Red Mite

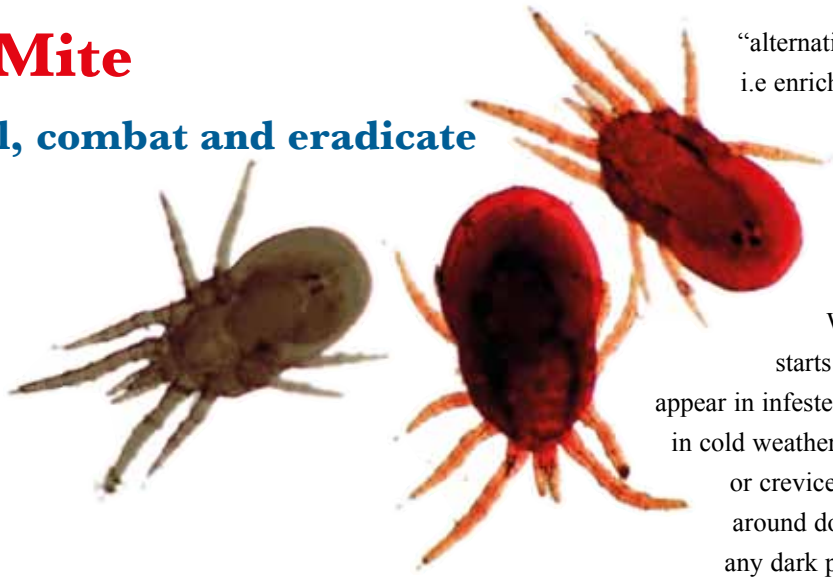
Control, combat and eradicate

Pier Enrico ROSSI[1]

Pier Ettore LUCCHI[2]

[1] Veterinary Surgeon

[2] Ali-Avizoo



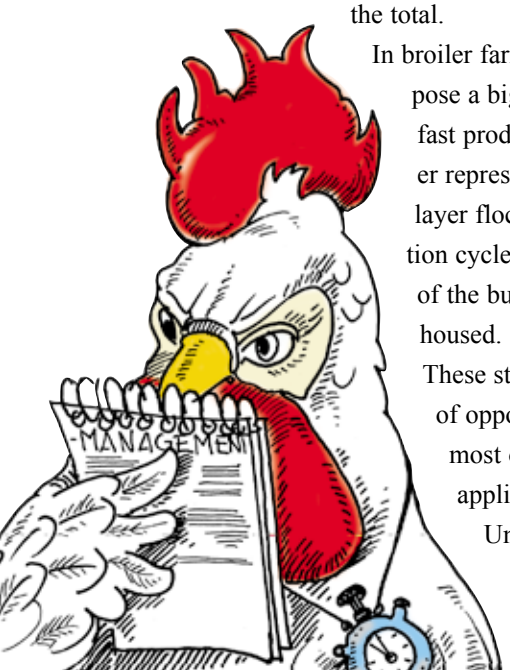
Among the numerous ecto-parasites, the one most widely found in the poultry industry is *Dermanyssus gallinae*, commonly known as "red mite".

This parasite is not red, but greyish and becomes red only when it is full of blood after having fed on his victims.

Dermanyssus gallinae is quite important not only because of its direct effects as a blood eater but also in its role in the transmission of various pathogens, viral and bacterial.

It is present worldwide, and in Italy the affected farms are estimated to be around 75 to 80% of the total.

MANAGEMENT



In broiler farms the red mite does not pose a big problem, due to the very fast production cycle, it does however represents a very big problem for layer flocks, due to the long production cycle and the internal structures of the buildings where layers are housed.

These structures give red mites lots of opportunities to hide away from most of the treatments that can be applied in order to control them.

Unfortunately the recent "alternative farming techniques" i.e enriched cages or aviaries etc., do not present any advantage versus traditional cages or floor operations with regard to red mite control.

When the temperature starts to increase red mites appear in infested farms. During winter in cold weather they hide in any hole or crevice available, under slats, around doors and windows, in any dark place etc, as they become active during the night.

Red mites can survive even if there are no animals in the building, they can fast from 6 months up to a year, and they do not die during winter as many people think but go into hibernation until the first warm temperatures, when they revive and start their vital cycle, and also the resistance of their eggs to drying out is very high.

Half of their vital cycle is on the host where they feed, and half is in the environment, where they breed. In order to feed, the red mite leaves its hiding place, usually during the night, and

EXHIBITING

The Future of Livestock Industry

8th in series

international animal industry expo

IAI EXPO

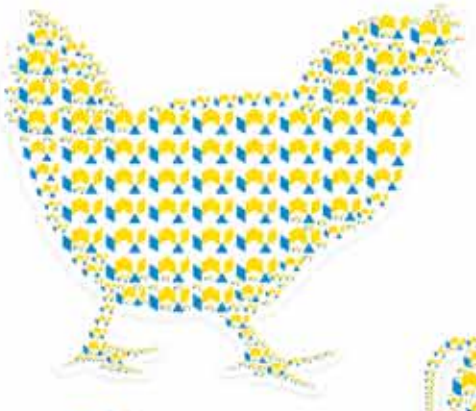
20-22 February 2014

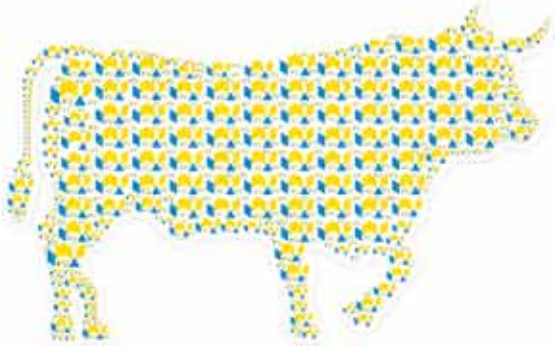
Hall No. 4-5, Pragati Maidan, New Delhi

Partner Country

Holland

Pioneers in international business





Supported by:

CLFMA OF INDIA

For Stall Booking & Sponsorship Opportunities

Contact us:
+91 9991705621
+91 9991705005
marketing@pixie.co.in

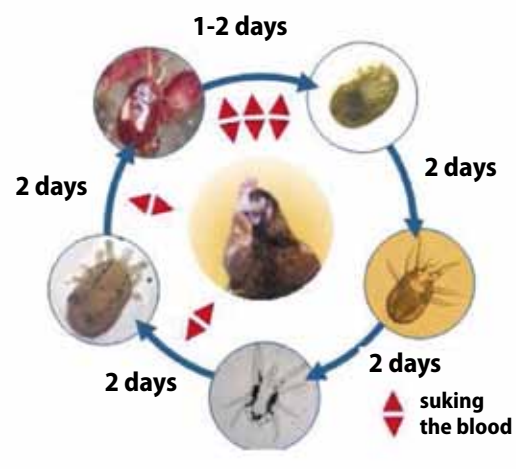
Organizer

PCSL

Pixie Consulting Solutions Ltd.

www.iaiexpo.com

remains on its host for a period between 30 and 60 minutes, then goes back in hiding. If the temperature is right the male mates with 3 or 4 females every day, the female then lays 10 to 15 eggs and the eggs hatch after 24 hours. The larvae can feed independently after 48 hours, and become adults in 6 to 7 days. The breeding cycle is at its maximum when the temperature is 30°C with 70 - 80% relative moisture. If the ambient temperature rises above 35°C the colony starts declining.



Due to this fast reproductive cycle the population of red mite can double in a very short time and rapidly affect a whole flock.
Dermanyssus gallinae causes major discomfort to a flock of hens, making them nervous and irritable causing them to eat less, lose weight and produce less eggs and the economical damage can be as high as 45 € cents per hen. Egg quality is also visibly affected with small reddish-brown spots being present on the eggshell due to mites' blood and faeces. In young birds *D.gallinae* can cause severe anaemia which in severe cases can lead to death.
The control of red mite in poultry farms is based almost exclusively on acaricides. Certain acaricides molecules have shown positive activity against this parasite in differing ways such as inducing paralysis and death, but none of these molecules is registered in Italy against *Dermanyssus gallinae.*
Only recently two products have been introduced onto the market, one an organic-phosphorus compound (phoxim) based product and the other spinosad based.
Recent surveys have confirmed that farmers have always used and continue to use acaricides registered for general agriculture use and for use on other species of livestock. The veterinary service has always tolerated the use of these acaricides in the poultry industry with the proviso that they are used exclusively between production cycles and with no birds present.
Improper use can produce:

1) Ineffectiveness of the molecules used and emergence of resistance.
2) Accumulation of pesticide residues in organs and tissues of poultry and in eggs.

The ideal acaricide should be able to reach all the places where the red mite can hide, should have a prolonged efficacy, be harmless for the hosts, easy to apply and rapidly active.
Moreover it should not be corrosive, have a short withdrawal period (preferably zero days) and, last but not least, be economical.
All this can be achieved by addressing the problem differently and more effectively.
It has been demonstrated that these parasites do not live on animals, but they go over them just to suck the blood. Their olfactory sensors, their most developed sense, allow them to identify their potential hosts by the smell and odour of birds.

With appropriate food supplements is now possible to reduce the stress caused to animals by infestation with *Dermanyssus gallinae*. The use of medicinal plants such as *Witamnia somnifera* and *Ocimum sanctum* can reduce the plasma concentration of cortisol. Recent studies have shown that high blood levels of cortisol promote the growth of *D. gallinae* (Lucifer effect). The use of *Mangifera indica*, *Mucuna pruriens* and *Boheravia diffusa*, thanks to the presence of ursolic acid, flavonoids and Levodopa, is capable of providing an antioxidant, anti-inflammatory and immunomodulatory response. The synergy of these materials enables the animal to fight against the effects of *Dermanyssus gallinae*.

The combination of these medicinal plants with *Allium sativum*, (garlic) rich in allicin, could lead towards the industry obtaining a final answer against red mite. All the alkaloids described are found in the bloodstream, providing on the one hand an anti-stress effect while on the other rendering the blood unattractive to the mite, which will be discouraged to continue feeding on the bird.

Additionally, the continued presence of these vegetable essences strengthens the immunity of the animal, while the continuous introduction of allicin in the environment causes an olfactory masking, "camouflaging" the smell of the bird and preventing mites from locating and reaching it. As a last step the association of these plant essences to a suitably treated source of organic silica, non-absorbable in the intestine, will lead to the continuous elimination of this silica with the faeces. With the drying of the faeces this silica is released as dust which, being highly abrasive, will when in contact with the exoskeleton of *D. gallinae* fracture it, causing the death of the mite. In this way we obtain several advantages, first of all no withdrawal time, and no problems of resistance are created by the treated silica. Last but not least we have a low cost intervention, as the phytochemicals present and titrated in the product can replace methionine as a feed additive. ■