

# Control of Poultry Red Mites

The Next Decade

# Dermanyssus gallinae – Poultry Red Mite - PRM



# On eggs - indicates a very big problem

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# Warm weather brings concerns about increase in poultry red mite



Agriland Team  
May 23, 2018 12:00 pm



Poultry keepers should be vigilant for signs of poultry red mite infestation, as the summer months may bring a rapid increase in their numbers, warns Maureen Prendergast - technical manager at MSD Animal Health.



Prompt treatment at the first signs of infestation can help to minimise the effect on production, estimated - in Europe alone - to cost the industry €360 million.

"These creatures come out at night to feed on the blood of the hens, causing great distress to the birds and increasing mortality rates and disease susceptibility."

<https://youtu.be/N7U5hB0d0S0>

# PRM- Life Cycle

life cycle - at least 7 days

More active in warmer months

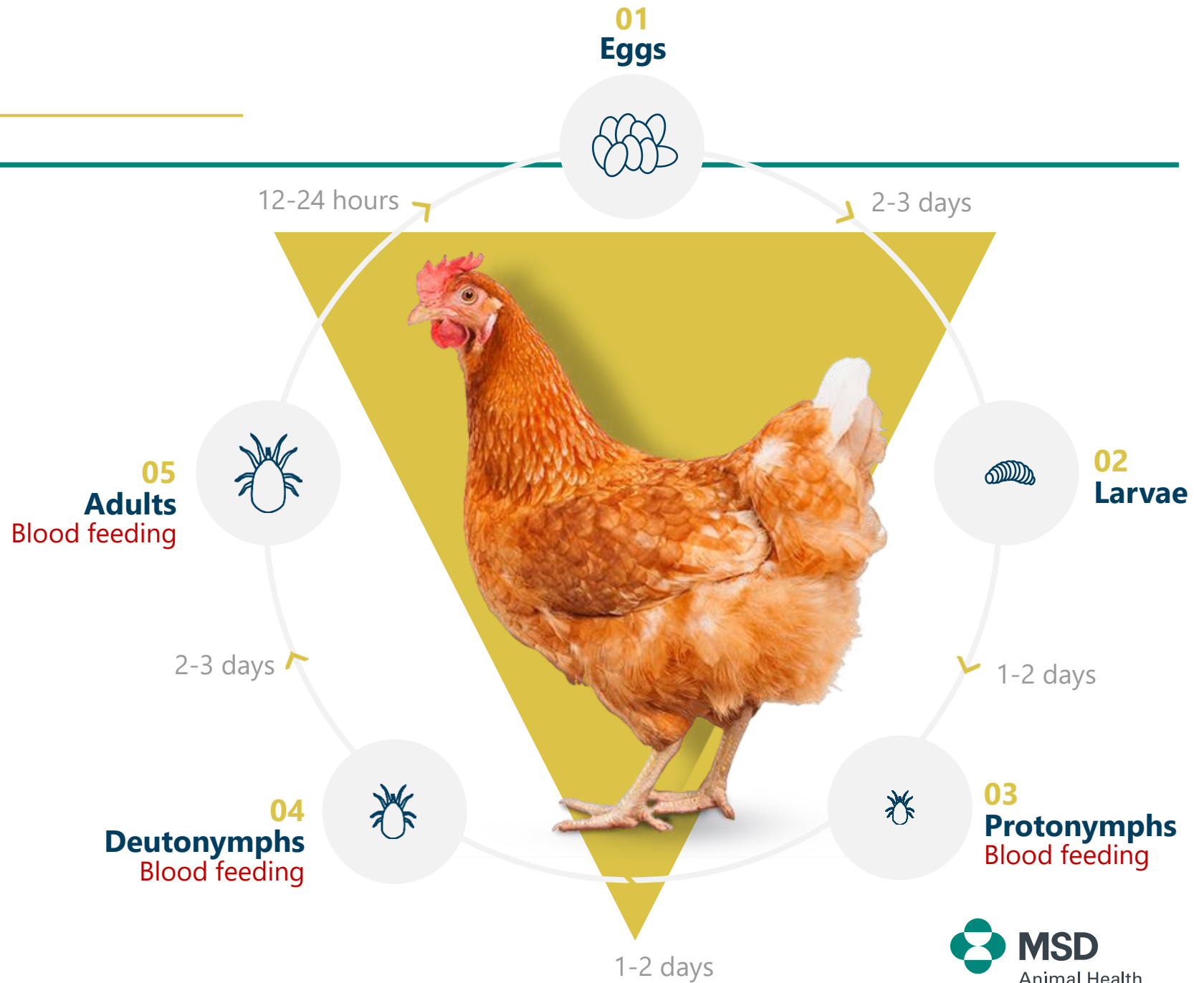
• May to October

Can live for 8 months without a feed

Inactive below 9°C

Introduced hens

Other alternative hosts include 30 species of bird, horses, rodents and humans



# Temperatures in Ireland

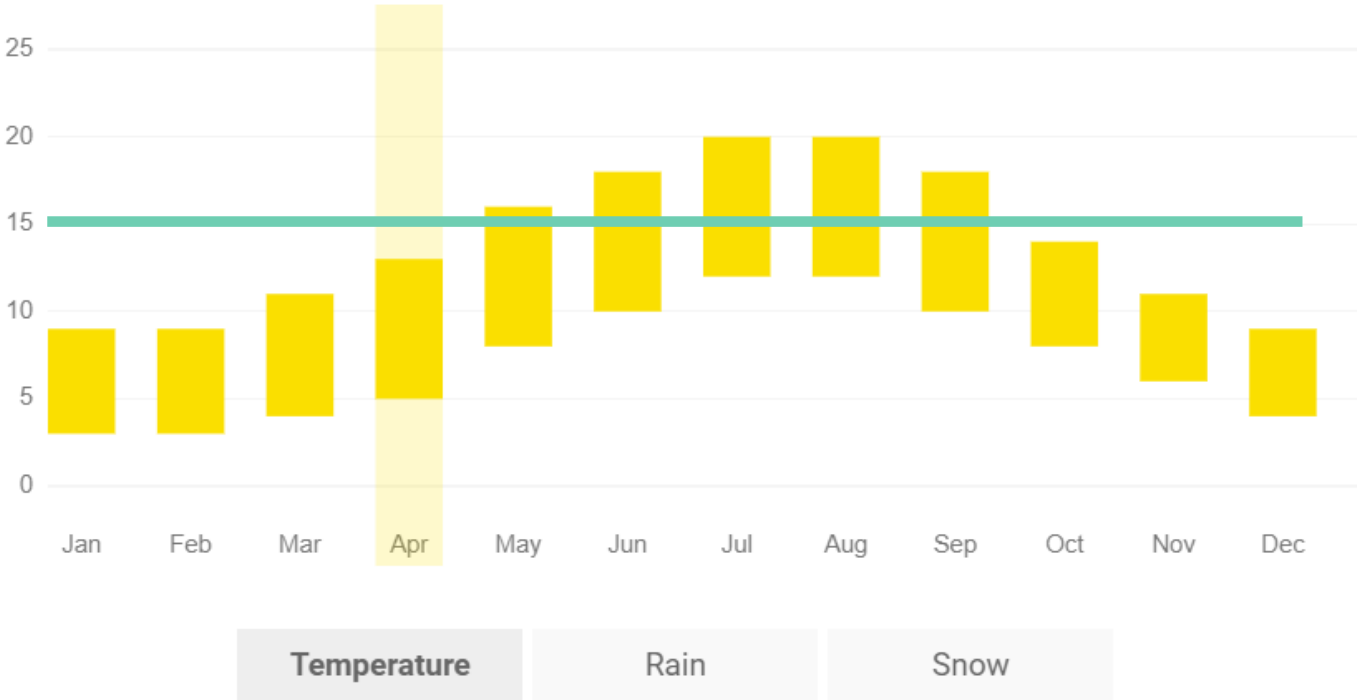


Average temperature

April

13 / 5 °C | F

Record temps 22° / -4° C  
Avg rainfall 5.1 cm  
Snow 0 days



Current forecast · Data from Weather Trends

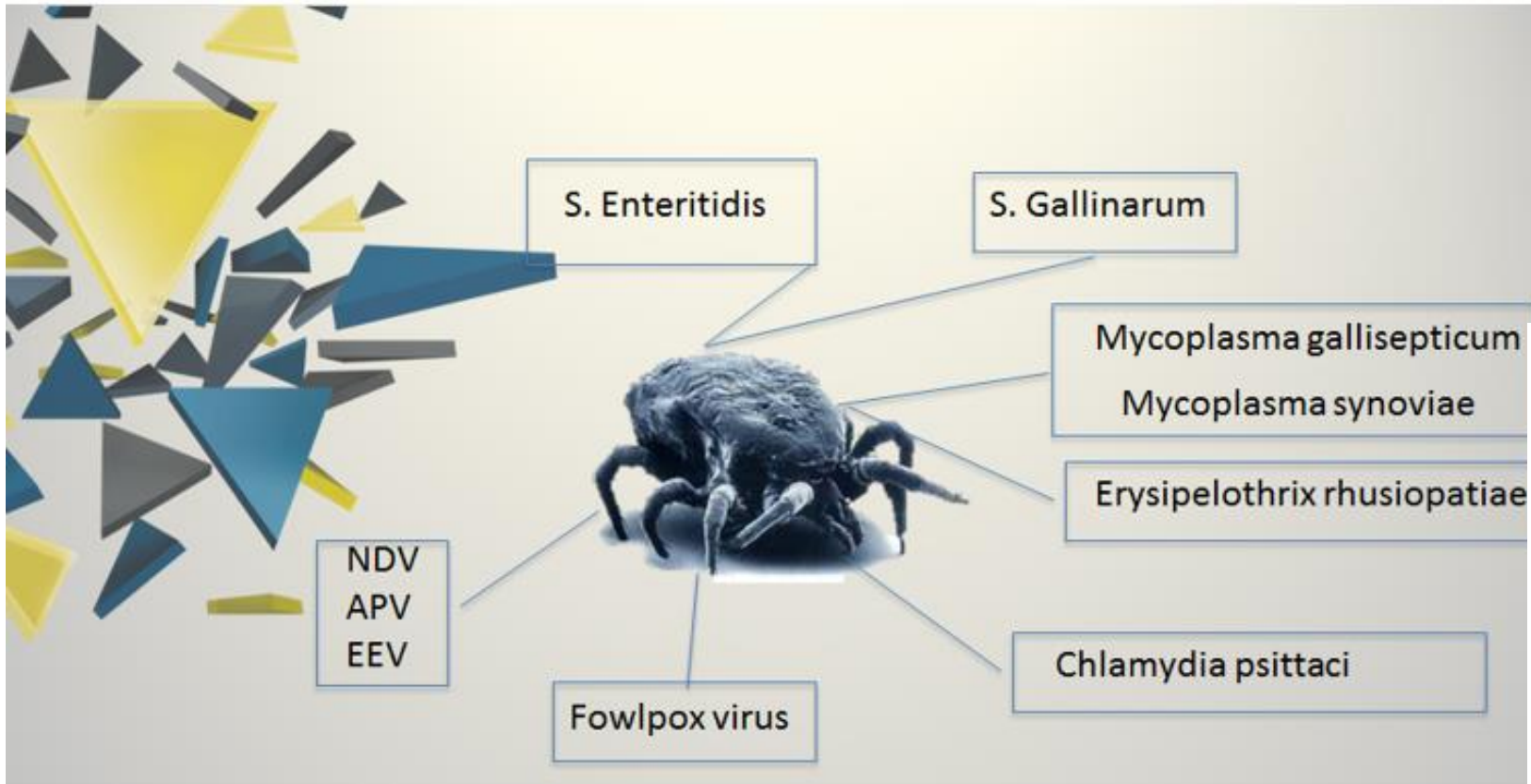
# Clinical Signs



- Listless
- Poor feathering
- Loss of blood, anaemia
- Lower production
- Lower egg weight
- Noisy at night
- Floor eggs



# PRMs – carry disease



## Controlling pests is key to reducing salmonella infection in the food chain

Salmonella enteritidis is the most common strain of salmonella in our food supply and the most common serotype associated with poultry. The increased prevalence of Salmonella enteritidis in poultry products made it a food safety issue that came to light in the 1970s.

by Richard J. Hack,  
RJH Consulting LLC, USA.

Poultry populations, in particular chicken and turkeys, are infected by salmonella via horizontal and vertical transmission and frequently without causing any clinical signs at the primary production level.

The presence of pests in poultry is suggested as the main risk factor, by allowing the bacteria to easily colonise the intestinal tract and thereafter table eggs and/or poultry meat for human

salmonella is the intestinal tract of food producing animals, which readily leads to contamination of a diversity of foodstuffs.

Every year almost 1 in 10 people fall ill from salmonella infections. This results in annual productivity losses that equate to many lost worker years because people are too ill to attend work.

Such foodborne diseases can be severe, especially for young children. Diarrhoeal diseases are the most common illnesses resulting from the consumption of unsafe food with 550 million people falling ill each year – this figure includes 220 million children under the age of five.

### Regulatory initiatives to control salmonella infections

The European Food Safety Authority (EFSA) was established to protect consumers from Salmonella



independent scientific support and advice on human health and food safety-related aspects of salmonella. Key actors that support EFSA include EU member states, European Commission, European Parliament, and the European Centre for Disease and Prevention (ECDC). The US Food and Drug Administration has developed 'Guidance for Industry: Prevention

incidence of salmonella in the food chain.

### The role of poultry pests as vectors for transmission

The following pests, associated with poultry production, are known to carry and transmit salmonella within the flock and to consecutive flocks:



# Human Health

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Further, *D. gallinae* also poses a threat to human health, as it can act a reservoir and possibly as a vector of several zoonotic diseases like *Salmonella enteritidis*, *Pasteurella multocida*, and *Borrelia burgdorferi*

Workers health/welfare

Itch

Dermatitis

Allergy

Nuisance



# What they are not? - differential

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**Lice**



**Northern Fowl Mite**



**Scaly leg mite**



Amy Murillo

# Cost of Disease

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Bird Production/welfare

Reduced egg production

Poor egg quality

Anaemia – more susceptible to disease

Treatment cost

**€360 million per year associated with *D. gallinae* in Europe – all costs**

**(€231 million at €0.60 per bird)**



# Effect on egg production – after effective treatment

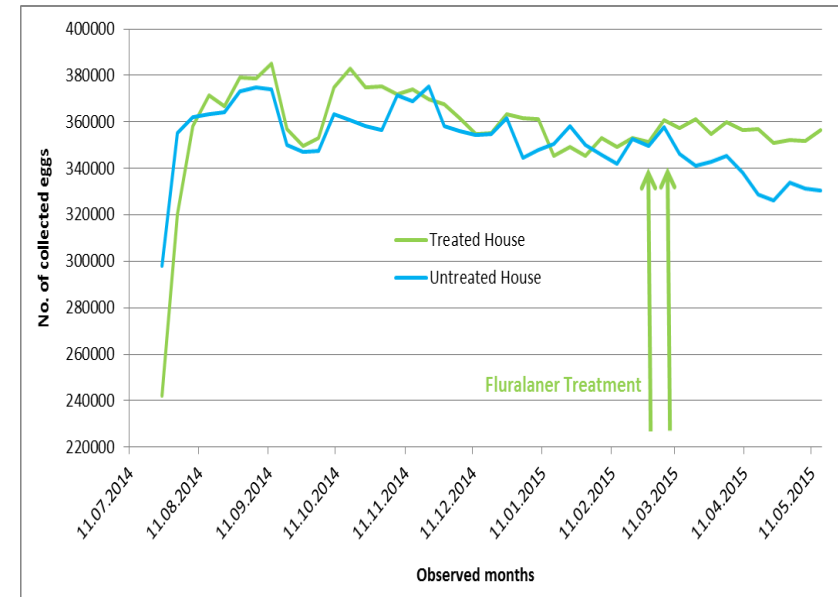
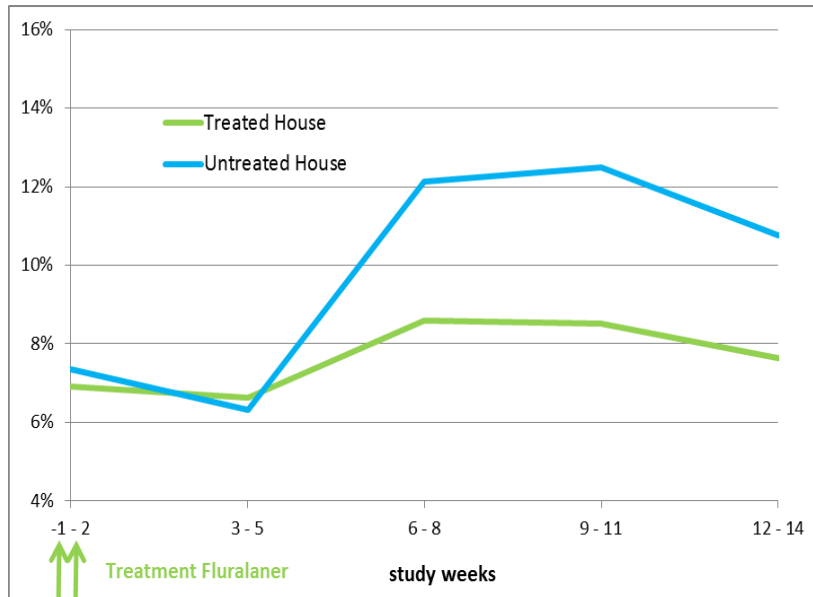
Less downgraded eggs (up to 4% less)

Increased laying rates (up to 5.75% in caged layers)

Downgraded Eggs

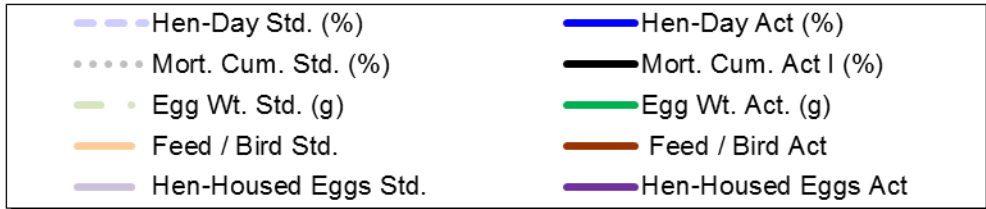
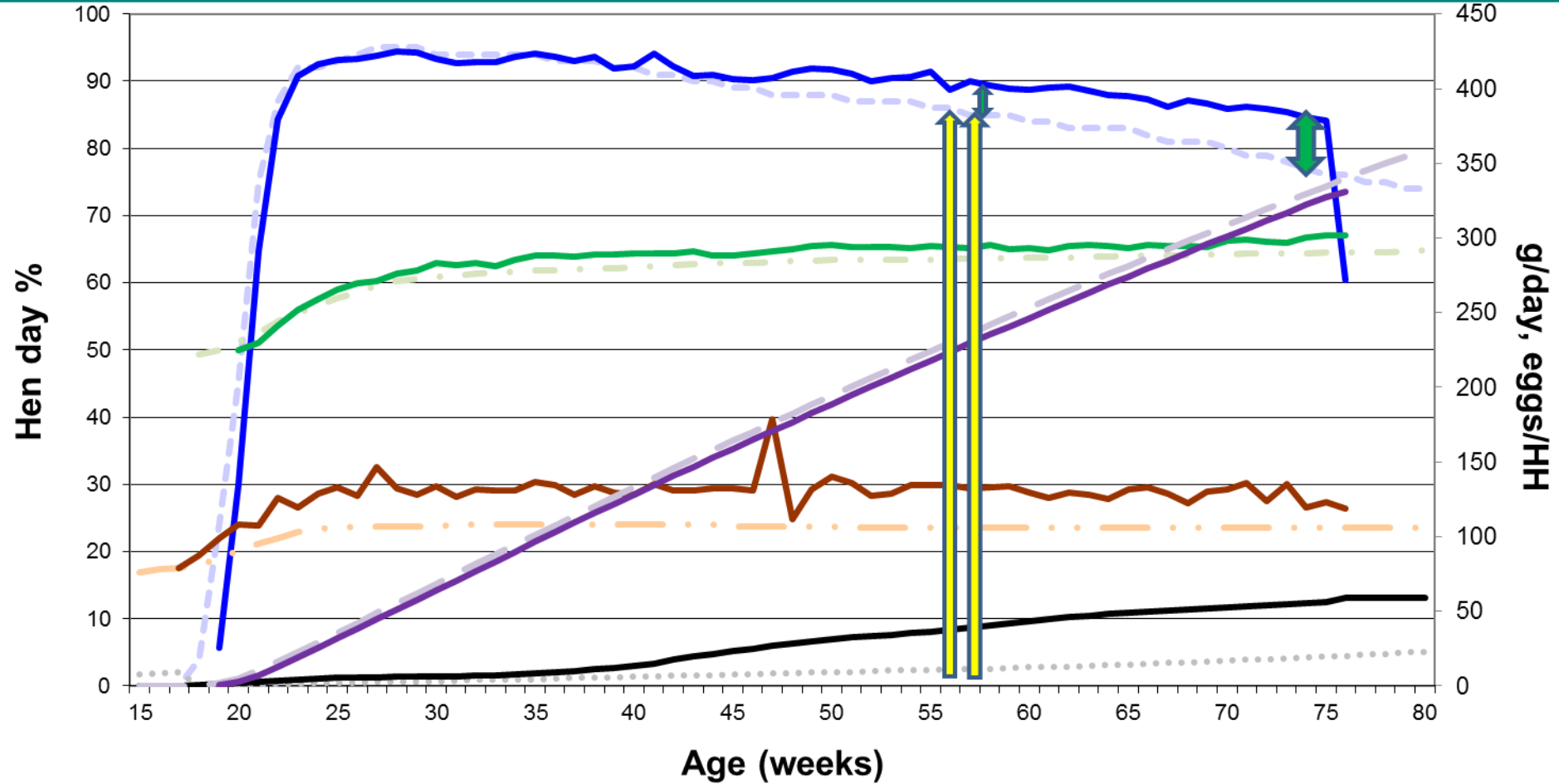


Laying Rate



# FLOCK PERFORMANCE

Yorkshire House 1 and 2 Hatch: October 7, 2016 Housed: 31,824 Hy-Line Brown



# WELFARE

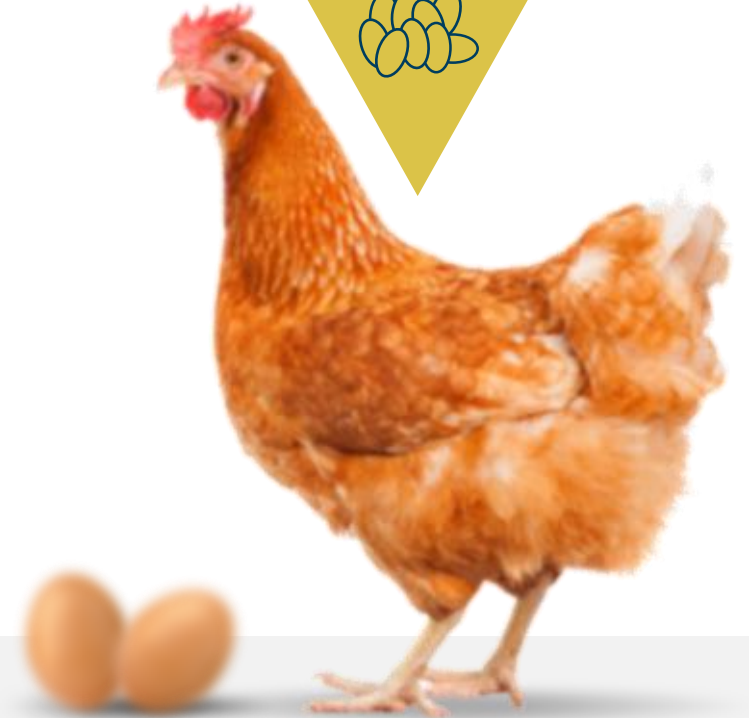
Before treatment, **corticosterone** levels were 4.0 ng/ml, and **significantly decreased** to 1.7 ng/ml after treatment, Inflammatory blood cells decreased from (0.1 to 0.6)



After treatment, **severe feather pecking decreased** during the day ( $p < 0.01$ ). During the night, the percentage of active hens decreased from 34% before to 11% after treatment



**Production** also **improved**, from 85.2% before treatment to 91.6% after treatment. **Daily mortality decreased** from 0.012% to 0.007% after treatment.



# Monitoring

Think like a mite



# Integrated Pest Management

1. Prevention and Population Suppression
2. Monitoring
3. Treatment Decision based on Monitoring
4. Non-Chemical Treatment
5. Selective Pesticides
6. Reduction of Chemical Use
7. Anti-Resistance Strategies
8. Evaluation throughout



## Possibilities for IPM Strategies in European Laying Hen Farms for Improved Control of the Poultry Red Mite (*Dermanyssus gallinae*): Details and State of Affairs

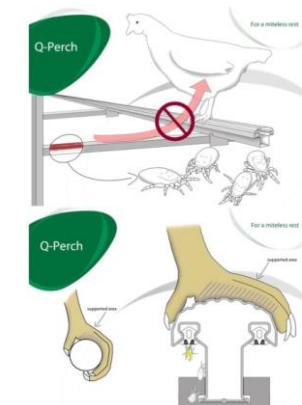
Eva Decru<sup>1\*</sup>, Monique Mul<sup>2,3</sup>, Alasdair J. Nisbet<sup>4</sup>, Alejandro H. Vargas Navarro<sup>5</sup>, Geoffrey Chiron<sup>6</sup>, Jon Walton<sup>7</sup>, Tomas Norton<sup>8</sup>, Lise Roy<sup>9</sup> and Nathalie Smeckx<sup>1\*</sup>





# Current red mite control: physical

- Oils (example rapeseed oil)
- Soap
- Diatomaceous Earth
- Silicate:
  - Cumbasil (dust bath)
  - Finecto+ (carrier)
  - FossilShield (electrostatic)
- Heat: Thermo-kill, Burning
- Q-Perch: electric
- Herbal mixtures
- Predators also carry disease



# Current red mite control: chemical

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- Pyrethrins
- Organophosphates
- Residues
- Hazardous
- New molecule eg. Fluralaner





### Manure Trailer

- Travelling around site, shared equipment ?
- Rarely cleaned

### Manure elevator room

- Cold area
- Reservoir for mite eggs ?

### Old equipment stored on range

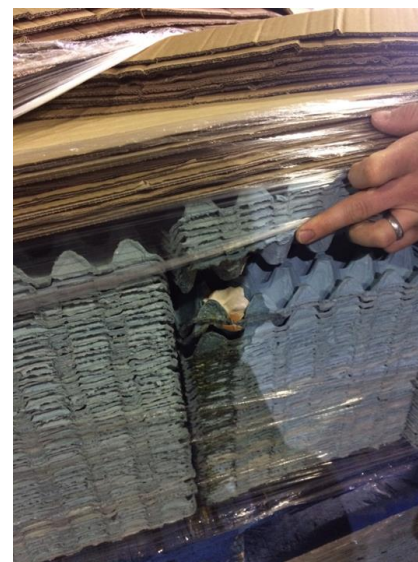
- Reservoir for mite eggs ?

### Standing water

- Attract wild birds ?



- Manure conveyor
- Residual manure and dust
  - Colder area, slower lifecycle
  - High risk of mite harbourage



# Places to look for mites

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# Biosecurity

## BIOSECURITY MEASURES

### ESSENTIAL PRACTICES FOR THE CONTROL OF POULTRY RED MITE (PRM)

PRM can have a huge economic impact on your business  
The points below will help you prevent and control PRM



<h4>EXTERNAL ENVIRONMENT</h4> <ul style="list-style-type: none"> <li>Restrict entry and maintain visitors log</li> <li>Keep all wild birds and vermin out and eradicate rodents</li> <li>Clean and disinfect vehicles on entering the farm</li> </ul> 	<h4>INTERNAL ENVIRONMENT</h4> <ul style="list-style-type: none"> <li>Install a perimeter fence and controlled access at all entrances</li> <li>Correctly maintain buildings to reduce hiding places for mites and prevent vermin.</li> <li>Ensure that house surroundings are clean and have a hard pavement</li> </ul> 
<h4>CLEAN AND DISINFECT</h4> <ul style="list-style-type: none"> <li>Thoroughly clean and disinfect houses when empty especially cracks and crevices</li> <li>Clean the cages and aviary structures weekly</li> <li>Maintain and clean egg conveyor belts and cross-belts and manure belts regularly</li> </ul> 	<h4>CLEAN AND DISINFECT</h4> <ul style="list-style-type: none"> <li>Maintain foot baths at the house entrance</li> <li>Maintain foot bath disinfectant at all times</li> </ul> 
<h4>MANAGEMENT</h4> <ul style="list-style-type: none"> <li>Check birds for presence of PRM before placement in the houses</li> <li>Check all containers and crates for PRM on entry</li> <li>Set mite traps and monitor regularly</li> </ul> 	<h4>MATERIAL/EQUIPMENT</h4> <ul style="list-style-type: none"> <li>Only use clean or new egg trays</li> <li>Clean containers and crates after use</li> </ul> 
<h4>REMOVAL OF CARCASSES</h4> <ul style="list-style-type: none"> <li>Remove carcasses twice daily</li> <li>Implement an adequate independent carcass removal system</li> <li>Clean and disinfect mortality dump to avoid PRM spread</li> </ul> 	<h4>PERSONNEL HYGIENE</h4> <ul style="list-style-type: none"> <li>Install a dressing room with a hygienic barrier</li> <li>Use shower when available to enter the farm</li> </ul> 
<h4>PERSONNEL EQUIPMENT</h4> <ul style="list-style-type: none"> <li>Workers require separate outer clothing for each house</li> <li>Instruct hen collection teams to undertake site biosecurity requirements</li> </ul> 	<h4>TAKE CONTROL</h4> <ul style="list-style-type: none"> <li>Implement a plan for all the above measures and ensure it is followed</li> <li>The control of the PRM depends on all the above biosecurity measures</li> </ul> 

**CONTROL OF PRM DEPENDS ON ALL OF US**

**MSD**  
Animal Health

MSD FOR THE FUTURE

# Successful treatment

Before treatment



After treatment

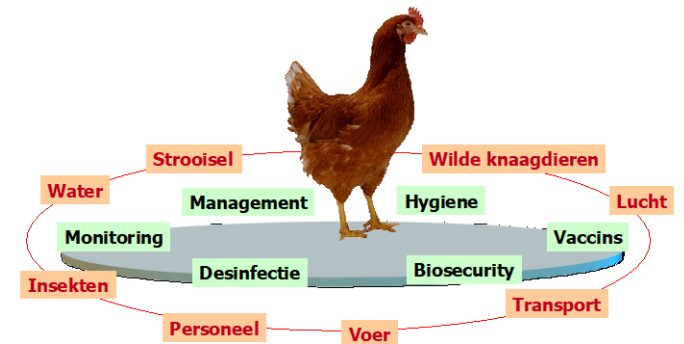


‘Dry Landing!’



# Conclusions

- Economic impact reaches 5-10 eggs (or more)
- Poultry Red mites transmits infectious diseases.
- Monitoring
  - Awareness
  - Shows infection before visual monitoring
  - Indicates when to treat
  - Evaluate treatment effect
- Integrated pest management is the key
- Global Warming will see an increase in mites







# Questions?

AgriLand 76%

redmiteexpert.com

**BREAK THROUGH  
BEFORE THEY DO**

**POULTRY RED MITES CAUSE LARGE PROFIT LOSS IN EUROPEAN POULTRY OPERATIONS.**

Control of poultry red mites is critical, as even relatively small mite populations can have significant impact on bird welfare and operation productivity. Poultry red