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“ANT 22 Method – A New Approach to the Eradication of *Dermanyssus gallinae*? (Preliminary Report)”



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Photo No. 1. ANT22 method – visual detail
view.

Photo No. 2. The poultry red mite, *Dermanyssus gallinae* (De Geer), clinical appearance in an infested poultry facility, +++ (++++).



Photo No. 3. *D. gallinae*, clinical appearance in an empty poultry facility,
++++.



Introduction

There are two approaches to the control of the poultry red mite *D. gallinae*, the most significant ectoparasite in poultry farming:

1. The generally accepted approach — suppression, i.e., reducing the population to a harmless level; and
2. The largely ignored approach — eradication and the implementation of biosecurity measures (DGMCP – *D. gallinae* Management and Control Program).

Through the application of the *D. gallinae* Control Program (DGMCP), we have successfully demonstrated, over 26 years, the possibility of eradication using insecticides, SiO₂, and inert oils (Pavličević et al., 2016; 2018a; 2018b; 2018c; 2021a).

- The existing control methods can be permanently and safely improved by adopting the *D. gallinae* Control Program approach.

Objective

Improvement of the *D. gallinae* Control Program
aimed at eradication through the application of the
inert oil method ANT22
(*New How*, Pavličević, 2022).



Photo No. 4. ANT22 method, cage view.

Materials and Methods

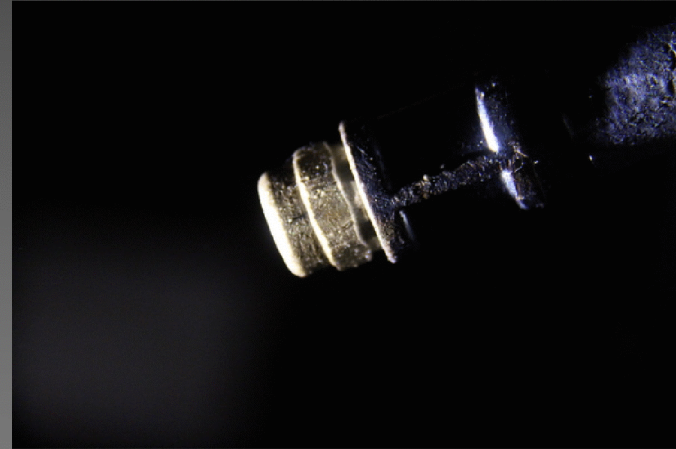


Photo No. 5
Nozzle

- Application of the ANT22 method under clinical conditions. Application performed by the author using devices (applicators) under development (manual and mechanical, with a movable single-level structure).
- Application of the veterinary drug **Exzolt** according to the manufacturer's instructions.

Table 1 Categorization of the intensity of *D.gallinae* infestation
(Павлићевић и сар., 2025)

No	Intensity and extensity of infestation	Harmful impact on			Detection
		Health status of the flock	Production results	Staff	Visual review
1	-	No	No	No	They are not noticeable
2	+	No	No	No	Single or small number of individuals
3	++	No	No	No	Nail-sized lumps
4	+++	Yes, beginning	Yes beginning	Yes	Larger clusters, up to the size of a palm
5	++++	Yes	Yes	Yes	Palm-sized or larger clumps, typical odor

Results

Table 2. Overview of the first treatments and results of the ANT22 method in empty objects

Serial number	Capacity (number of hens)	Intensity of infestation before treatment	Treatment dates (T)	Hygiene conditions	Facility break (days)	Effects (months)	Observations, remarks
2	12.000	++	2024.03.23.; 2024.03.27. (2)	yes	2	14 ++	Control of new flock (?)
3	7.000	+++ (++)	2024.04.29.; 2024.05.07. (2)	yes	Да	9 ++	Control of new flock (?)
5	7.000	++++	2024.05.29.; 2024.06.05. (2)	yes	6	8 ++	Control of new flock (?)
6	2.000	+ (++)	2024.06.07.; 2024.06.25. (2)	yes	30	13 -	D. gallinae eradication completed in the object

Results

Table 3. Overview of the first treatments and results of the combined ANT22 method and the veterinary drug Exzolt (fluralaner)

Serial number	Capacity (number of hens)	Intensity of infestation before treatment	Treatment dates (T)	Hygiene conditions	Effects (months)	Observations, remarks
1	25.000	+++	2025.06.17.-30. (3+2)	yes	4 -	Starting a procedure in an empty object
2	5.000	+++	2025.07.29.-08.15. (3+2)	yes	2 -	Starting a procedure in an empty object
3	2.300	++	2025.08.08-15. (2+2)	no	2 -	Procedure in an inhabited object

Through thorough and regular inspections within the specified time frames, not a single *D. gallinae* individual was found in the tested facilities.

Research is ongoing.

Discussion

- **The *D. gallinae* Control Program (DCP):**
is a comprehensive approach oriented toward preventive veterinary medicine and rational control, with the ultimate goal of eradication and implementation of biosecurity measures (Pavličević et al., 2003; 2007; 2008; 2016; 2018a; 2019; 2021; 2025).
- The criterion for eradication using inert materials is that, over the course of one year, (1) not a single *D. gallinae* individual can be found through thorough inspections. Due to the long duration of this process, there is a possibility of reinfestation (subsequent introduction).

Discussion

- The **ANT22 method** competes in terms of complete safety, cost-effectiveness, durability, technology, and the potential for upgrading and combining with other approaches (Pavličević et al., 2025).
- The main drawback of **inert oils** is the possibility of egg belt slippage and a slippery environment. These effects can be minimized and rendered acceptable if the procedure is performed optimally (Pavličević et al., 2020; 2021).

Discussion

- Previous studies of the ANT22 method in occupied facilities demonstrated suppression effects lasting 4–10 months after a single treatment and 8–10 months after two treatments. The observed effects depend on the infestation level, fulfillment of required conditions, and quality of application (Pavličević et al., 2025).
- Preliminary research conducted in an empty facility, depending on the infestation level and environmental conditions, showed results ranging from 8 months to complete eradication of *D. gallinae* from the production site. The obtained results confirm the eradication potential of the ANT22 method, although further verification is required for final evaluation.

Photo No. 6 – Macro photograph of a cluster of *D. gallinae*.



Photo No. 7 – Macro photograph of a cluster of *D. gallinae* exposed to the ANT22 method.



Discussion

- External application, in addition to the choice of product and method, is influenced by the quality of application, hygienic conditions, occupancy status (empty/occupied), complexity of the environment (Pavličević et al., 2019a; 2019b), and resting periods of the facilities.
- The quality of application depends on both the human factor and the application devices.
- The quality of application directly affects the manifestation of negative properties of inert oils.
- For the research, application devices under development were used, whose performance has not yet been optimized.
- A new multifunctional machine (Patent P 2024/1051; Pavličević & Đurđević) is currently under development, designed to optimize the preparation and application process of the ANT22 method (as well as other aqueous solutions and emulsions).

Discussion

- The veterinary drug Exzolt (fluralaner) suppresses *D. gallinae* for a duration ranging from 56 to 238 days (Emmanuel et al., 2017), i.e., up to approximately 8 months.
- According to the current preliminary results of testing the combined application of the veterinary drug *Exzolt* and the ANT22 method in experimental facilities, within a period of 2–4 months, no *D. gallinae* individuals could be found.

Discussion

For now, based on all available data, it can be stated that there is a potential for the eradication of *D. gallinae* from production facilities and farms.

However, a one-year period of ongoing studies and additional examples is required to confirm that eradication can be achieved routinely.

Eradication would:

Reduce toxicological risk (by preventing frequent use of insecticides such as fluralaner and others);

Limit the development of resistance to fluralaner;

Positively affect the health status of poultry;

Eliminate further economic losses caused by *D. gallinae*;

Prevent the spread of *D. gallinae*;

And achieve other additional benefits.

Discussion - SAVINGS

- The damage caused by *D. gallinae* in poultry farming has been estimated at approximately **€0.6 per hen**, with a **recorded tendency to increase** (Emous, 2005; 2017).
- The **D. gallinae Control Program (DCP)**, involving eradication of *D. gallinae* and implementation of biosecurity measures, **eliminates ongoing costs and generates cumulative savings** (Pavličević et al., 2021). For a farm with a capacity of **one million hens**, the **estimated savings over 10 years** amount to approximately **€6 million**.
- The authors do not have access to precise data on the **actual number of laying hens** and the **prevalence of *D. gallinae*** in the Russian Federation. However, assuming infestation in facilities with a capacity of **50 million laying hens**, the **annual savings** could exceed **€30 million**, as this would also **prevent further spread of *D. gallinae***.

Conclusion

- The ANT22 method is a conditional approach.
- Preliminary results indicate that the ANT22 method has potential for the eradication of *D. gallinae*; however, further research is required to draw definitive conclusions.
- The method shows potential both as a standalone approach (in empty facilities) and even more so as a component of the combined *D. gallinae* Control Program (DCP) applicable to both empty and occupied facilities.
- A shift in control strategy through the implementation of the DCP aimed at eradication would lead to:
 - Reduction and eventual elimination of toxicological risk;
 - Improvement of the general health status of poultry;
 - Significant cost savings;
 - The possibility to halt the unfavorable spread trend;
- Reduction and eventual resolution of the *D. gallinae* control problem;
 - A positive effect on slowing the development of resistance;
 - And other additional benefits.

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Thank you for your attention!

All photographs are original parts of the author's research archive.

Photo No. 8 – Central Serbia

