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ERADICATION OF *DERMANYSSUS GALLINAE* IN INDUSTRIAL POULTRY PRODUCTION

Aleksandar PAVLIČEVIĆ^{1*}, Ivan PAVLOVIĆ²

¹ "Aves mit" DOO, Subotica - Bajmok, Serbia, ²Scientific Veterinary Institute of Serbia, Belgrade, Serbia

- Introduction:** The decades-long increase in the prevalence of *D. gallinae* in poultry, along with all its harmful consequences, is a reason to reconsider the current control approach based on suppression (reducing the number of parasites to a harmless level). To prove the possibility and justification of the eradication procedure in industrial facilities and farms, as a solution to the health and economic problem of *D. gallinae* in intensive poultry farming.
- Material and method** Selection of active ingredients and control methods; practical application; detection and surveillance; and criteria for assessing eradication in a *D. gallinae* control program
- Results and discussions**

No	Facility capacity (number of hens)	Type of control treatment <i>D. gallinae</i>	Invasion intensity	Hygiene condition / facility closure	Finding <i>D. gallinae</i> / months	Remark
1	60.000	P 437/17	+++	no / yes (long)	30 / - ERADICATION	In an empty building
2	12.000	ANT 22 methods *	++	yes / yes (a little)	14 / ++	New flock control (?)
3	7.000	ANT 22 methods *	+++ (++)	no / yes	9 / ++	New flock control (?)
4	7.000	ANT 22 methods *	++++	yes / yes (a little)	8 / ++	New flock control (?)
5	2.000	ANT 22 methods *	+ (++)	no / yes	22 / - ERADICATION	In an empty building
6	60.000	Combined P 437/17 and Exzolt (fluralaner)	+++	no	17 / - ERADICATION	Inhabited object
7	25.000	Combined methods ANT 22 and Exzolt (fluralaner)*	+++	yes / yes	10 / - Examination in progress	In an empty and inhabited object
8	5.000	Combined methods AHT 22 and Exzolt (fluralaner)*	+++	yes / yes	8 / - Examination in progress	In an empty and inhabited object
9	2.300	Combined methods AHT 22 and Exzolt (fluralaner)*	++	no	8 / +	Inhabited object

The test results data were updated with subsequent reviews up to 2026.04.08.

*Note: the application was carried out by the author using an improvised applicator, by hand application.

- In six-year tests of acaricides, the active substance carbaryl was singled out based on its characteristics (2001-2006). Its characteristics suitable for the eradication of *D. gallinae* were proven in laboratory conditions, and then confirmed in practical application. However, over time, the development of resistance ruled out the justification for the use of the active substance carbaryl. We found permanent solutions in inert substances. The first available were SiO₂ formulations. We achieved eradication of *D. gallinae* SiO₂ by the correct selection of active ingredients, combining liquid and powder form, in 11 facilities, with a total capacity of 257,500 (2,500-40,000 hen capacity). The next phase of improvement includes research into aqueous emulsions of inert oils. Clinical research of formulation P 437/17 covers the period 2017-21, and proves eradication in 3 parent flock facilities (total capacity 25,000 poultry); 8 cage rearing facilities (total capacity 144,000 layers); and 5 exploitation facilities (total capacity 144,000 layers)
- New research takes into account the problems of conditionality, developmental moments and current circumstances. In example 1 (P 437/17) the method of work was successfully adapted to unconditional circumstances. In examples 2-5, the new New How method with an aqueous emulsion of ANT22 was tested, with which the eradication of *D. gallinae* was successfully carried out in example 5. Its basic characteristics, safety and simplicity, create the basis for the development of a *D. gallinae* control program. The current technological deficiency in the application will be overcome by the development of new machines for the preparation of objects and external application (P 2025/1123).
- Inert materials enable eradication only in empty, hygienically conditioned facilities when there is a rest period in the facilities. On the other hand, the independent application of the veterinary drug Exzolt (fluralaner) leads only to suppression (the range recorded is 56-238 days). However, with frequent repetition of the application, the effectiveness is lost and the negative properties are increasingly emphasized. However, we have proven that the New How approach, a combined method (P 437/17 + fluralaner), can successfully eradicate *D. gallinae* in an inhabited facility (example 6). For the combined application of the ANT22 + fluralaner method, we are still waiting for the final results (examples 7 and 8), but the potential is already obvious.
- Unlike suppression, eradication of *D. gallinae* and introduction of biosecurity measures allows for the elimination of high material costs, toxicological and health prevention of humans, animals and the environment, but also prevents significant harmful effects and the development of acaricide resistance.

Conclusions Through decades of laboratory and clinical research (27 years), using the strictest recorded criteria, a programmatic approach to the control of *D. gallinae*, we demonstrate the possibility of eradication from industrial poultry production facilities: acaricides, SiO₂ and inert oils and/or their combinations. The evidence is combined, previously published and new research, on a total of 29 facilities, with a capacity of 642,500 poultry.