ST DAVID'S POULTRY TEAM

VETERINARY SURGEONS

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Heat stress in poultry

DR. DANA SIMPSON DVM MRCVS

Introduction

- ✓ Graduated from Utrecht University 2005
- ✓ Large animal vet 2006-2017
- ✓ St Davids Poultry 2017-present
- ✓ Currently studying for a masters degree in poultry veterinary
- ✓ Oversee commercial rearing and laying farms (~ 3 million birds)
- ✓ 90-100 week old layers
- ✓ Holistic bird management

The modern layer

More productive

Changes to nutrition

Longer laying cycle

Hotter summers

- Heat stress is one of the most **important environmental stressors** challenging poultry production worldwide
- High ambient temperature can strongly impact bird **welfare**, **production** and **shell quality**
- Coupled with high relative humidity (RH) the impact can become critical
- Environmental factors affecting perceived temperature:

- **Air temperature**
- **Relative humidity**
- **Air movement speed**

What is heat stress?

When birds have difficulty balancing **body heat production** and **body heat loss**.

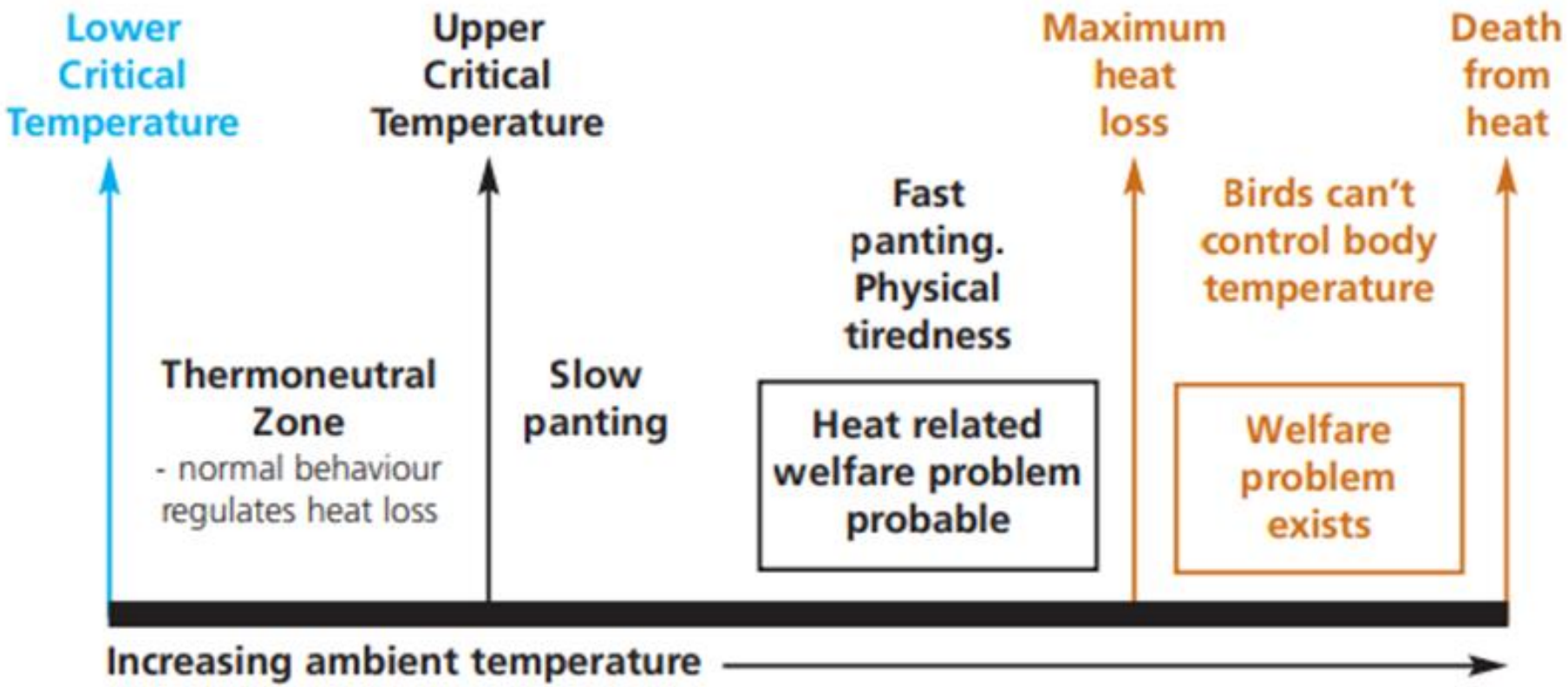
This can occur at all ages and in all types of poultry

If **heat production** > **maximum heat loss** either through acute heat stress or through chronic heat stress → birds may die.

It is important to realize that a **welfare problem** is likely to occur **before** bird losses commence.

Be aware of changes in bird behaviour and signs of distress

Diagram 1 – Diagram of Thermoneutral Zone



Source www.defra.co.uk

Signs of heat stress

Panting / open mouthed breathing

Spreading of wings

Reduced feed intake

Increased water intake

Reduced production

Weaker eggshells / smaller eggs

Lethargy

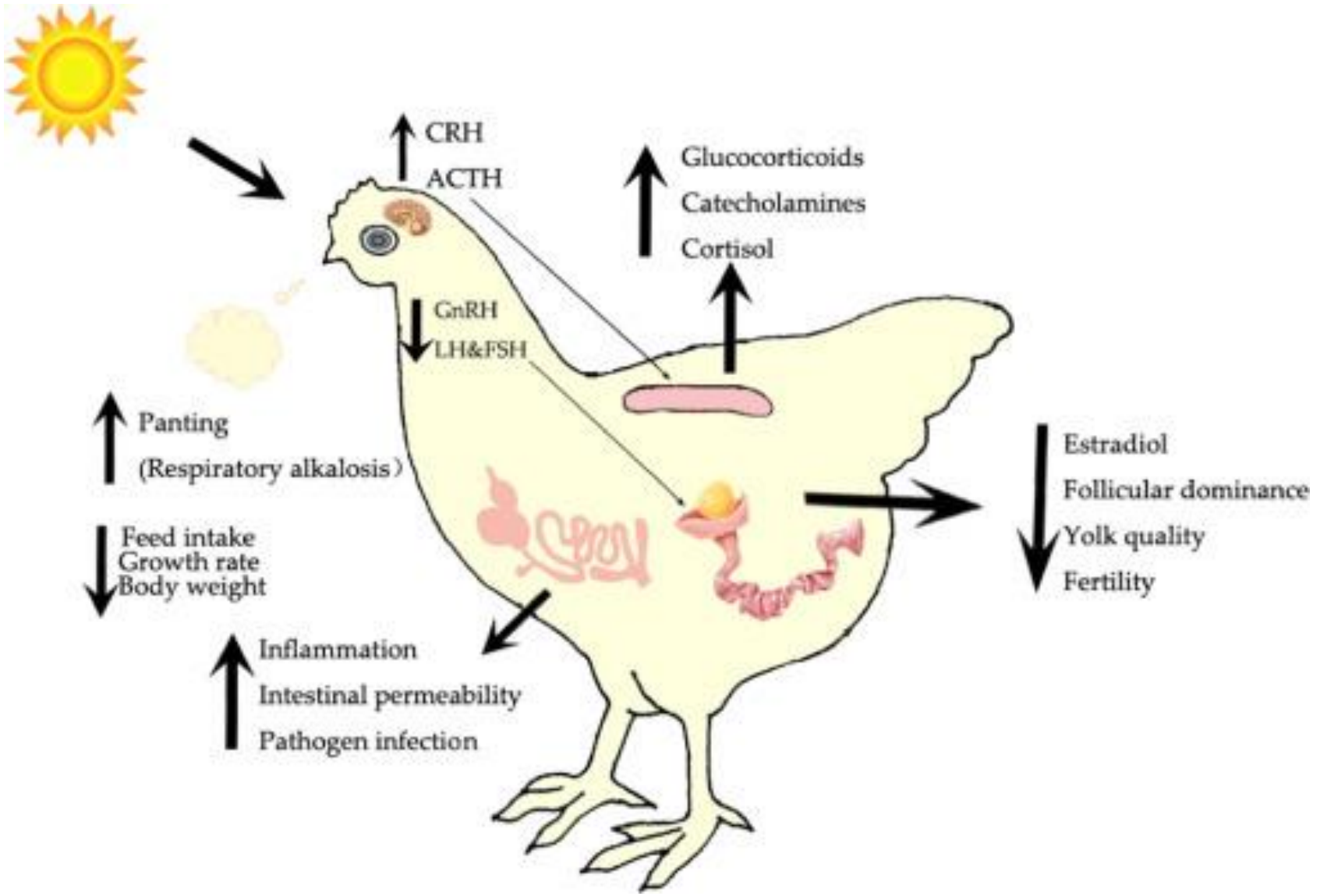
Death

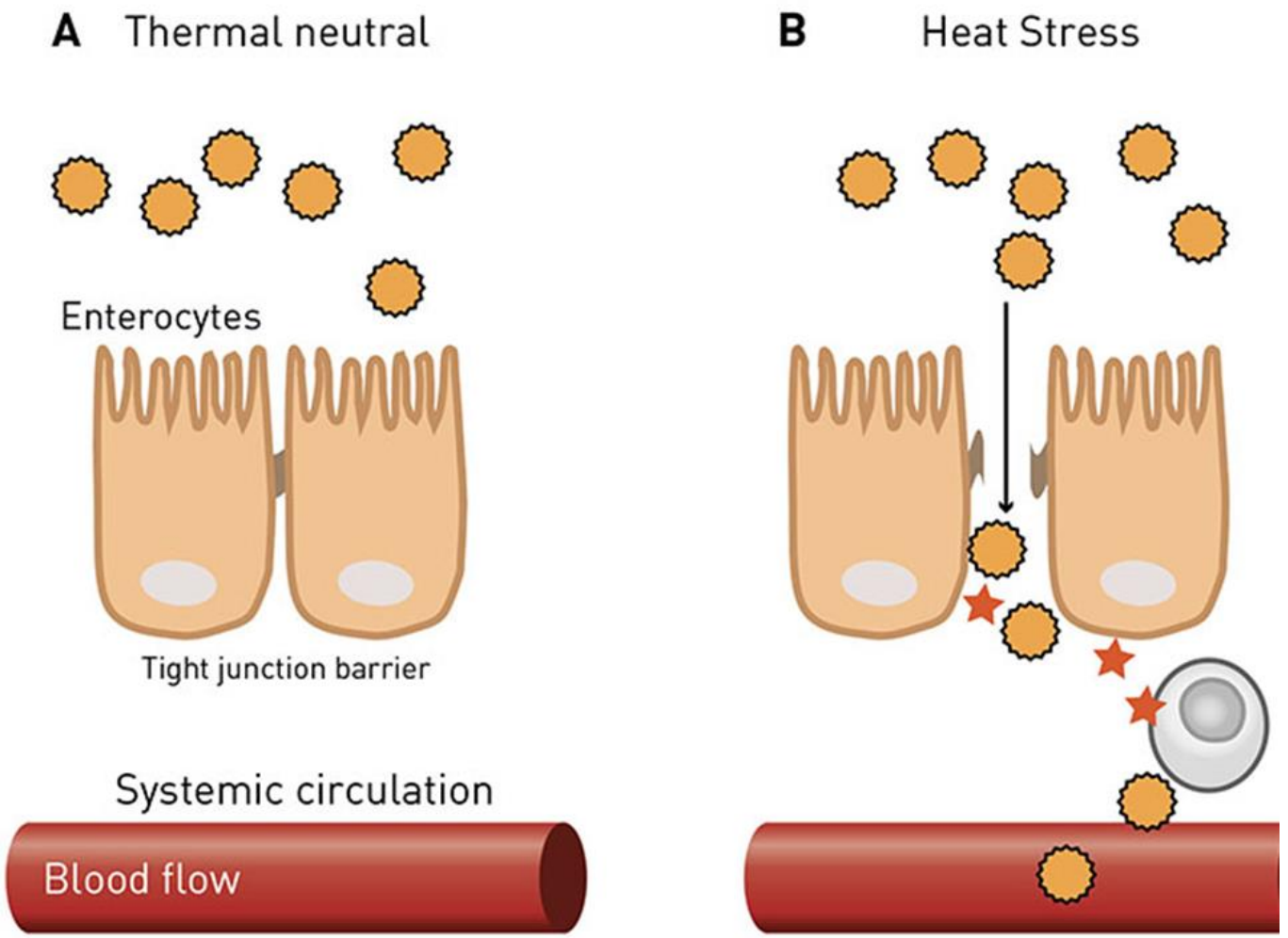
But what is happening inside the hen?

Panting → metabolic acidosis → Ca availability reduced
Reduced feed intake → Ca uptake reduced
This can lead to reduced shell quality

Reproductive hormones reduced → **drop in production**

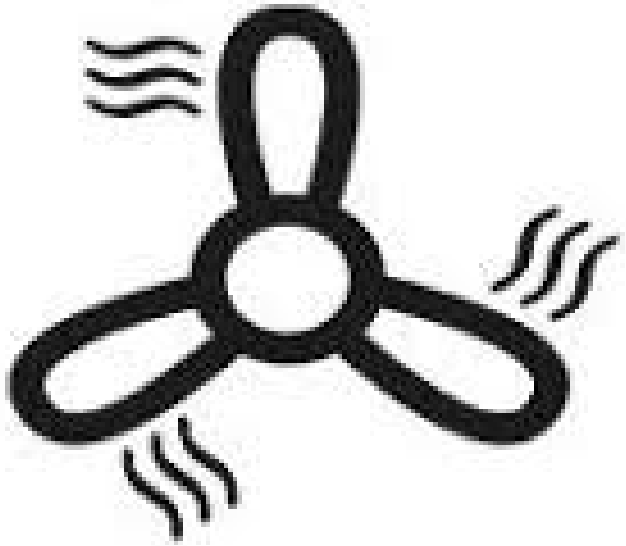
Corticosterone (stress hormone) increases
Stress induced swelling of intestinal cells → leaky gut syndrome → peritonitis → **mortality**





What can you do to minimize heat stress?

1. Increase ventilation



benefits of high airspeed over birds;

- Removes the boundary layer of hot air around the birds, aiding convectional heat loss.
- Removes humid air from around the birds' heads, making panting more efficient.
- Makes the birds feel cooler than the actual temperature → reduces panting
- Makes the most of evaporative heat loss when, at very high temperatures (> 32 C), the effects of windchill diminishes.

2. Keep the water supply cool

Panting → water loss from lungs

More water is needed to prevent dehydration

Cool water stimulates intake and helps reduce the body temperature

3. Nutraceutical support

Both in feed and in water products are available to help minimize the effects of heat stress.

Best to start these prior to onset of stress

4. good litter quality

Dustbathing helps cool the birds down

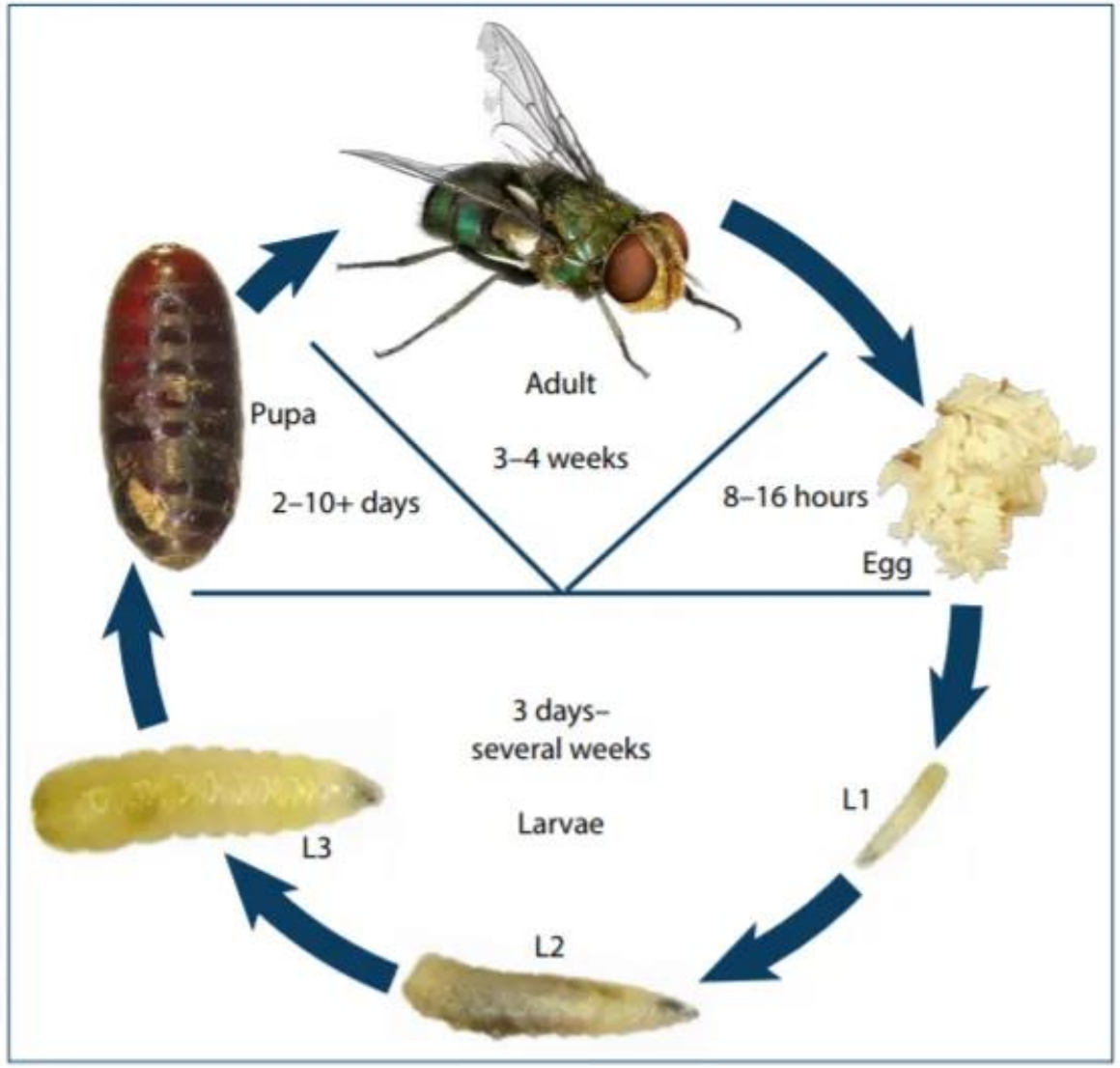
In Summary

Heat stress costs money and causes aggrievance

Provide adequate ventilation for the number of birds housed.

Provide fast air speed over birds.

High humidity increases the likelihood of heat stress in hot weather.



Fly control

Flies pose a health risk for humans

and poultry.

They are carriers of Salmonella,

Pasteurella, Campylobacter and E.Coli

The speed of fly reproduction can vary

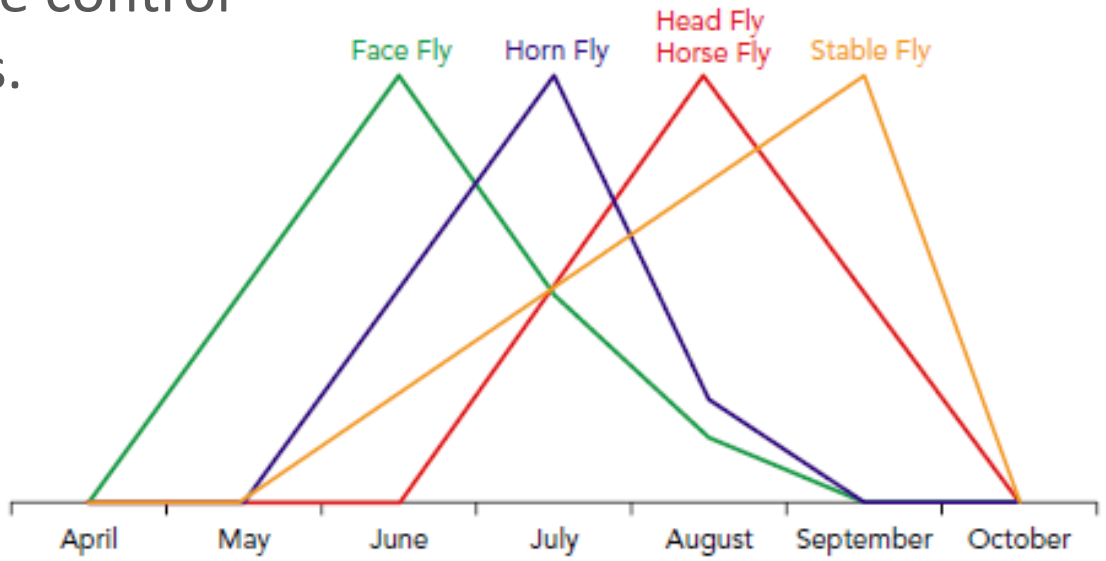
depending on environmental conditions such as warmth, moisture and food sources, but it is not uncommon to have 5 - 6 generations during a single summer breeding season

Fly season April – October (ISH)

Good management strategies:
Defensive , **Proactive** and **Year-round**.

Fly control requires a combination of preventative measures before the fly season and active control programmes during the warmest months.

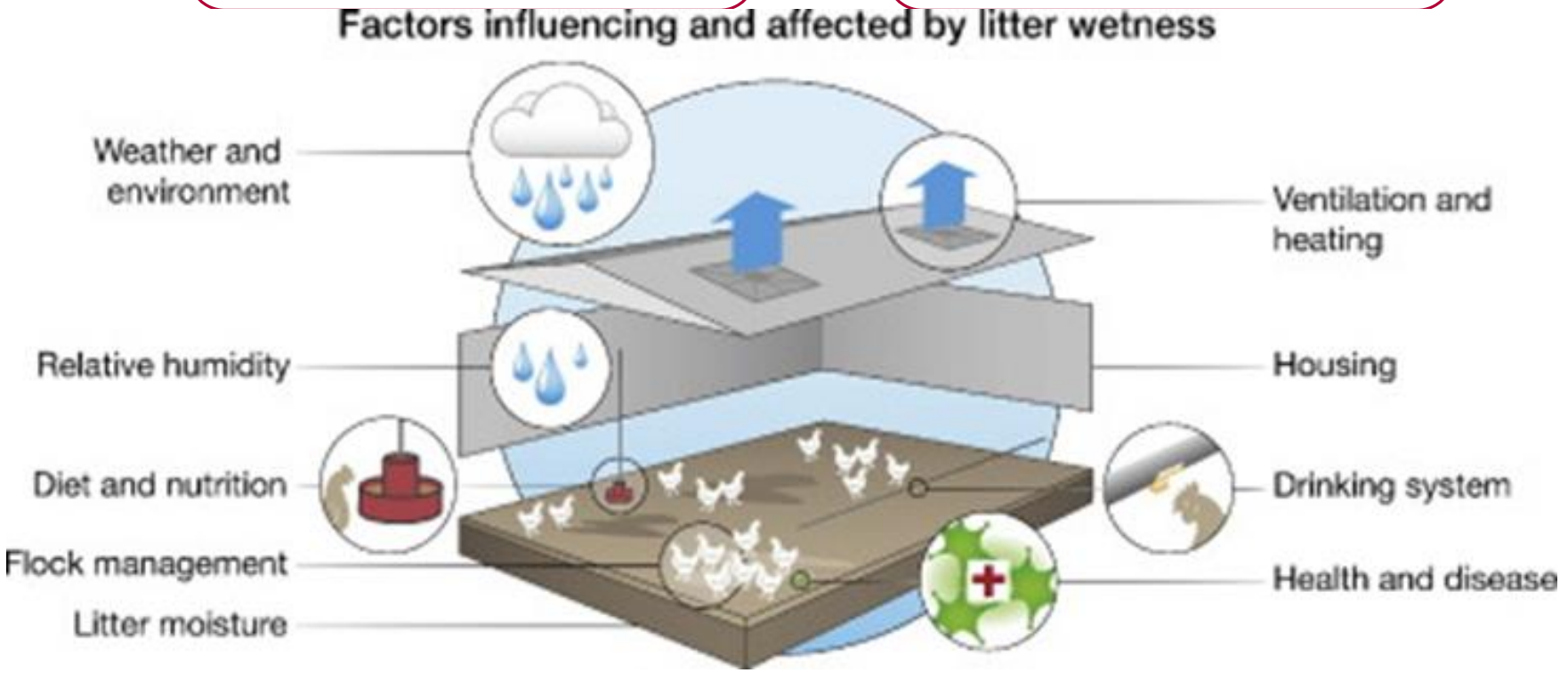
There is no one-size-fits-all solution.



Picture source blog.livestockfarming.co.uk

The key to avoiding fly infestations is managing water and moisture in the litter.

A successful fly control programme ensures moisture is controlled within the house and fly breeding sites are eliminated.



Picture source: Science of the total environment Journal

Insecticides can help provide temporary reductions in fly populations but cannot be the only method of effective fly management.

Use an integrated fly management programme involving techniques such as:

1. Chemical methods of fly control
2. Non- chemical fly control methods
3. Alternative methods

1. Chemical methods of fly control

Insecticides → adult flies

Larvicides → larval stage

Paint → adult flies

2. Non chemical fly control methods

- Litter, moisture and water management
- Screens → Inlets
- Fans → packing area

3. Alternative methods

Electrical Zappers

Fly traps

Fly paper

Take home message

- ✓ Fly control requires a combination of tactics
- ✓ Be proactive
- ✓ Monitor
- ✓ Take fast action when required

References

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Thank you for your attention
are there any questions?