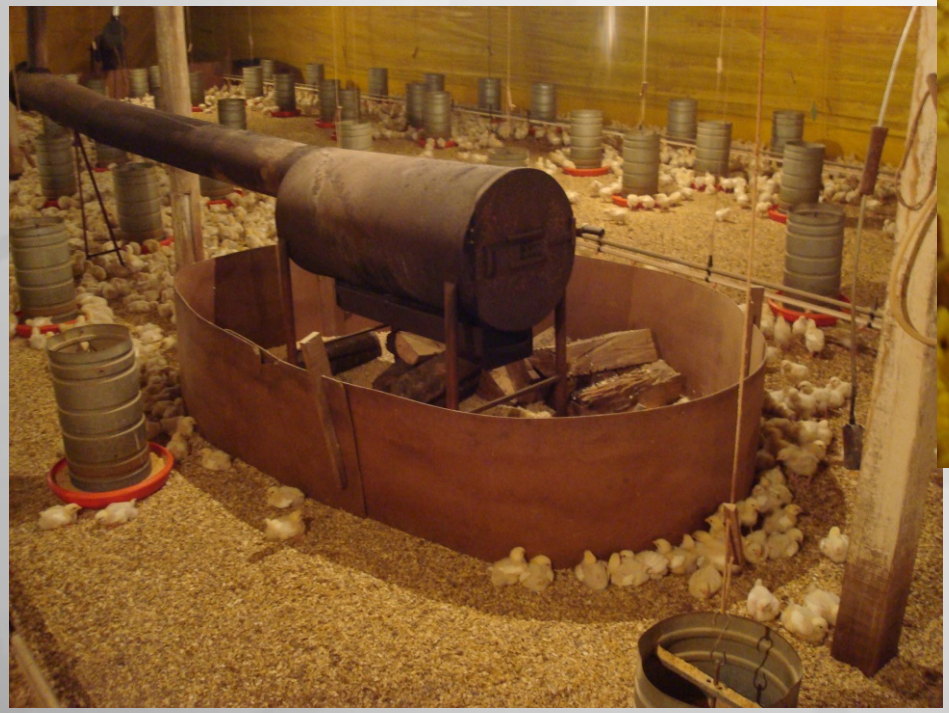
Housing & Environment
“HEAT SOURCE”




CHICKEN-DRINKER



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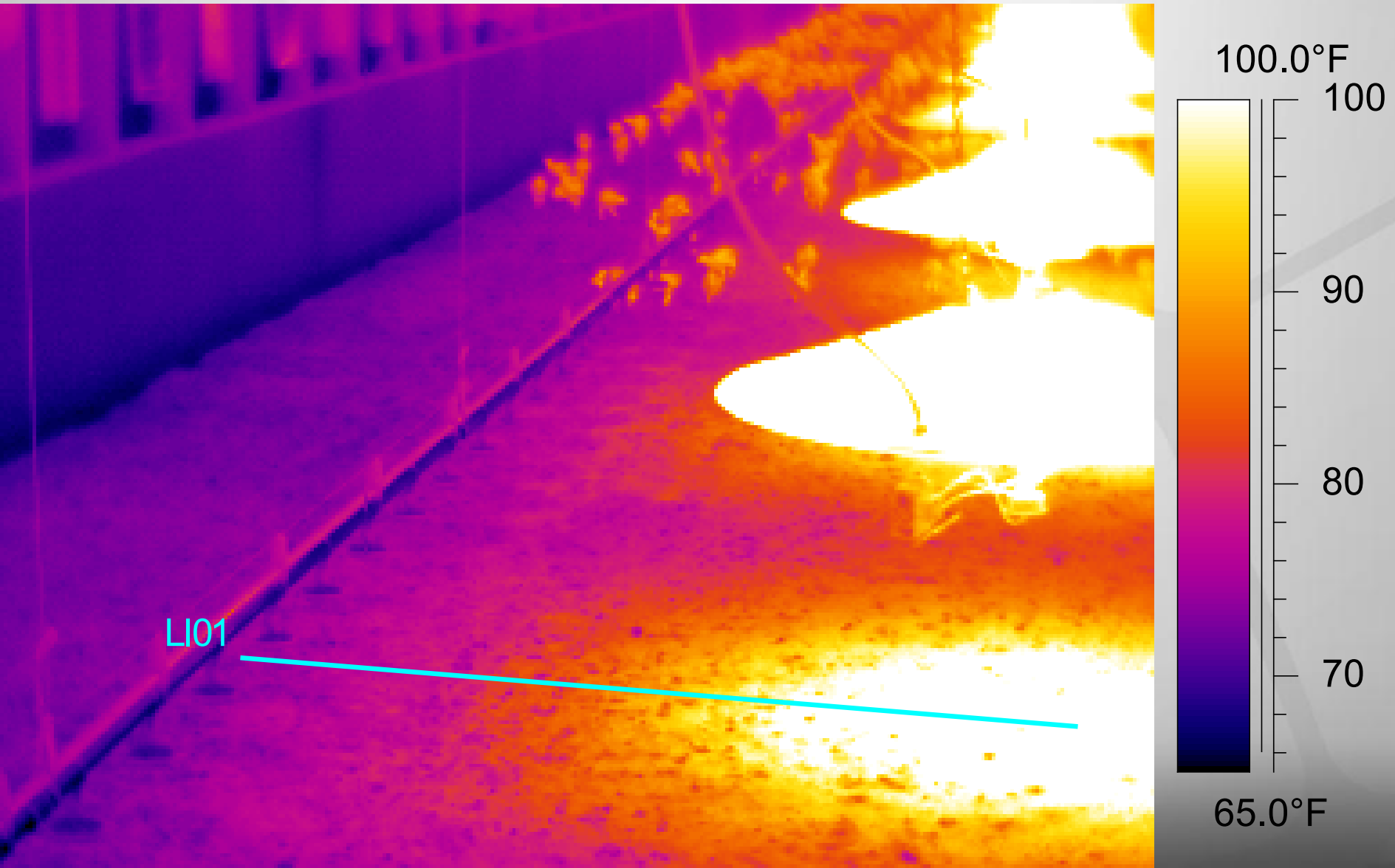
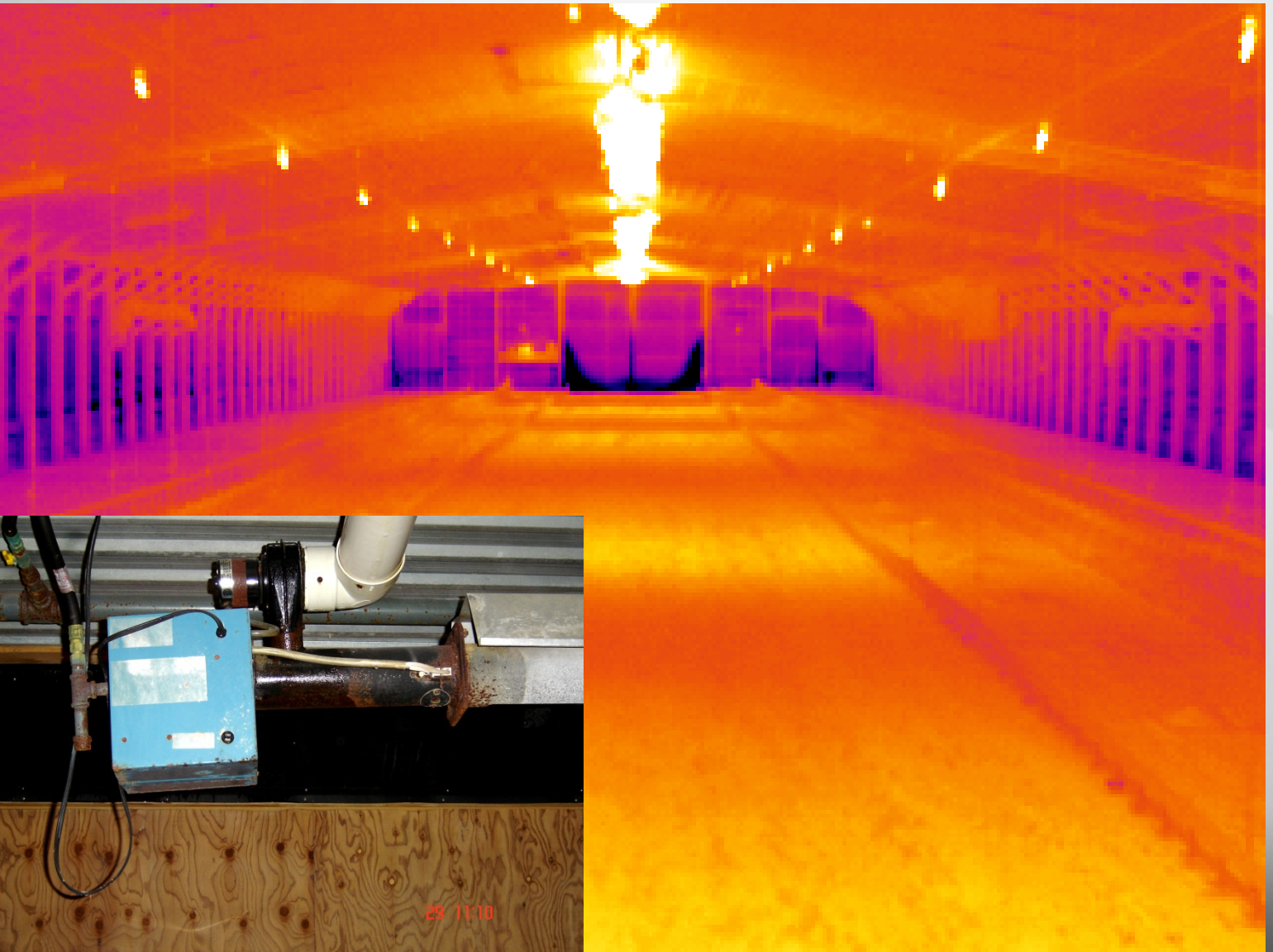
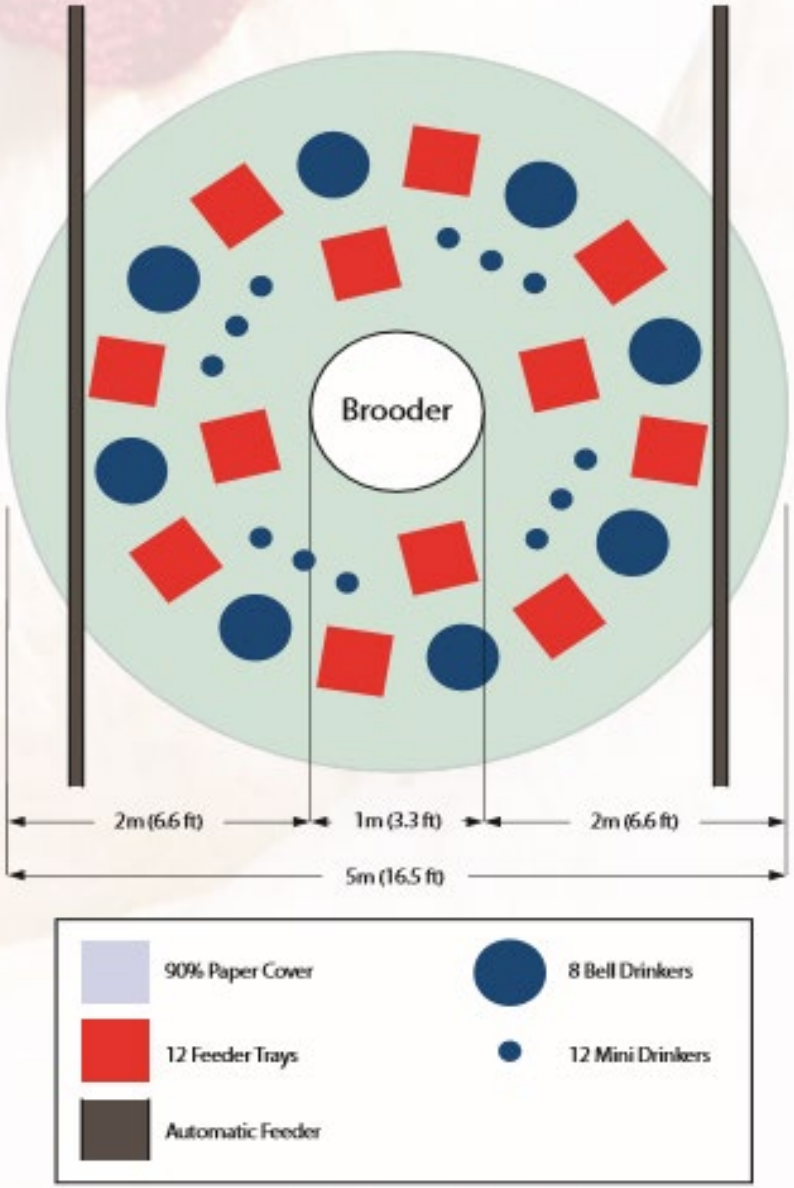
Pancake brooder heat zone



Floor temperatures in house with radiant tube brooders prior to chick placement



Spot brooding circle set-up



*A good **Zone of Comfort** has been established here.*

Chick/Poult Behaviour

Correct environmental conditions: chicks will spread evenly through the brooding area

NO ACTION REQUIRED

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Chick/Poult Behaviour

Environmental conditions are too cold!

IE; chicks grouped together under heaters or within the brooding area

INCREASE TEMPERATURE AND/OR RELATIVE HUMIDITY

Chick/Poult Behaviour

Environmental conditions are too hot!; chicks are crowded near the house walls or brooding surrounds away from the heat source or they are panting

DECREASE TEMPERATURE AND/OR RELATIVE HUMIDITY


120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
°F
50
40
30
20
10
0
-10
-20
-30
°C
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How to Use the Infrared Thermometer

- **103F (39.4C) – 105F (40.8C)**

Management for the Broiler

Temperature – Nutrient usage

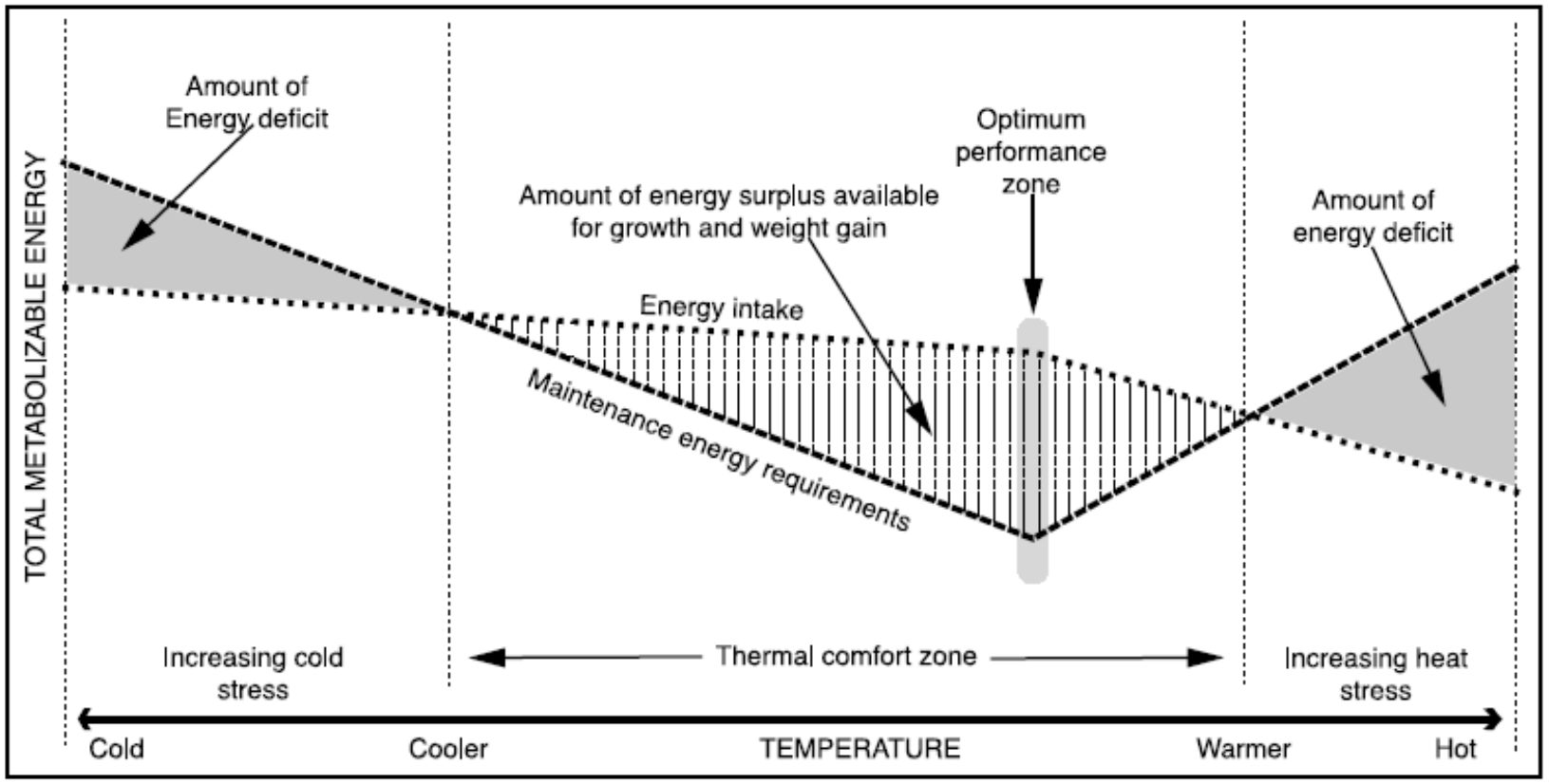

Figure 1. Optimum Performance Temperature Zone – At each stage of a bird's development, there is one narrow temperature range where maintenance energy requirements are lowest and the bird can make maximum use of feed energy for growth. If temperature goes just a few degrees outside the optimum performance zone, cooler or warmer, birds will be using a higher proportion of their feed energy for body maintenance and less for growth.

FLAWS

Brooding Phase

The basis of a good flock is a good start

- Feed
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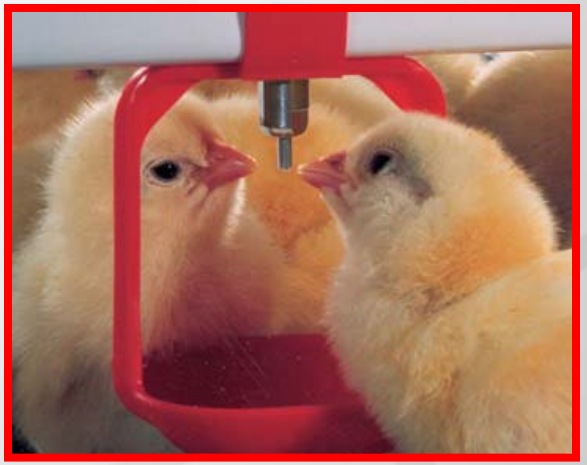
- **S**ecurity
- **S**anitation

Provision of Water

Nutrition and Management for the Broiler

The Early Brooding Period

- Water – Considerations
  - Start Clean
  - Fresh
  - Warm
  - Available
  - pH



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Drinking Systems

Drinker Type	Requirements
Nipple Drinkers	<3 kg (6.6 lbs) 12 birds per nipple >3 kg (6.6 lbs) 9 birds per nipple
Bell Drinkers	10 drinkers (40 cm / 17 in) per 1000 birds

- CHICKS PER NIPPLE ????
- Water should be available 24 hours a day
- Adjust drinker height daily
- Monitor water to feed ratio daily
  - 1.8:1 bell drinkers
  - 1.7:1 nipples with cups
  - 1.6:1 nipples without cups
- Ideal water temperature is 15-21°C (59-70°F)
  - BROODING??????
- Keep drinkers well maintained and clean
- Provide supplementary drinkers until 4 days of age (PS Vs Br)

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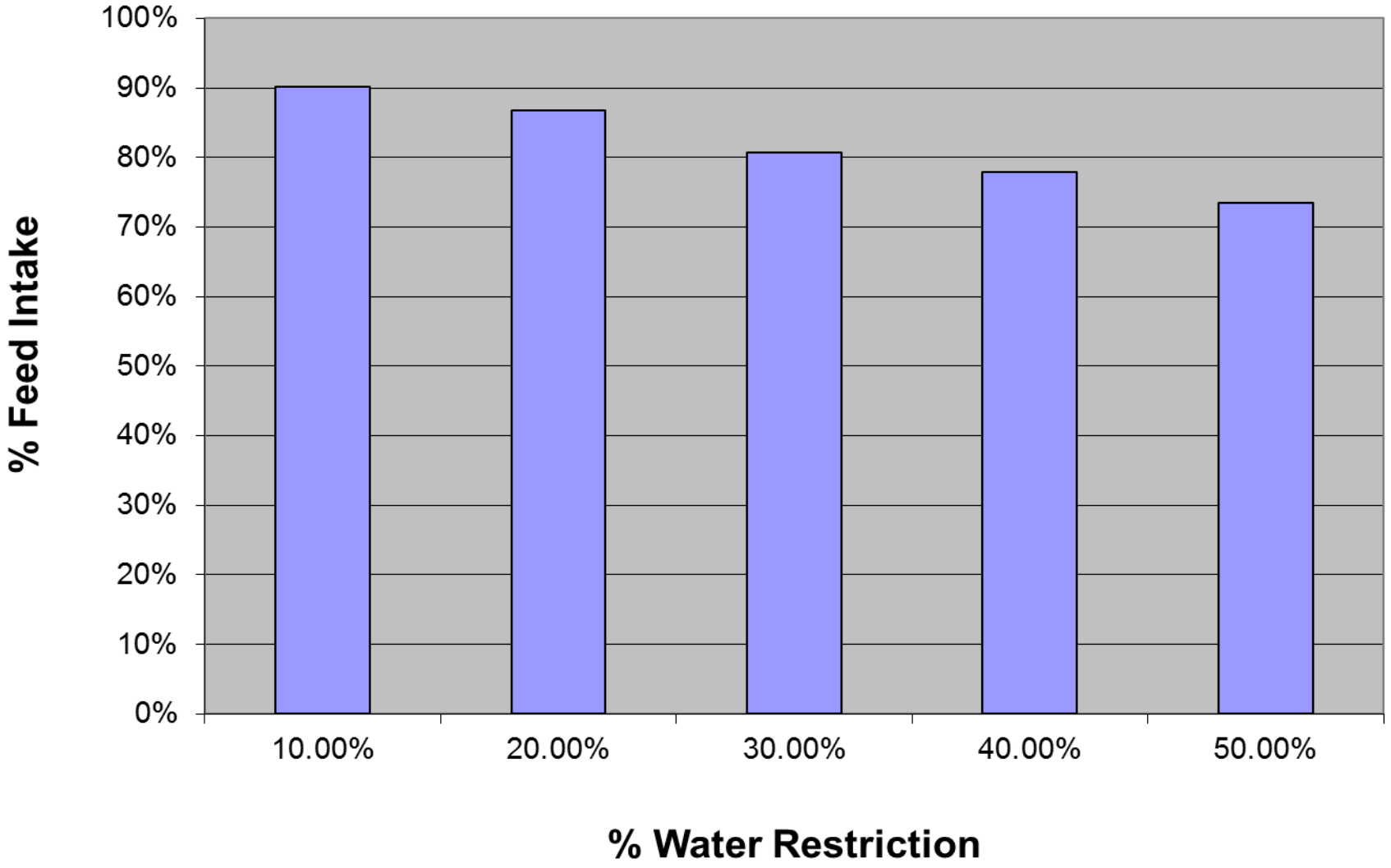
Effect of Water Restriction on Feed Intake



Nutrition and Management for the Broiler

Early Brooding Period – Water > *"TRENDS"*

The effect of water restriction on feed consumption, weight gain, feed conversion and intestine weight of chicks at 7 days of age (Ribeiro et al., 2005)

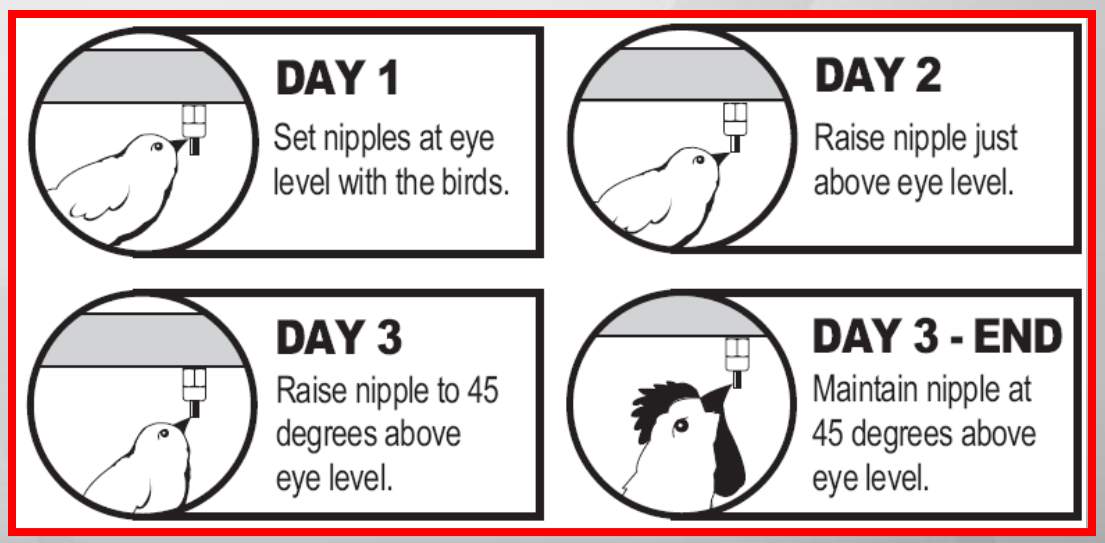
Treatment % Restriction	Feed Consumed (g)	Weight Gain (g)	Feed Conversion (g/g)	Intestine Weight (g)	Villi Height (micrometer)
0	173a	140a	1.24ab	13.03a	1340
10	136b	119b	1.14ab	11.95ab	1137
20	129c	108b	1.20ab	11.47bc	1134
30	117c	91c	1.29a	10.09c	1100
40	110d	77c	1.3a	8.59d	1064

The most important management impact on performance of the baby chick is to ensure that they consume enough food and water.

Nutrition and Management for the Ross Broiler

For all stages of life

- Water – Availability
  - Flow / Pressure
  - Height
  - Access
  - Leakage
  - Stay Clean



Know your system

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2007 11 21

When E.coli is not just E.coli

(Pseudomonas arthritis and septicaemia)

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Water Quality and Availability

Pathogen/Indicator	Survival in seconds (s) or hours (h) at ORP (mV)		
	< 485	550 < X < 620	> 665
E. coli O157:H7	> 300 s	< 60 s	< 10 s
Salmonella spp.	> 300 s	> 300 s	< 20 s
Listeria monocytogenes	> 300 s	> 300 s	< 30 s
thermotolerant coliform	> 48 h	> 48 h	< 30 s

University of California Pub8149 2004

Oxidation Reduction Potential- measures the effectiveness of the water sanitation program- the free chlorine available. Goal 650-700 Millivolts

- Microbial Contamination
- Waterline Sanitation
- pH Measurement

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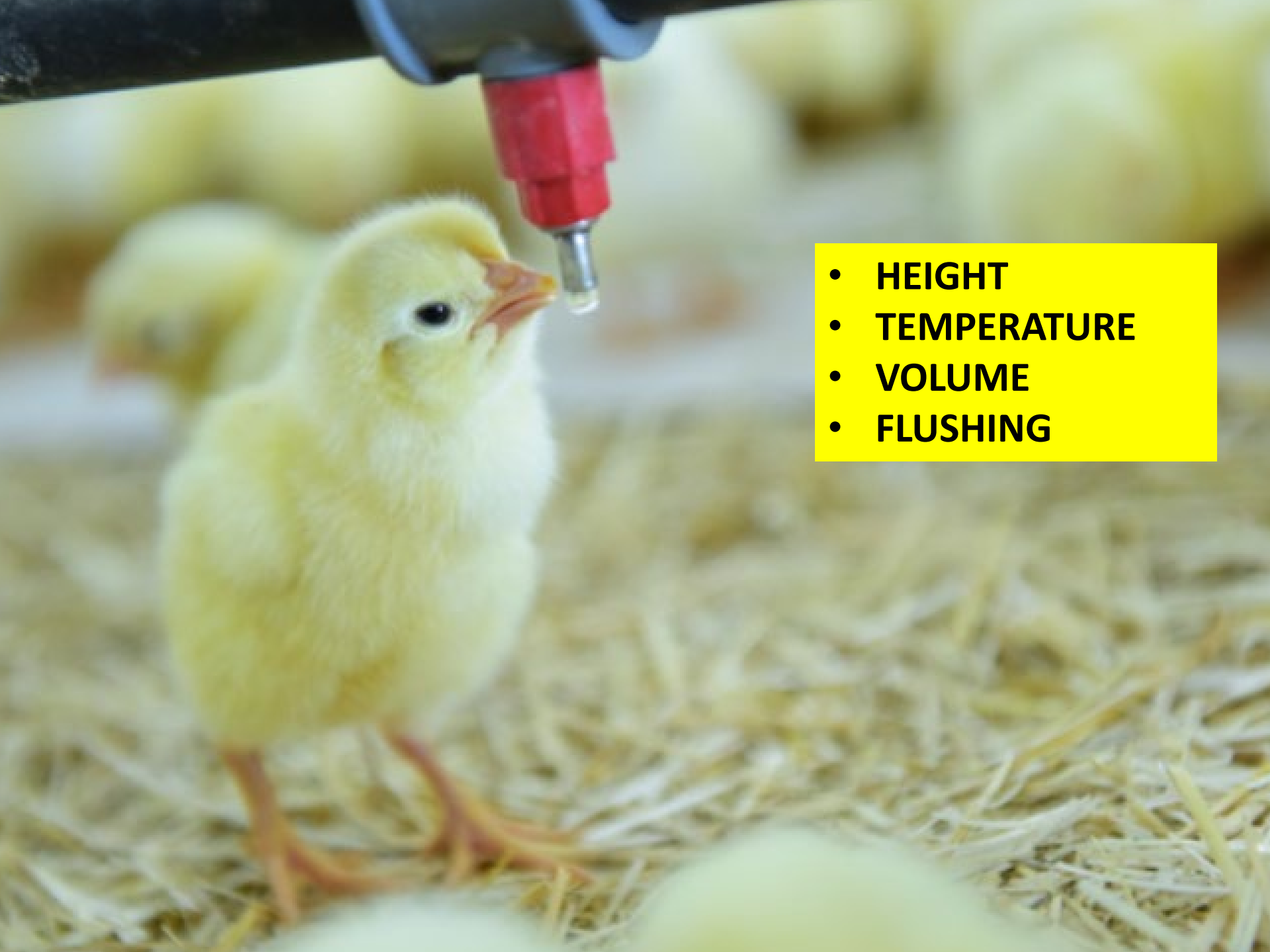
• HEIGHT
• TEMPERATURE
• VOLUME
• FLUSHING


Supplemental Feeders and Drinkers

Water Quality and Availability

- During each grow-out flow rate checked
  - Placement
  - 3 Weeks
  - 6 Weeks
- Example of equation:
  - WOA x 7+ 20= ml/min
  - ➢ 3woa x 7 +20= 41ml/min

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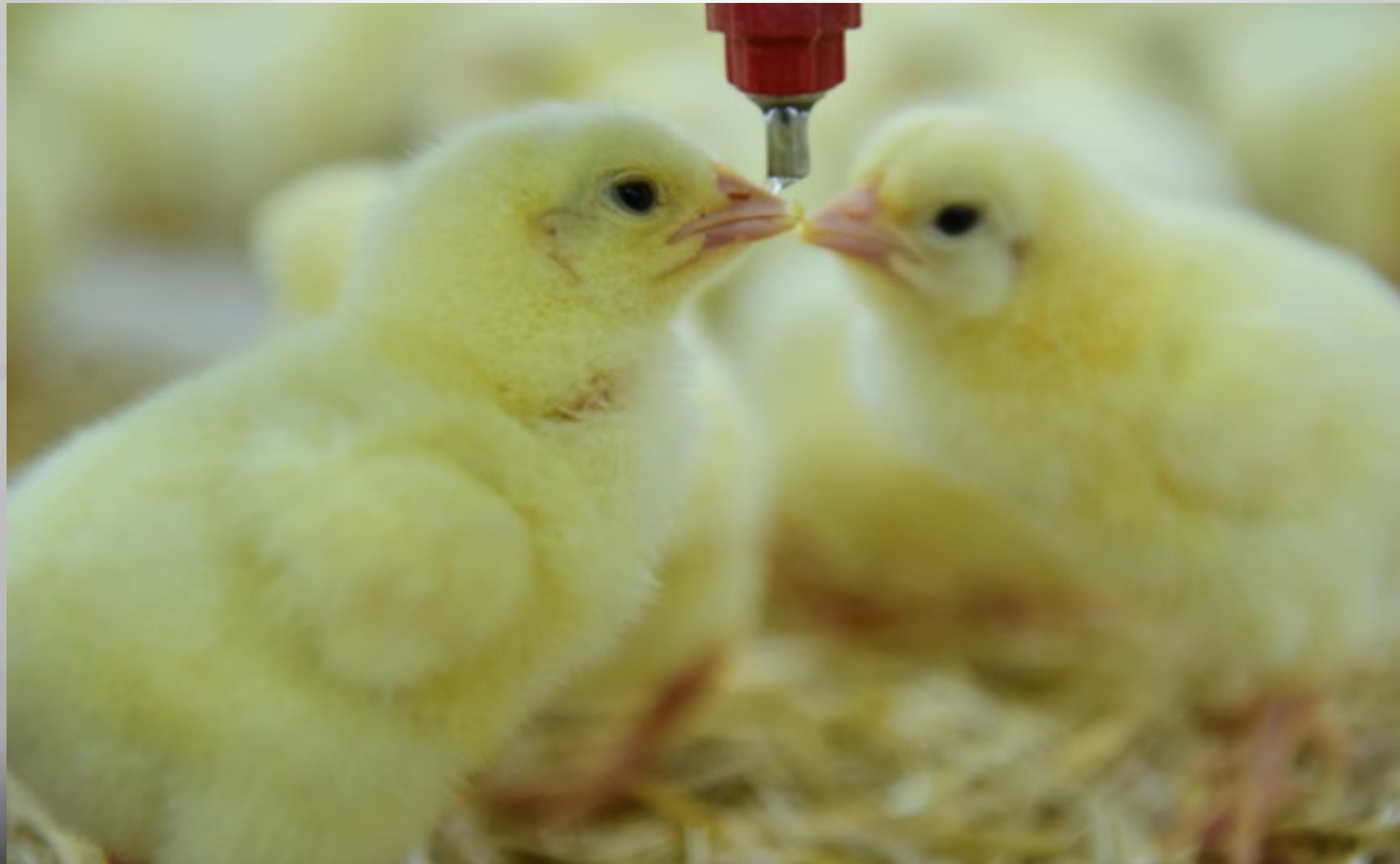
20 – 30 ML/MINUTE



Water Quality and Availability

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How To...

Measure Nipple Drinker Flow Rate

08

Why measure nipple drinker flow rate?

- To ensure that water supply will meet maximum demands for daily water intake.
- A *lower* than required water flow rate can cause dehydration, reduce feed intake, body-weight gain, and if left unchecked, livability.
- A *higher* than required water flow rate may increase spillage from drinkers causing poorer litter quality, and associated foot and leg health and environmental issues, and may result in reduced water intake as birds may not be able to activate the nipples correctly.

HOW TO...

Measure Nipple Drinker Flow Rate

08

Interpreting results

It is important to remember that water flow rate through the nipple should be increased as the birds age to allow an adequate amount of water to be available throughout life.

Recommended flow rates through nipples

Bird age	Flow rate (ml/min)
0 - 7 days	20
7 - 21 days	60 - 70
>21 days	70 - 100

Remedial action if flow rates are not as recommended

Flow rate	Action required
Less than recommended	Ensure water is turned on. Increase pressure at pressure regulator end of drinker line. Ensure there are no air locks or blockages in lines by depressing nipples to release air until water flows freely or by unscrewing water supply lines. Ensure drinker line is level. Check nipples are not clogged - clean with a recommended product or replace if necessary. Check rubber seals are in place and / or are working correctly. Replace seals if necessary.
Higher than recommended	Reduce pressure at pressure regulator end of drinker line. Ensure there are no air locks or blockages in lines by depressing nipples to release air until water flows freely or by unscrewing water supply lines. ** Ensure drinker line is level. Check rubber seals are in place and / or are working correctly. Replace seals if necessary. Ensure purge button is not activated. This button will differ in position depending on the type of nipple system and pressure regulator in use.

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Broiler- chick start aims

- Managing the transformation from embryo to chick
- Manage the process so that the chicks are fed as quickly as possible after hatch
- Once on the farm all the chicks should find food and water quickly. All about COMFORT ZONE
- Consistent early growth and uniformity as a good basis for good final weights and uniformity
- Develop appetite.
- Develop immune and gut function.

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WE CANNOT MANAGE

WHAT WE DO NOT MEASURE

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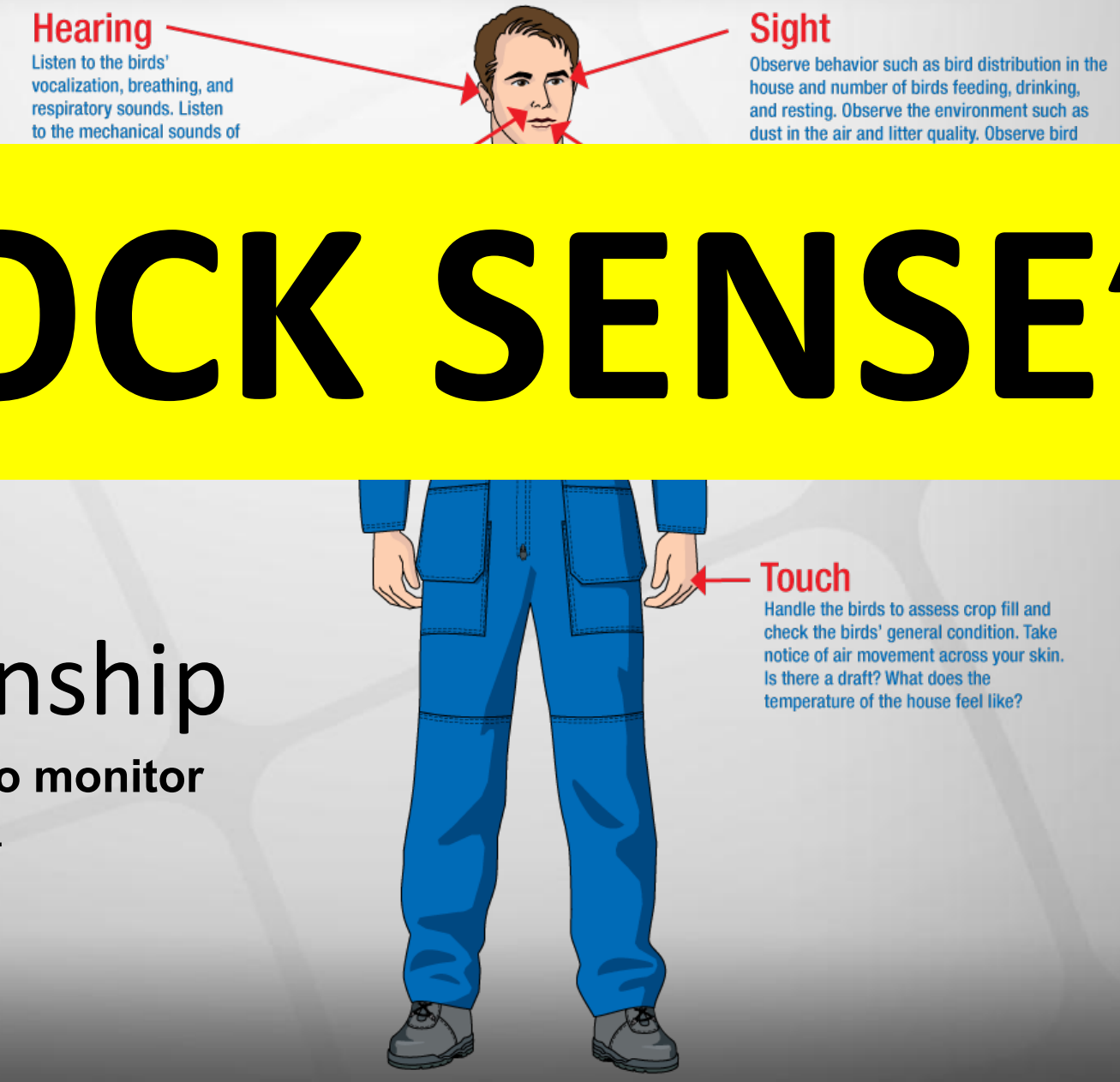
Measure for Success



"FLOCK SENSE"

Stockmanship

Use all senses to monitor a flock.

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How Do I assess Chick / Flock Quality on my farms

- Observe the flock as a whole
  - Walk the entire length of the brooding chamber
    - Flock uniformity
    - Morbidity (sick birds)
    - Incidence of defects
    - Incidence of injuries
    - Mortality / smell
- Communicate to Hatchery

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- What is the Pattern on the Floor
  - Are the bunched under the brooders
  - Are they crowded into the feed lids, on pans
  - Are they crowded against the wall or one end of the house
  - Are they spread out with access to feed and water

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What is the activity level of the chicks

- Are the chicks sluggish
- Are they hyperactive
- Are they loud or quiet
- Are they sneezing,

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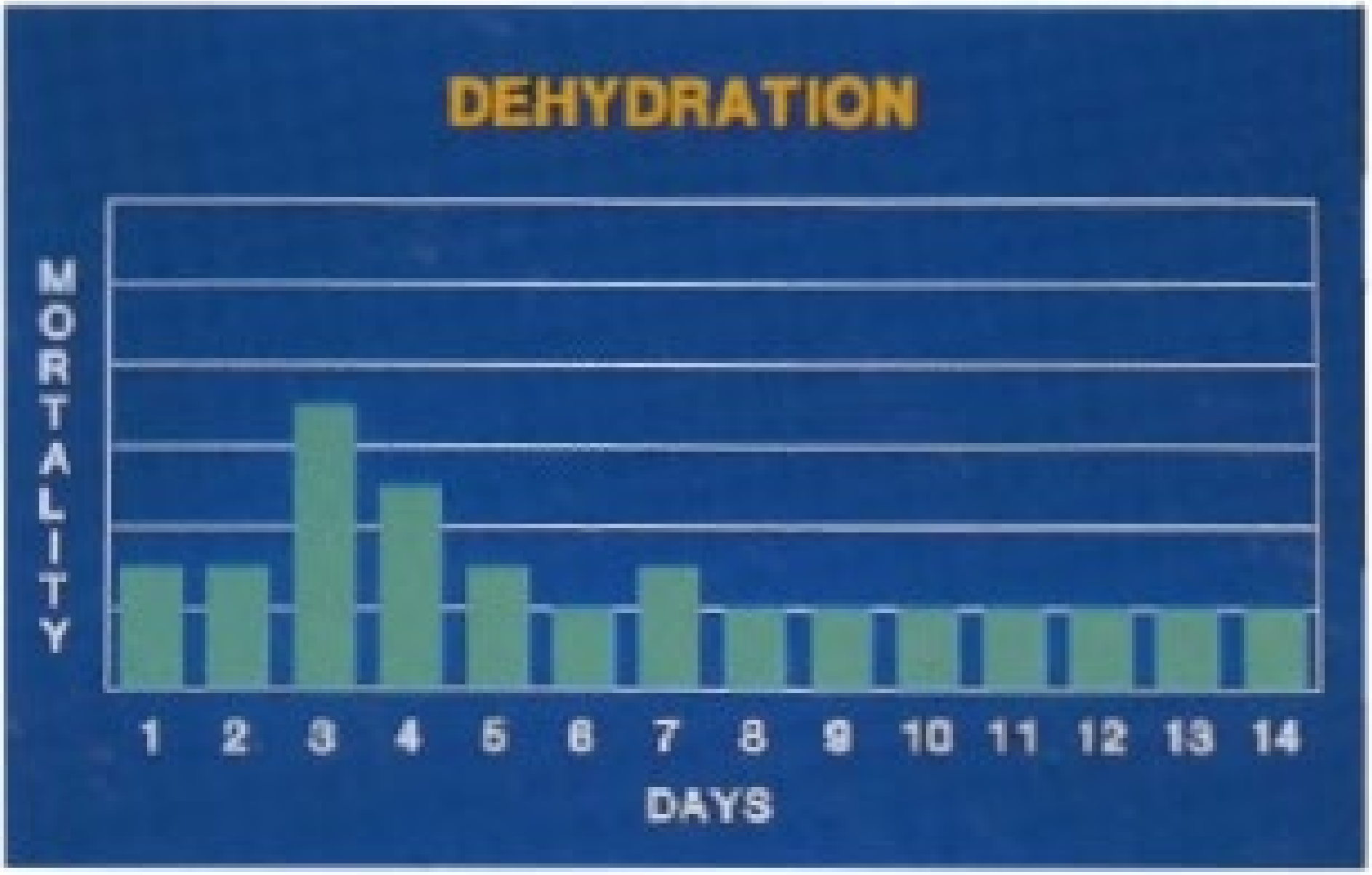
DEHYDRATION
MORTALITY
1 2 3 4 5 6 7 8 9 10 11 12 13 14
DAYS

Understand What is Happening At Bird Level


WATCHED
17:49
Broiler Brooding Best Management Practices
Chicken Farmers of Ontario
3 years ago • 397,583 views

Measuring Crop Fill

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Crop Fill Goals:

Time	Target Percentage of Flock with Full Crop
2 hrs	75%
8 hrs	80%
12 hrs	85%
24 hrs	95%
48 hrs	100%

Crop fill is the measure that gives us an opportunity to evaluate if the chicks are getting feed and water and to recognize if they are in their *Zone of Comfort*.

Number Of Chicks With Crop Fill

DIVIDED BY

Total Flock Count

Step 1 Using the catching frame, collect 30-40 chicks in total; approximately 10 chicks at a time from 3-4 different places in the house (or surround where spot brooding is used).

Step 2 Handling each chick with care, gently feel the crop of each chick in the pen using your thumb and forefinger.


Step 2

Step 3 Record the content of the crop of each chick using the following categories:

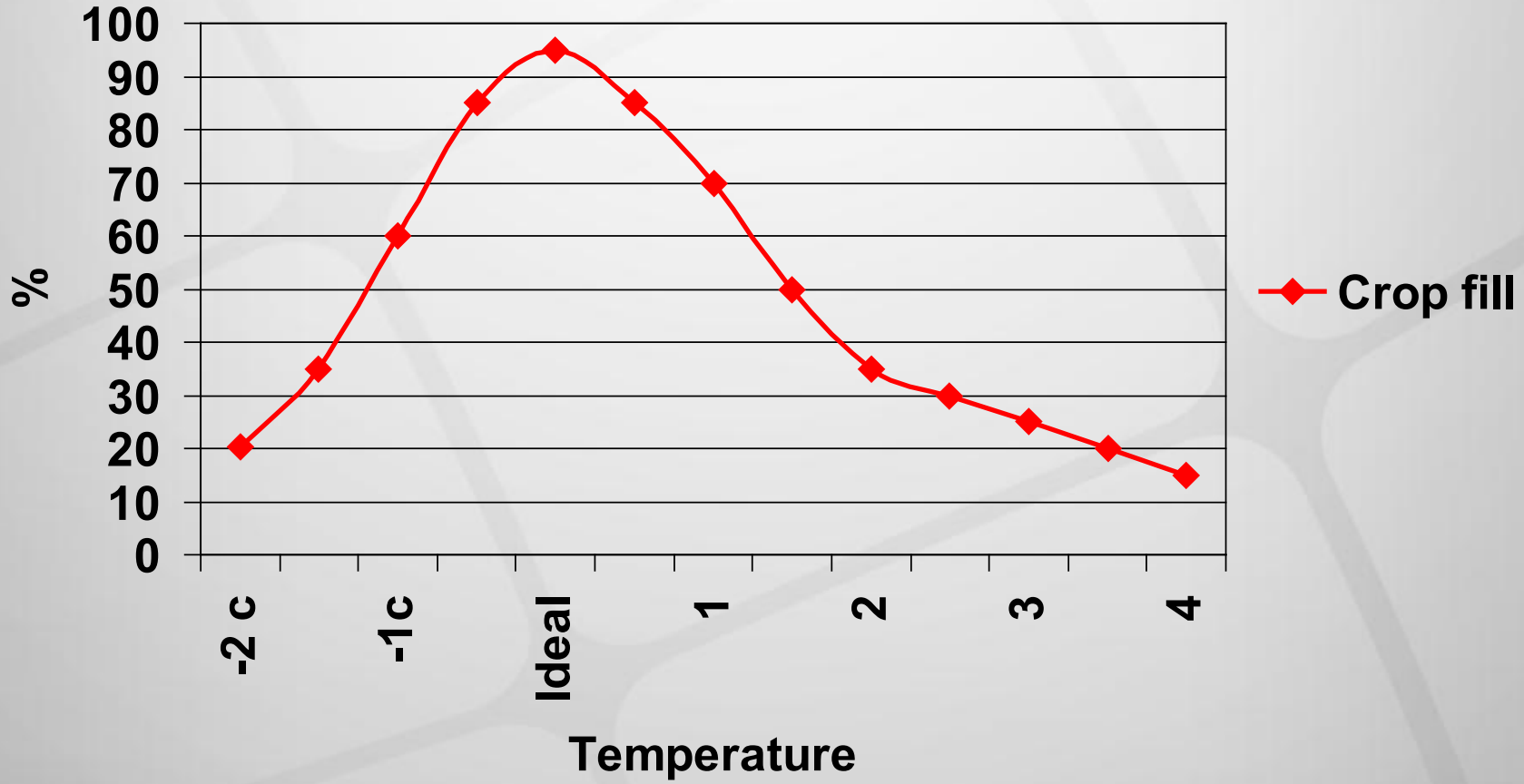
- Full, soft, and rounded – Chicks have found feed and water.
- Full but hard with original feed texture felt – Chicks have feed but little / no water.
- Crop empty – Chicks have not found feed or water.

Step 4 Calculate the percentage (%) of chicks in each category by dividing the number of chicks recorded in each category by the total number of chicks assessed and multiplying by 100.

Step 5 Compare your results with the target crop fill assessment guidelines on page 3.


Good
crop fill

Effect of temperature on crop fill



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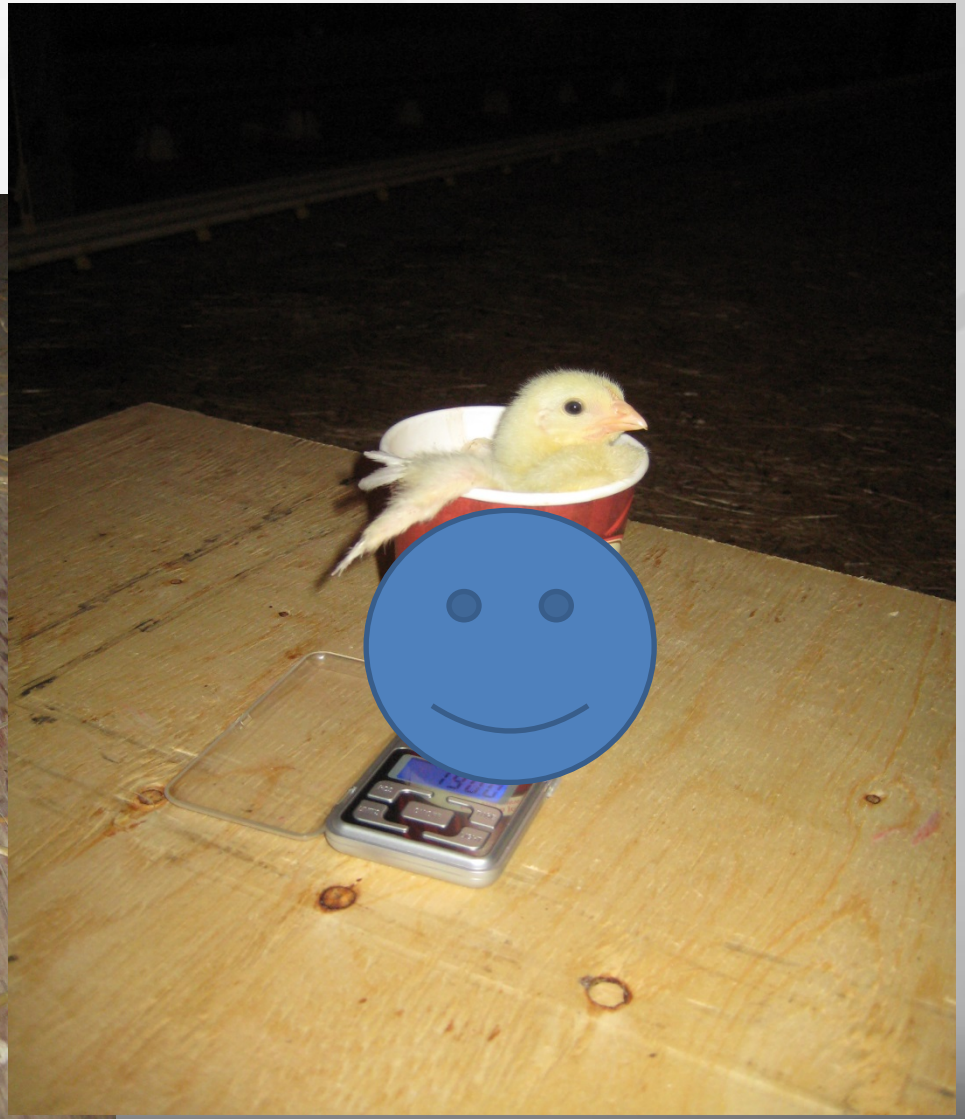
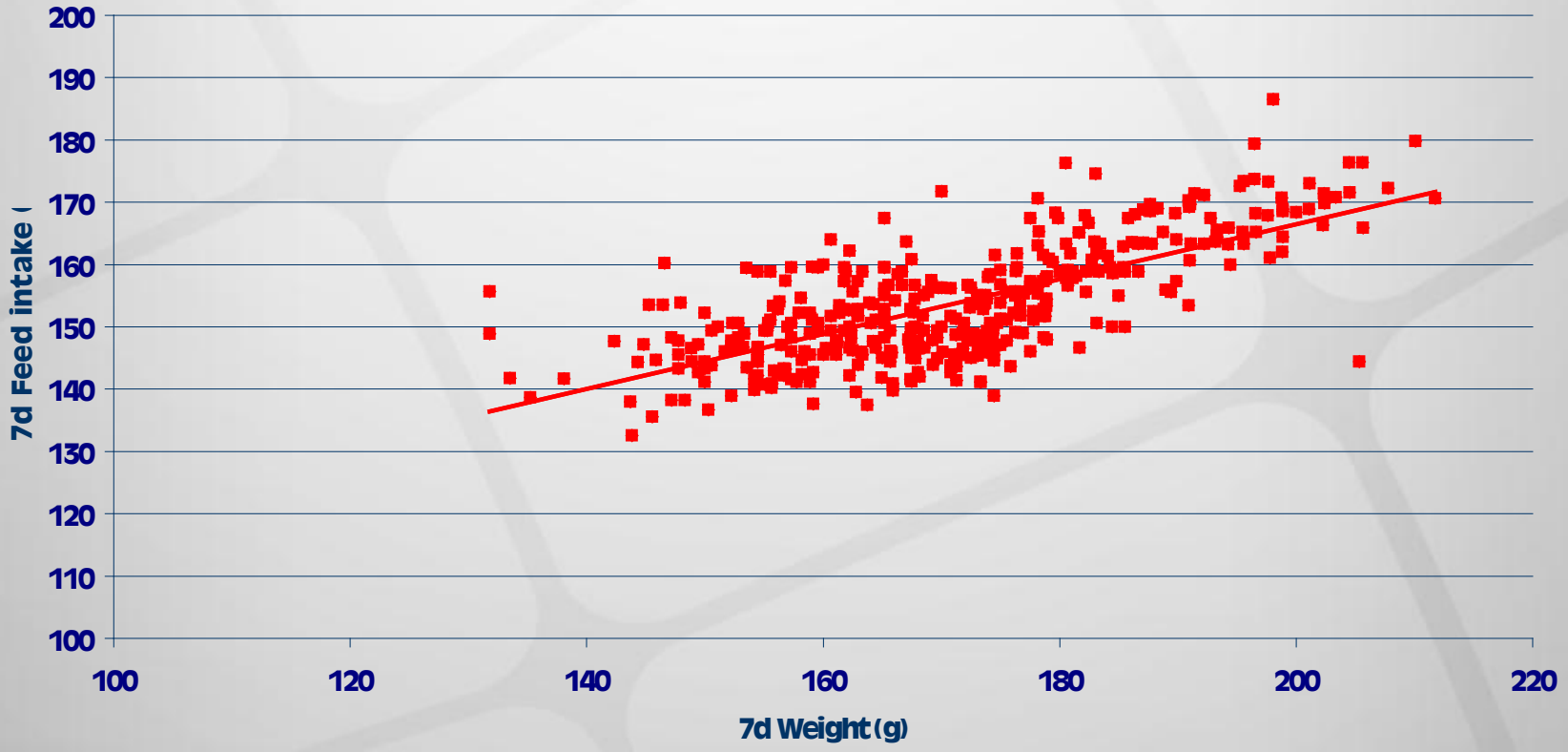
Weigh the Chicks



Effect of early feed intake on 7 day weight



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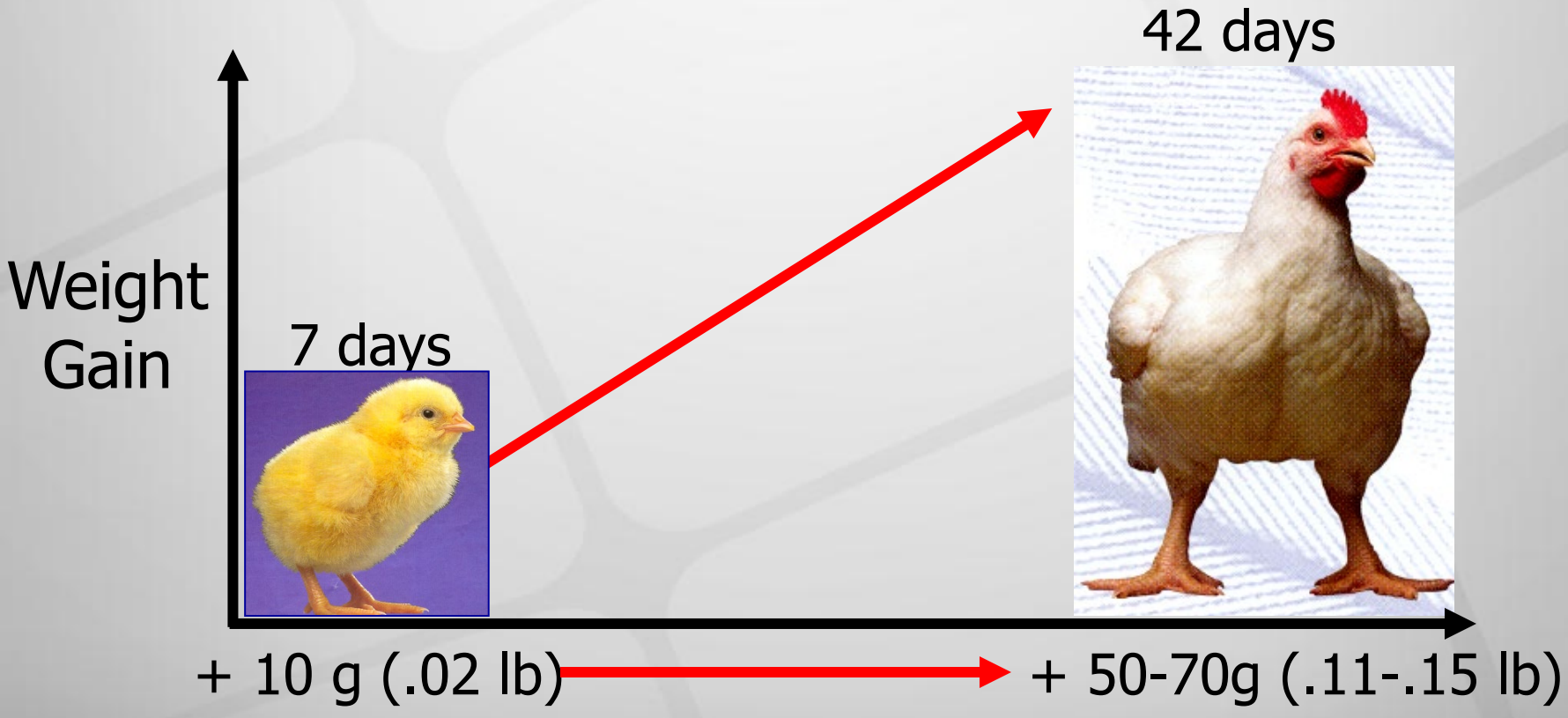
Live weight correlation (*ad libitum*)



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The First 24 Hours

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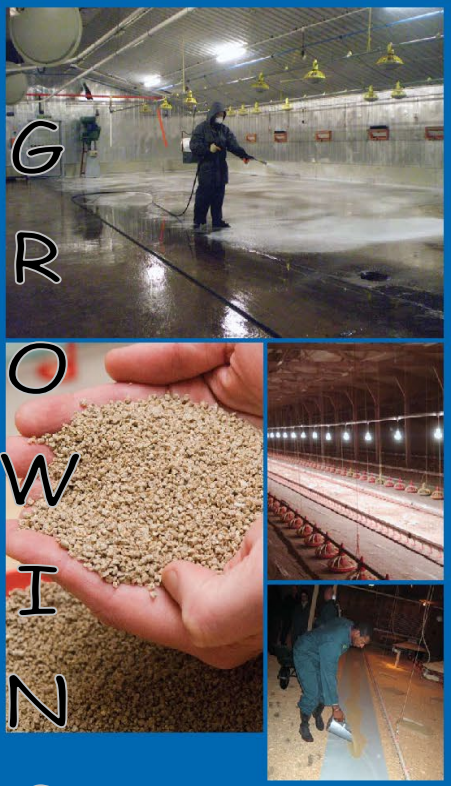
Before Chick Arrival



- Provide chicks with biosecure, clean housing.
- Arrange equipment to enable the chicks to access water and feed easily upon arrival.
- Feed should be a sieved crumb with no dust.
- Chicks should not have to move more than 1m to find water or feed in the first 24 hours.
- Position supplementary feeders and drinkers near the main feeding and drinking systems.
- Pre-heat the house and stabilise temperature and humidity prior to chick arrival - achieve a floor temperature of 28-30°C.

Chick Arrival

- Unload and place chicks quickly.
- Ensure feed and water is available immediately.
- Light intensity should be >20 lux to stimulate chick activity.
- Allow chicks to settle for 1-2 hours then check behaviour.

Environmental Targets

- Chick placement targets:
  - Air temperature of 30°C (at chick height)
  - Litter temperature of 28-30°C
  - Relative humidity of 60% - 70%
- Use chick behaviour to determine if temperature is correct.
- Ventilation (without draughts) is required to provide fresh air and remove waste gas, excess moisture and heat.
- Chicks are susceptable to wind chill effects, therefore the air speed should be less than 0.15 m/s.

Measures of Success

Crop fill

- When chicks start to feed, they tend to eat a good meal. If chicks are feeding and drinking properly the crop fills with a mixture of feed and water. Gentle handling within the first 24 hours can indicate the chick's progress.
- Check a sample of birds 2 hours after arrival to ensure all chicks have found feed and water.
- Gently sample the crops of 30-40 chicks from 3 or 4 different places in the house.
- Chick crop fill assessment:

Time of crop fill check after placement	Target crop fill (% of chicks with full crops)
2 hours	75%
12 hours	>85%
24 hours	>95%

May 2009

Evaluating Brooding Temperature

During the brooding period, optimal chick body temperature is provided through the correct environmental conditions.

Correct placement conditions: • Litter temp = 28-30 °C (82-86 °F) • Air temp at chick level = 30 °C (86 °F) • Ideal RH = 60-70%

Age (Days)	Dry Bulb Temperature at RH% - °C (°F)			
	40 (%RH)	50 (%RH)	60 (%RH)	70 (%RH)
Day-old	36.0 (96.8)	33.2 (91.8)	30.8 (84.4)	29.2 (84.6)
3	33.7 (92.7)	31.2 (88.2)	28.9 (84.0)	27.3 (81.1)
6	32.5 (90.5)	29.9 (85.8)	27.7 (81.9)	26.0 (78.8)
9	31.3 (88.3)	28.6 (83.5)	26.7 (80.1)	25.0 (77.0)

Note: Dry bulb temperatures, at the ideal RH are colored red.

Interaction between Temperature and Relative Humidity (RH)

Ideal

Chicks:
- huddle together
- become distressed and noisy

Increase temperature and / or RH
Check ventilation | Check air flows

Cold

Chicks:
- spread evenly across the brooding area

No action required

Hot

Chicks:
- move the edges of the house / brooding area
- are quieter than normal
- spread their wings and begin to pant

Decrease temperature and / or RH
Check ventilation

Monitor Chicks

Measure vent temperature.

Vent Temp 39.4 - 40.4°C (103 - 105 °F)

Crop fill
2 hrs = 75%
8 hrs = 80%
12 hrs = 85%
24 hrs = 95%
48 hrs = 100%
Percentage of birds with full crops.

BREEDER CHICK PLACEMENT CHECKLIST

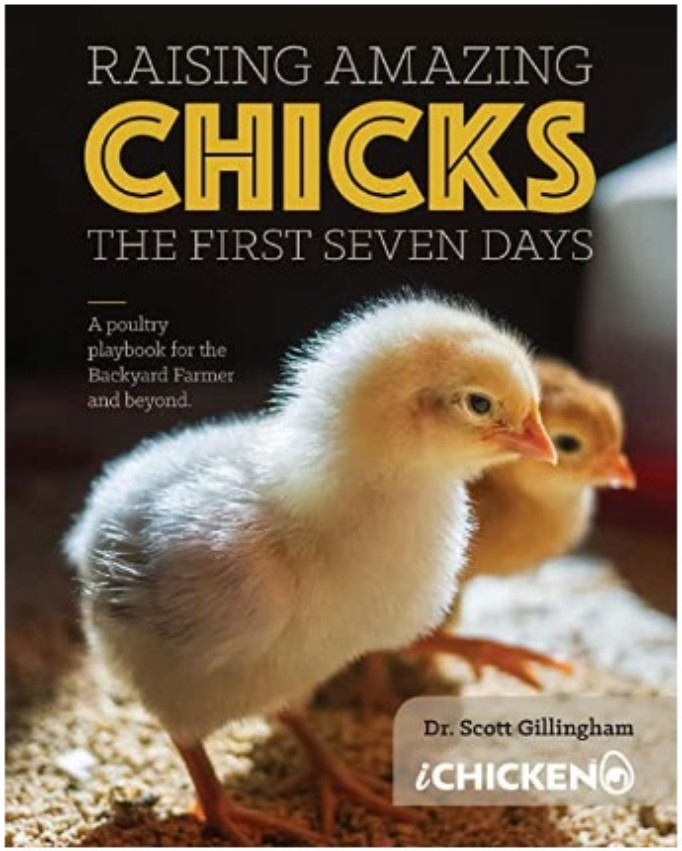
02/12

Placement Date:					
Farm Name:			Barn #:		
Contact Name:			Quota Period:		
Farm Location:			# of Birds Placed:		
Feed Company:			Feed Representative:		
Hatchery:			Hatchery Representative:		
CHICKS	**RECOMMENDED**	**MEASURED/ACTUAL**	**SPACE**	**RECOMMENDED**	**MEASURED/ACTUAL**
Vent Temp. at Delivery	**Range 103 - 105° F Average +/- 104° F**		**Density in Brood Area**	**0.5 sq. ft. /bd**	
Average Weight @ Placement	**Sample 100 chicks / pen**		**Density in Barn**	**1.6 sq. ft./bd (to 20 weeks)**	
Uniformity @ Placement	**+ / - 15%**		**Dimensions (LxWxH)**		
Crop Fill @ 24 hours	**> 95% - Sample 100 chicks**		**BEDDING**	**RECOMMENDED**	**MEASURED/ACTUAL**
Activity @ 24 hours	**Eating, Drinking Resting Playing Vocalization**		**Depth / area per unit**	**Shavings - 5 -10 cm Straw - 1 kg / m2 Remember effect of compression (~ x 1/2)**	
Distribution @ 24 hours	**Still in Brooding Area Zone of Comfort**		**Type of Bedding**		
Navels	**Healed**	Healed Unhealed	**Temperature surface of Bedding**	**90 - 92 F 32 - 33 C**	
Hydration	**Acceptable**	Acceptable Unacceptable	**Floor type**		Concrete Wood Other:
FEED	**RECOMMENDED**	**MEASURED/ACTUAL**	**COMFORT ZONE**	**RECOMMENDED**	**MEASURED/ACTUAL**
Feeder Height (floor to lip of feeder)	**On Floor, Flood position**	(cm / in)	**Partial House Brood**	**Birds fenced within brooding area (around Comfort zone)**	Yes No
Accessable	**Yes**	Yes No	**Whole House Brood**	**Where chicks spread throughout the pen soon after being unloaded**	Yes No
Supplemental Feeder	**Linear Heat source - Paper, Radial Heat source - Trays**	Paper Trays #	**Focused Brood**	**Where heat and attraction lighting can be used to hold birds to feed & water**	Yes No
In Zone of Comfort	**Yes**	Yes No	**LIGHT**	**RECOMMENDED**	**MEASURED/ACTUAL**
Distribution Comments	**Well Spread to allow easy access by all birds**	Yes No	**Light Type:**		
Feed Type	**Crumble**	Mash Crumble	**Attraction Lights Brooding Area**	**Either dedicated brooding lights or brighter than growing lights**	Yes No
Size of Crumble	**Medium Crumble**		**Intensity (Lux) Brooding Area**	**>30 Lux at chick height >3 Foot Candles**	
Creep Feed Amount (grams/chick)	**50 - 70 gm/bd (or fresh feed daily)**		**Even Light throughout Brooding area**	**Lights outside of brooding area off**	Yes No

BREEDER CHICK PLACEMENT CHECKLIST

WATER	RECOMMENDED	MEASURED/ACTUAL	AIR	RECOMMENDED	MEASURED/ACTUAL
Drinker Type			Temperature at chick height in brooding area	87 - 92° F 31 - 33° C	
Nipple Flow (ml/minute)	25 ml/min or follow manufacturer rec's		Humidity at chick height in brooding area	50 - 60 %	
Temperature	>86° F >30° C		Air movement at chick height in brooding area	Still Air No drafts	Yes No
pH	6.5 - 8.5		**SANITATION**		
Height	Tip of nipples even with bird eye level; move to 45° @ 3 days		Blown Down	Prior to further cleaning and disinfection	Yes No
Height - Uniform	Lines should be level	Yes No	Litter Removed	Completely removed prior to further cleaning and disinfection	Yes No
Availability (#chicks/nipple in brood area)	15 - 25 birds / nipple depending on system		Wash If yes:	Whenever possible; particularly in response to prior concerns	Yes: No Hot Water Cold Water
Availability (#chicks/nipple in barn)	8 - 12 birds / nipple depending on system (comply with regs)		Disinfectant / Insecticide Product concentration		
Water Source		City Well Other	Down Time (from manure out)	As long as possible	
Water Line Sanitation (describe program)	As necessary based on water analysis		Disposal of Mortality	per regulations, away from flock	Incinerate Compost Other
Water accessibility in Comfort Zone	Should be be easily accessible without leaving light and warmth	Yes No	Disposal of Manure	per regulations, away from barn	Out Stored Distance
COMMENTS					

Thank You



Raising Amazing Chicks: The First Seven Day

by Scott Gillingham

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