Control of Poultry Red Mites

The Next Decade

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Animal Health
The Science of Healthier Animals™

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

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PRM- Life Cycle

life cycle - at least 7 days

More active in warmer months

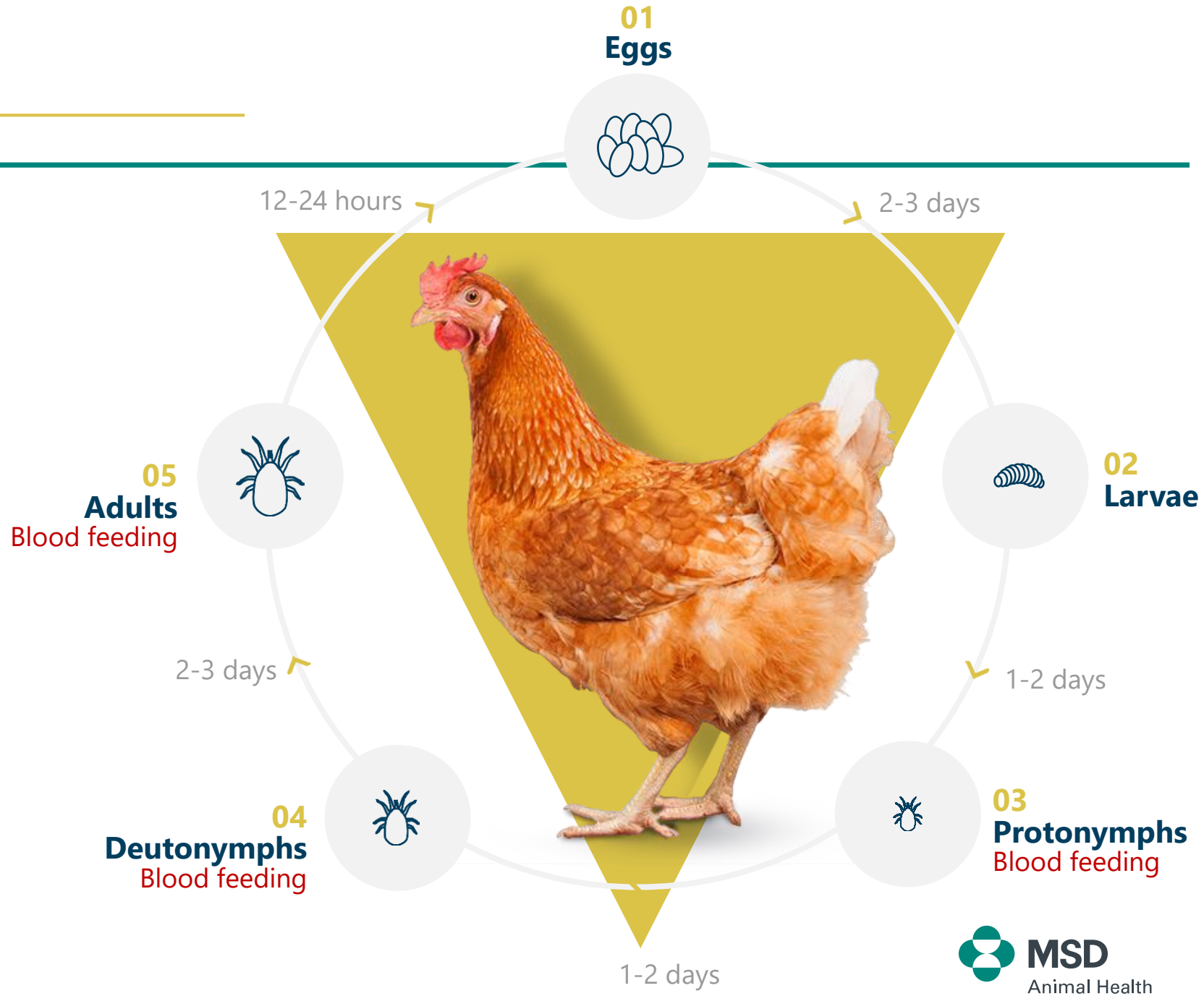
- **May to October**

Can live for 8 months without a feed

Inactive below 9^0C

Introduced hens

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



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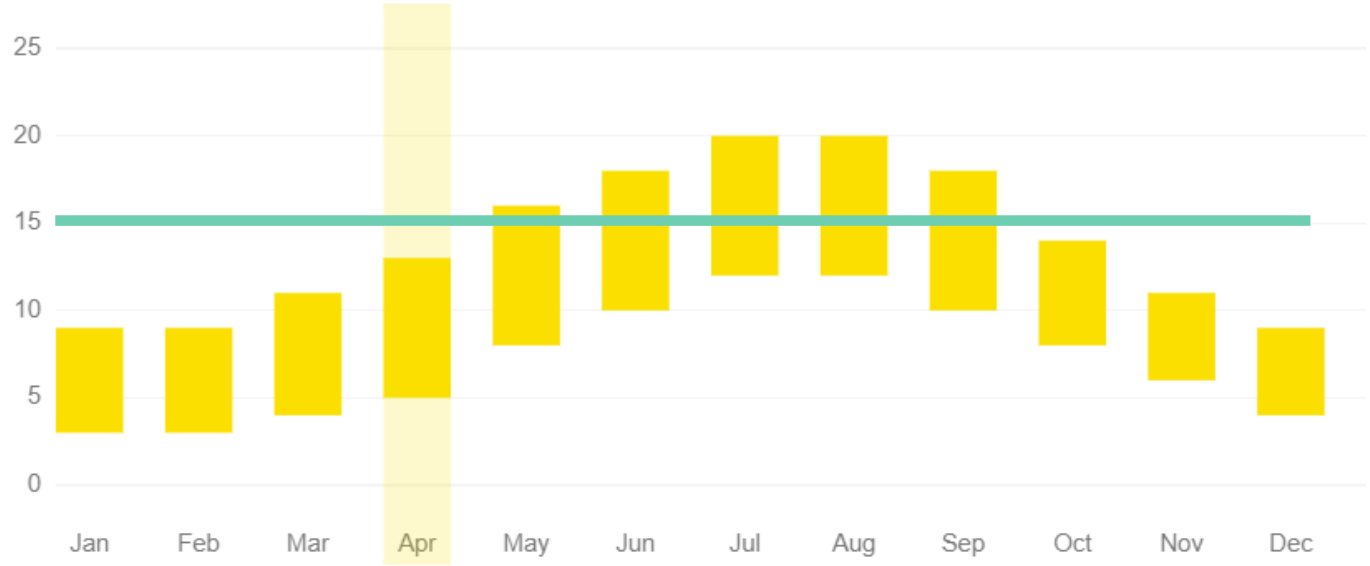
Temperatures in Ireland

Average temperature

April

13 / 5 °C | F

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



Temperature | Rain | Snow

Current forecast · Data from Weather Trends

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Clinical Signs

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

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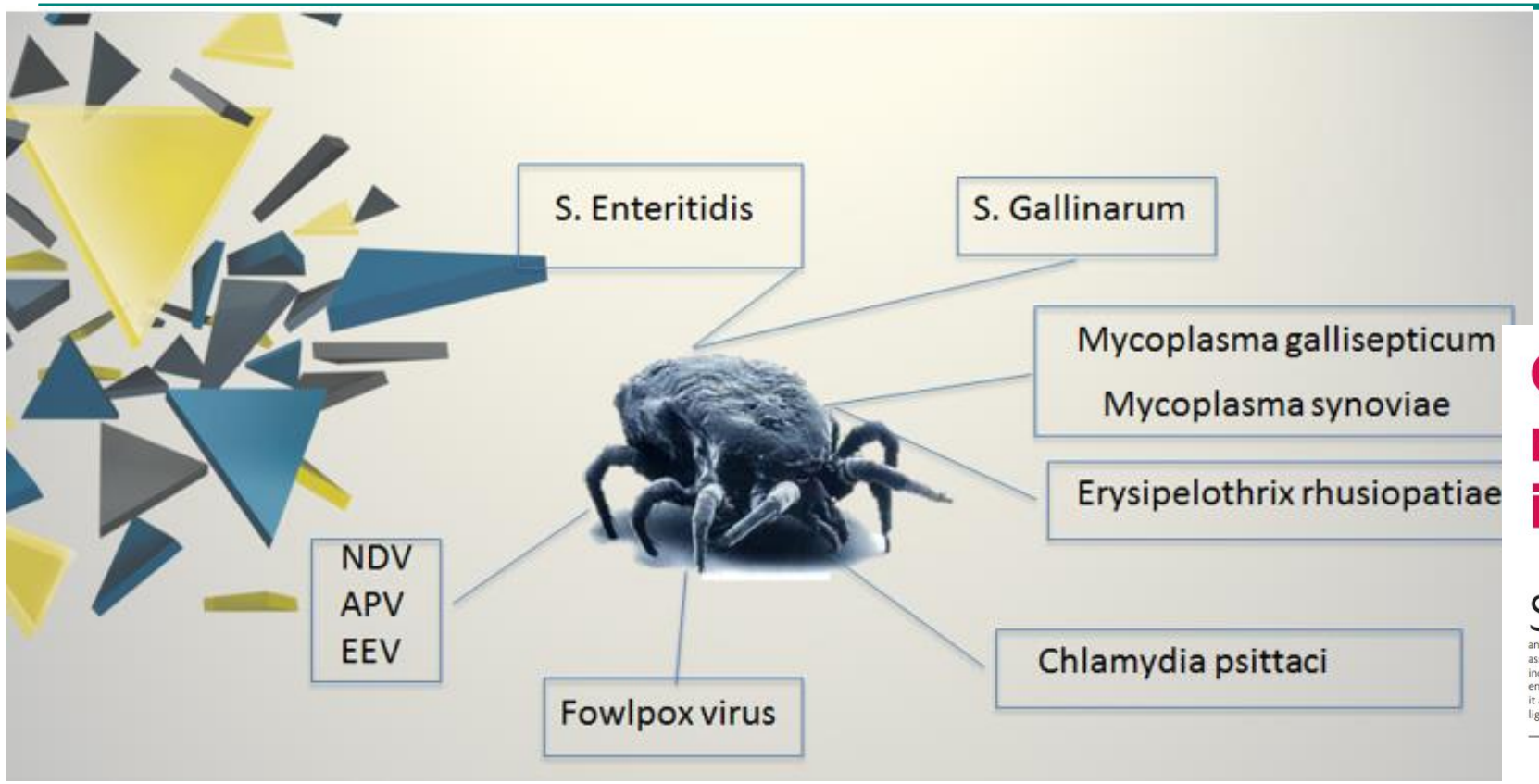
PRMs – carry disease



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:

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Human Health

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

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What they are not? - differential

Lice

Northern Fowl Mite

Amy Murillo

Scaly leg mite

Cost of Disease

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)

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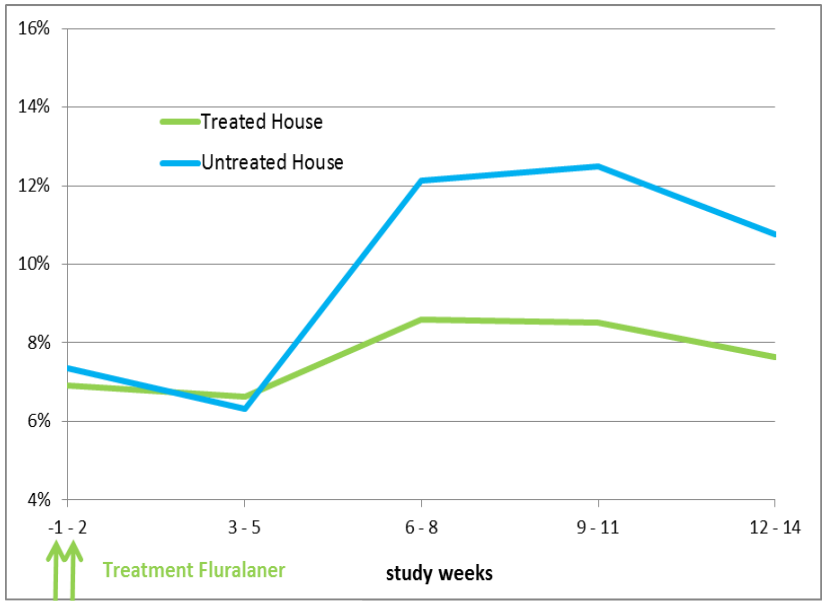
Effect on egg production – after effective treatment

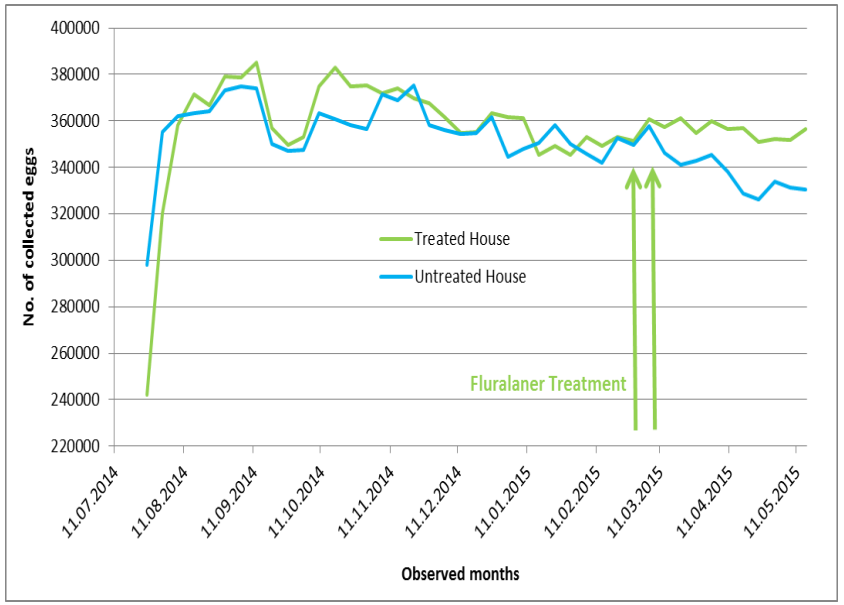
Less downgraded eggs (up to 4% less)

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

Downgraded Eggs



Laying Rate



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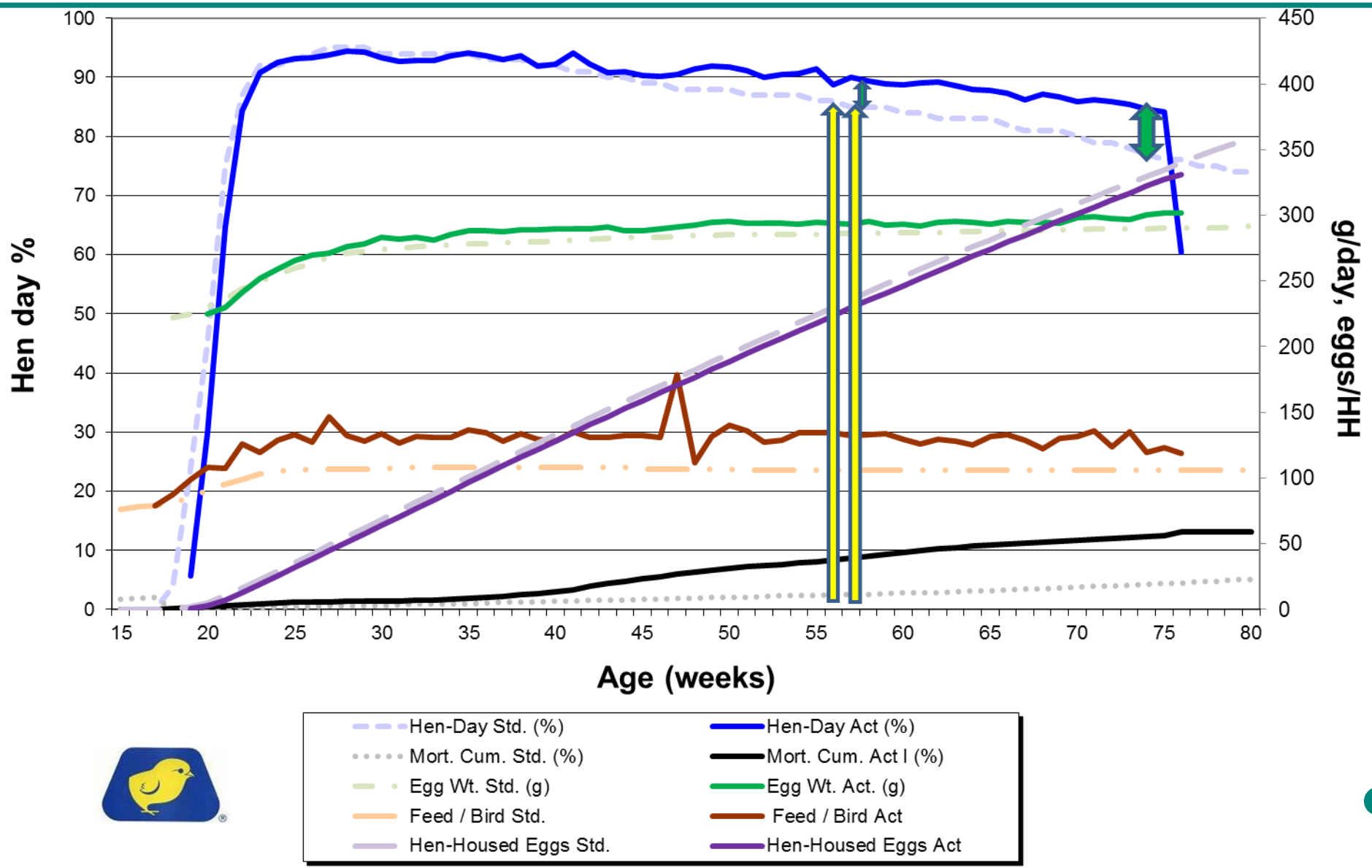
FLOCK PERFORMANCE

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



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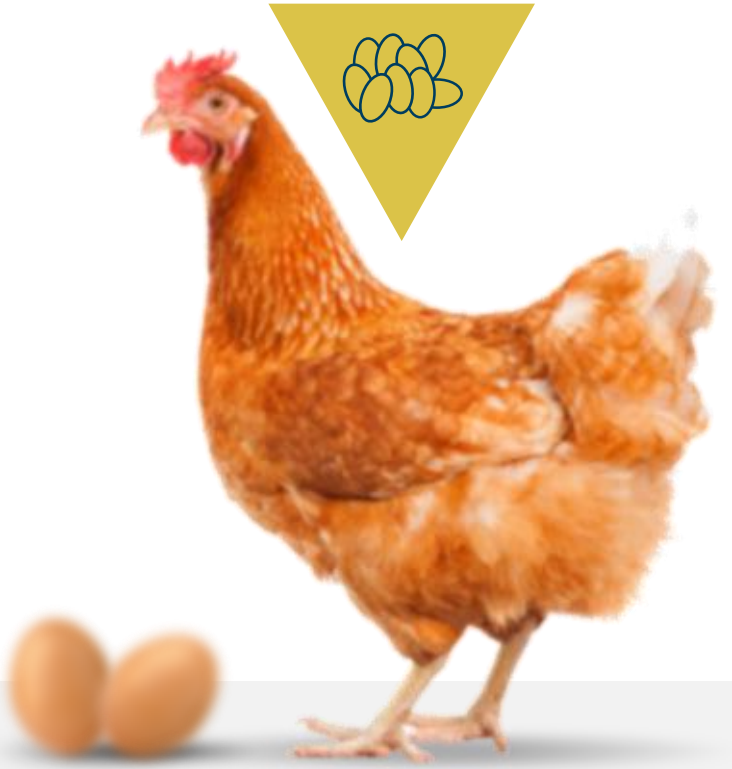
WELFARE

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.



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D. Temple et. al. 2018. Effects of a treatment against *Dermanyssus gallinae* with fluralaner on welfare parameters in laying hens. In: World's Poultry Science Journal Proceedings of the XVth European Poultry Conference, Dubrovnik, Croatia, 17-21 Sep, 2018. Page 230. ISBN 978-90-829157-0-9

Monitoring

Think like a mite

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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

frontiers in Veterinary Science

REVIEW
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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[1], Monique Mul[2,3], Alasdair J. Nisbet[4], Alejandro H. Vargas Navarro[5], Geoffrey Chiron[6], Jon Walton[7], Tomas Norton[8], Lise Roy[9] and Nathalie Sleeckx[1]*

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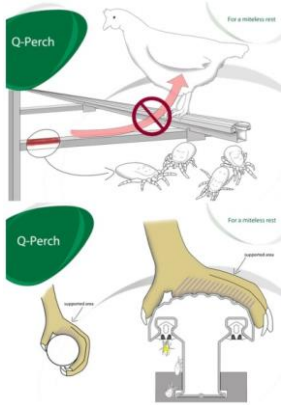
Current red mite control: physical

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



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Current red mite control: chemical

- Pyrethrins
- Organophosphates

- Residues
- Hazardous

- New molecule eg. Fluralaner

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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 ?

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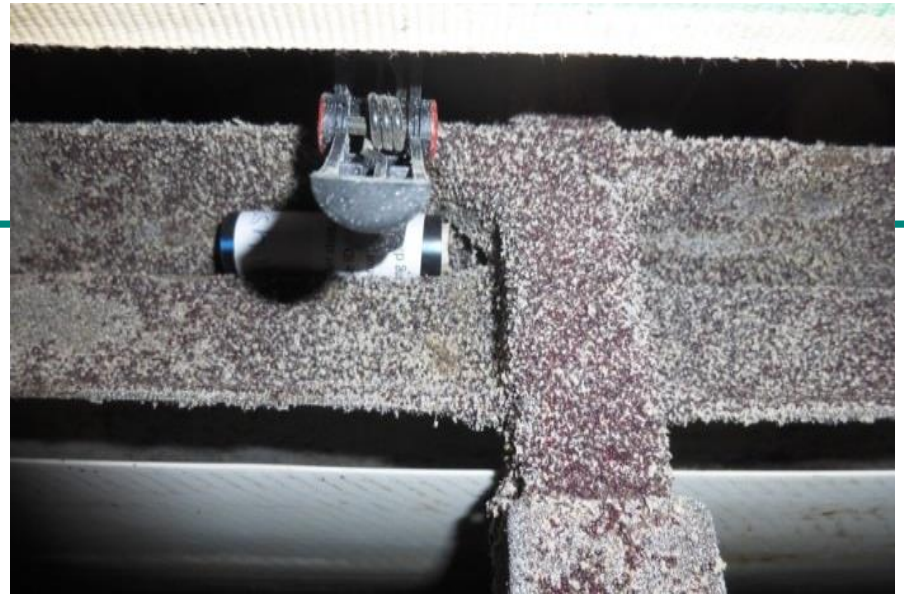
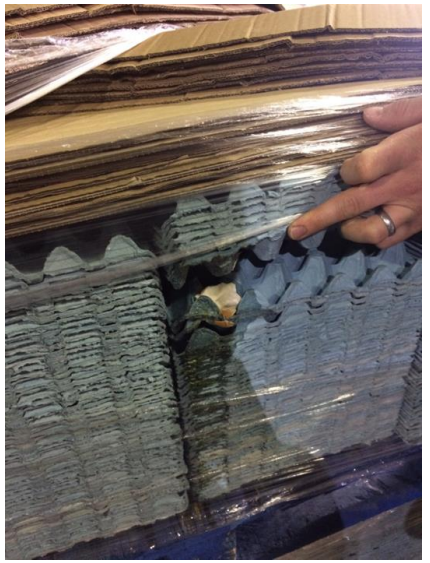


Manure conveyor
- Residual manure and dust
- Colder area, slower lifecycle
- High risk of mite harbourage



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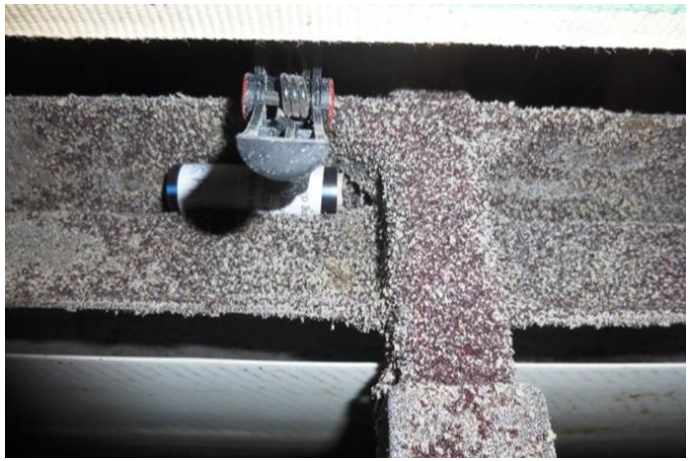
Places to look for mites



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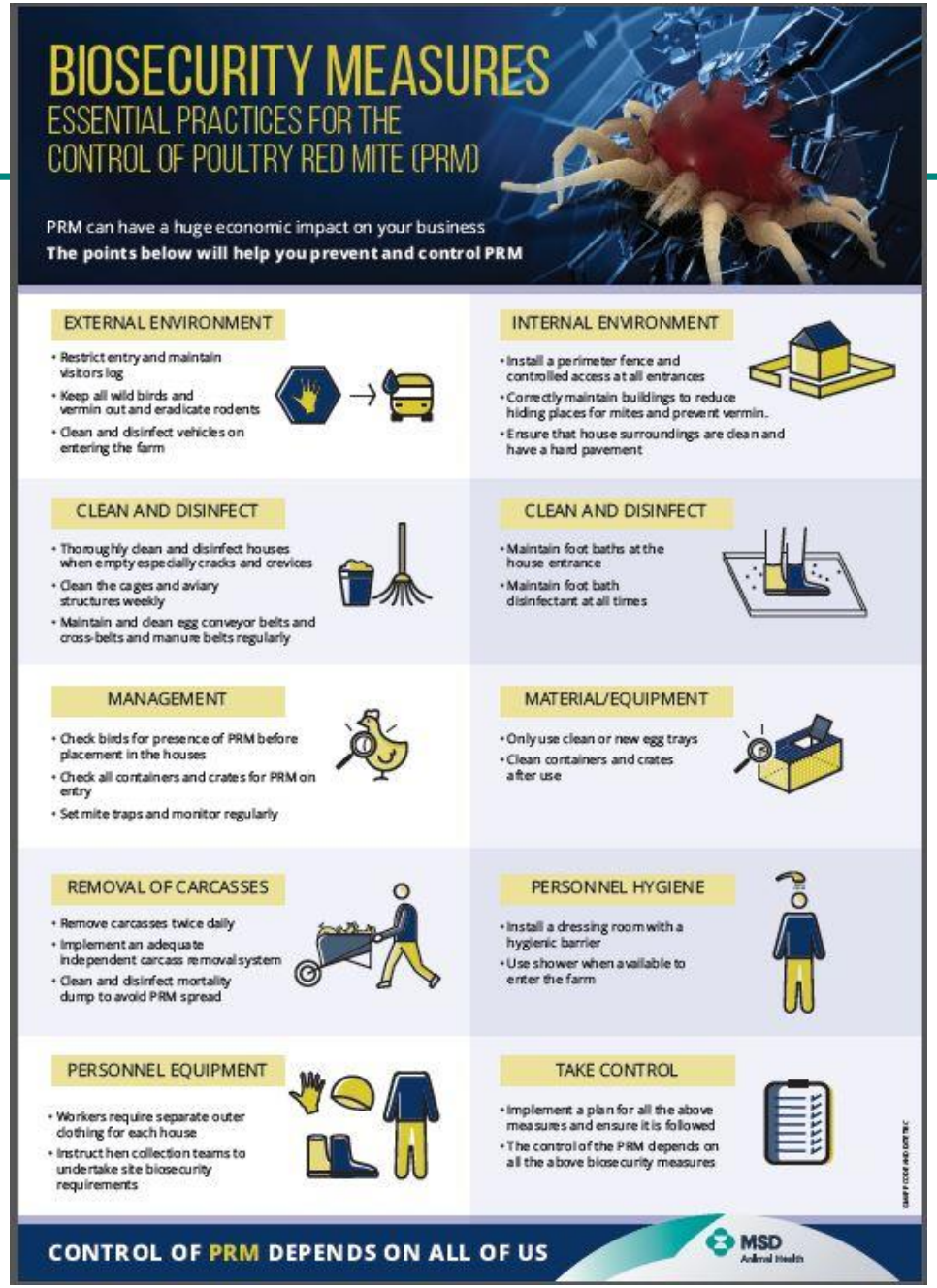
Biosecurity



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Successful treatment

Before treatment

‘Dry Landing!’

After treatment

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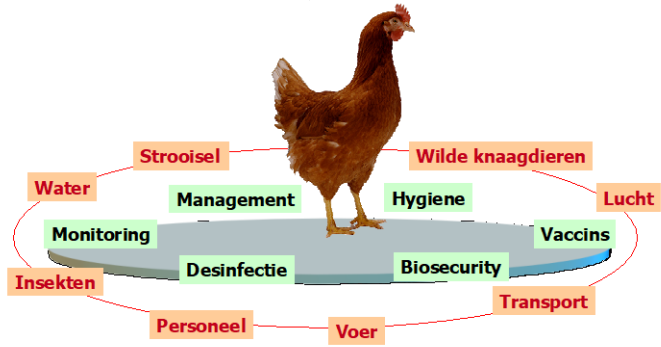
Conclusions

- 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



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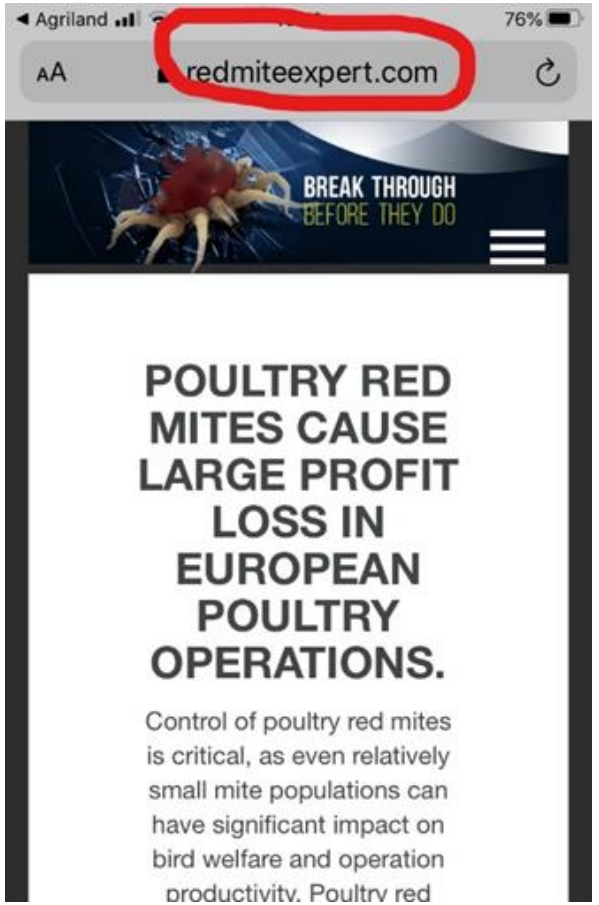
Questions?



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