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ANT22 - AQUEOUS EMULSION CONTROL METHOD: CONTRIBUTION TO RATIONAL CONTROL OF DERMANYSSUS GALLINAE IN POULTRY

Aleksandar Pavličević¹, Radomir Ratajac², Tamaš Petrović², Aleksandra Tasić³, Ivan Pavlović³

¹ "AVES MIT" LLC, Subotica-Bajmok, Serbia, ² Scientific Veterinary Institute „Novi Sad“, Novi Sad, Serbia ³ Scientific Institute of Veterinary Medicine Veterinary Institute of Serbia, Belgrade, Serbia

Abstract: The ANT 22 method is safe and does not develop resistance. It is a conditional method, which requires hygienic preparation and adequate application, and is optimal for empty buildings with rest. An important technical condition is the correctness of the applicator and a professionally performed application. Considering the control findings obtained so far, we believe that they justify testing the application of the ANT 22 method for control purposes in large industrial facilities, but also for the purpose of eradicating *D. gallinae*

• Introduction

- Red poultry mite *Dermanyssus gallinae* (De Geer, 1778) is an ectoparasite that feeds on the blood of birds and mammals. In terms of prevalence and impact, *D. gallinae* is classified as a key health, economic, and ecological problem of poultry farming. Annual losses worldwide are estimated at 3.92 billion USD. The aim of the research is to apply the ANT 22 (inert oils) method in the rational control of *D. gallinae* in small industrial facilities, by manual application, in application conditions when conditions for process optimization are lacking.

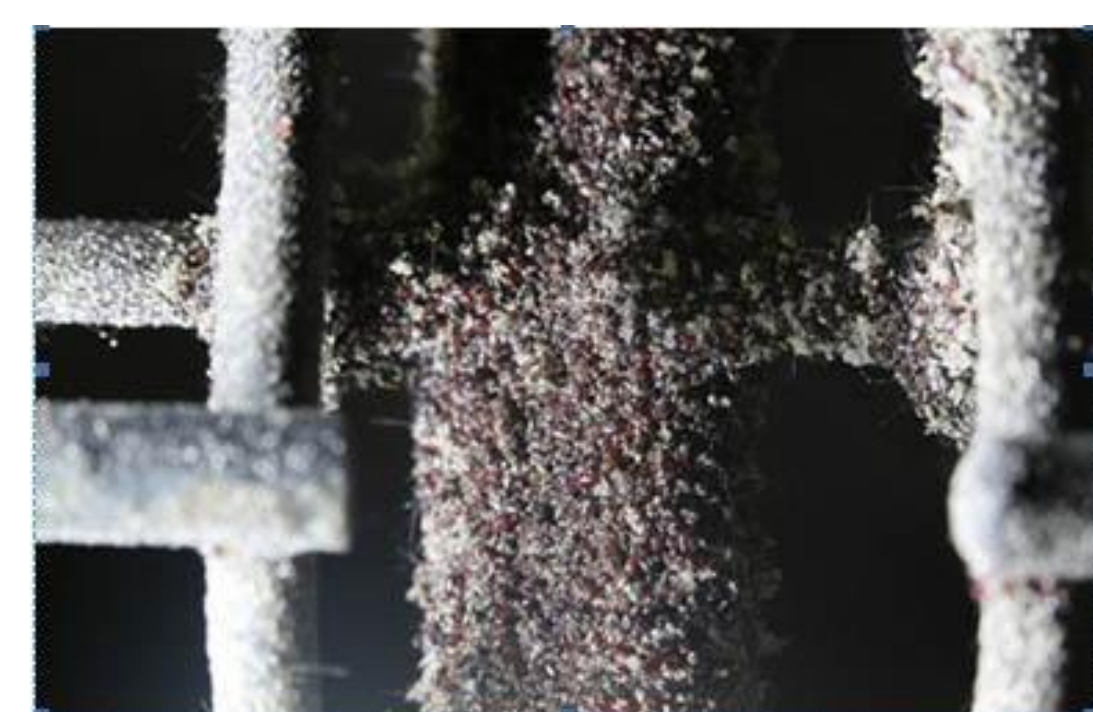
• Material and method

- The ANT 22 method (working name) is based on "know-how" formulation and technology of application of inert oils. The manual external application (with one nozzle), a spray method, was carried out in the study. The application was carried out with a hand-made applicator in the clinical conditions of 20 small industrial facilities (2,000 - 14,500 animals) of laying hens (conventional and enriched cage systems), with a total capacity of 169,800 laying hens in a time frame of 25 months. The intensity of the invasion was monitored by visual inspections of the poultry facilities and the health status of the flock, where the production results and the opinion of the farm staff were consulted

Categorization of the intensity of *D. gallinae* infestation

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

Aggregates of *D. gallinae* on cage (high intensity of infestation).



Results and discussions

Overview of experimental facilities, performed ANT 22 treatments and control effects of *D. gallinae*

No	Capacity of facility*	Infestation intensity	Facility Full= 1; Empty= 0	Date of treatment	The effect suppression (months)	Comment
1	2.000	++	1	2022.02.16.	5	Hygiene not conditional
2	12.000	++ (+++)	1	2022.05.23. 2022.06.17.	8	-
3	12.000	+++ (++)	1	2022.05.30. 2022.06.03.	10	-
4	6.000	+++ (++)	1	2022.06.13. 2022.06.27.	10	-
5	6.500	+++ (++++)	1	2022.06.04. 2022.06.17.	8	-
6	7.700	++ (+++)	1	2022.06.06.	7	-
7	12.000	++ (+++)	1	2022.06.09. 2022.06.24.	8	-
8	10.000	+++ (++)	1	2022.06.20.	5	-
9	14.500	+++ (++)	1	2022.07.23.	6	-
10	7.700	++++	0	2022.07.22.	4	Hygiene not conditional
11	5.700	+++ (++++)	1	2022.11.28.	4	-
12	10.000	++ (+++)	1	2022.12.12.	5	-
13	7.700	++++	1	2022.12.27.	5	-
14	12.000	+++	0	2023.02.20.	10	-
15	14.500	+++ (++)	1	2023.04.18.	7	-
16	7.700	+++ (++)	1	2023.05.03. 2023.06.12.	10	-
17	10.000	+++ (++)	1/0	2023.05.30.	6	-
18	6.000	+++	0	2023.10.12.	(4) - in progress	Partially conditional

* Number of animals (poultry) in facility

- The results of our research presented in Table 2 primarily include higher intensity invasions (+++, +++) in the conditions of an inhabited facility. The ANT22 method, when applied with a single treatment, achieved predominantly weaker results in these situations.
- The ANT 22 method is still under development; it is being developed to improve the formulation, application, and the applicator. Further development will ensure quality adaptation of the application in large industrial productions, a positive shift concerning the general shortcomings of the method (hygienic conditionality, the complexity of the application, etc.), and raise the overall quality of the external application.
- Under the tested conditions, the results indicate that the ANT 22 method is competitive in itself and suitable as a basis for combination with other products and methods (program). The ANT 22 method is particularly suitable to prepare empty buildings, used cages and equipment, as well as transport cages (as a preventive measure). Based on the findings obtained so far, it is expected that in hygienically conditioned buildings with a rest period of the prepared buildings, with two treatments, the ANT 22 method will lead to the eradication of *D. gallinae* from production facilities.