Characteristics of the exogenous nucleic acids application in the technology of silkmoth *Antheraea pernyi G.-M.* growing

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Investigations relating to acclimatization and industrial cultivation of Chinese silkmoth started in Ukraine in the late twenties of 20th century. As a result of these investigations, silkmoth culture was wide spread and grown in the specialized agricultures of Polisya and Lisostep. As a consequence of perennial directed selection and hybridization, under the direction of professor Synickyi M., the domestic monovoltine species of silkmoth – Poliskyi tasar – was hatched. The species positively proved in the working conditions of the forest zone and approved for wide industrial growing in the specialized agricultures.

One of the tasks of successful silkmoth cultivation is an increasing of forage resources via the species adaptation in the northern growing regions, and using substitutes of the ground fodder crop – the leaves of oak, for the leaves of birch, beech, hornbeam and the certain sorts of osier. The successful silkmoth cultivation in Ukraine is possible only in view of the ecological resources, well adapted for the certain forage plants and climatic conditions. Lately, the tendency to substitute silkmoth forage for less valued and more widespread species than English oak has appeared. It was harvested the beech, hornbeam, osier and birchen fodder range, adapted for new plants. In the silkmoth growing technologies, with the purpose of increasing its viability and productivity, are used various biostimulants both organic and mineral origin. According to producers' estimations, these technologies are too labor-intensive, require great amount of time and biostimulants, and have negligible result.

We suggested fundamentally new silkmoth growing technology, principal part of which provides for directive effect on embryos (grain) of the silkmoth with aqueous solutions native, as well as with modified thiophosphamide or

cyclophosphamide deoxyribonucleic acids (DNA, DNT, DNC correspondingly) in different concentrations. The essential principle of the technology, in contrast to traditional usage of the aqueous solutions biostimulants, which were applied multiply on the fodder leaves, is exogenous nucleic acid-wash of embryos. For this purpose, in advance, the optimal concentrations of specimens were experimentally selected, in aqueous solutions where grain was held. Contact time with the stimulant and other determinant test rates.

As a consequence of the specimens application in the range of indicated concentrations, according to coefficient of the silk yield, the stable effect has obtained. The optimal expeditions are in the interval of 3–4 hours. The fragment of the investigations, given in the table below, characterizes the productivity and vitality of the silkmoth, depending on time interval of the specimens' effect on grain. In the optimal conditions, we have the considerable exceeding of the determinant indicators comparing to the control conditions

The data of the table 2 shows positive result, obtained after using the offered technology comparing to better analogue – fusasol treatment of grain – the native product of the fungi fermentation. As evident, considerable advantage in all determinant indicators in two technologies testing was obtained.

Thus, we offer the accomplished scientific development, characterized by the obtained result and technological effectiveness as high tech. This development is widely tested and showed constant stable results.

Table 1

Dependence of the silkmoth productivity on time interval of the native and modified DNA effect on grain - laboratorial-manufacturing conditions of growing.

Specimen	Effect on grain, (exposition), hours.	♀♀ mass of cocoon	mg % before the control of silk capsule	Outlet of the silk raw materia, %	♂♂ mass	mg % before the control	Outlet of the silk raw materia, %
Control	-	5894	477 ±24	8,09	4419	406 ±19	9,18
DNT	2	6907 117,2	612 ±81 128,4	8,86* +0,77	5156 116,7	361 ±33 138,2	10,88* +1,7
	3	7163 121,5	644 ±27 135,1	9,00* +0,90	5363 121,4	591 ±30 145,6	11,02* +1,84
	4	7025 119,2	633 ±36 132,8	9,01* +0,92	5417 122,6	583 ±40 144,1	10,80* +1,62
	5	6518 110,6	571 ±25 119,8	8,76* +0,67	4727 107,0	502 ±18 123,6	10,62* +1,44
DNC	2	6475 109,8	528 ±21 110,7	8,15* +0,06	4606 104,2	457 ±21 112,6	9,92* +0,74
	3	6925 117,5	644 ±36 135,1	9,30* +1,21	5345 120,9	596 ±27 146,8	11,15* +1,97
	4	7198 122,1	655 ±29 137,3	9,10* +1,01	5249 118,8	580 ±19 142,8	11,05* +1,88
	5	6383 108,3	561 ±27 117,7	8,78 +0,69	4702 106,4	483 ±18 119,1	10,27* +1,09

Comment: the indicators of the silk capsule size that probably statistically exceed the control indexes pointed out by the asterisks.

Table 2

The indicators of the silkmoth productivity as a consequence of the directive effect of exogenous DNA. Comparison with better analogue

Compared indicators	Results obtained, implementing the technology		Positive result obtained, implementing original technology
	offered	known	
Range of the effective action on the grain (days)	All vibrio period	Only on the 5thday	Absence
Consumption of specimen on treatment 1 kg of grain (1litre of the solution is 1g)	5,0 – 0,04	10,0	Reduction of the consumption in 2-200 times
Range of the acting concentrations, %	0,50 0 - 0,04	1,0	Reduction of the overexpenditure of speciment possibility
Mass of cocoon, mg (%)	Females 7067 (102,5)	6897 (100)	+ 170 (2,5)
Mass of the capsule, mg (%)	628 (102,3)	614 (100)	+14 (2,3)
Content of silk, %	9,0	8,9	+ 0,10
Vitality, %	91,5	82,4	+ 8,8
Mass of cocoon, mg (%)	Males 5213 (98,7)	5279 (100)	- 66(1,3)
Mass of the capsule, mg (%)	573 (104,4)	549 (100)	+24 (4,4)
Content of silk, %	10,93	10,39	+ 0,54
Vitality, %	91,5	82,4	+ 8,8