

## THE RESULTS OF MOLTING BEARING HENS

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The swarm of Hy Line bearing hens (8260 pieces) held in three floor cages were molted at the age of 87 weeks. In the first producing season the swarm did not reach the planned weight and in 87 weeks the average weight of hens was 1768 grams. The reduced body weight caused a slightly smaller production than planned, so the production of eggs on each hen was 335 pieces, and the mass of the eggs on each hen was 20.9 kilos. The average daily meal was 133 grams. The swarm was healthy during the entire production period, and the deaths reached 4,8%. The owner of hens decided to molt when the average production per week was 57.56%, and the percentage of eggs with low quality reached 4.85%. The intense molting was conducted according to a plan of restricting food, water and light, made especially for this swarm. The plan was also adjusted during the production period, because of the low temperatures outside and inside the object where hens were held. Molting lasted for six weeks, hens lost 22% of body weight, and the period of the second egg bearing lasted two weeks. In the second producing season 93% of the eggs was in SS, S and A weight category. Eggs with soft shell were reduced to 0,8%, the amount of food spent per hen daily was 135 grams, during the six months long production, 170 eggs per hen were produced. Death during molting and production period in the second producing season was 6.4%.

**Key words:** bearing hens; molting; producing eggs

## РЕЗУЛТАТИ ОД МИТАРЕЊЕ НА КОНСУМНИ НЕСИЛКИ

Јато од 8260 несилки од Ну-линијата држени во кафезни транспортни батерии е митарено на возраст од 87 недели. Во првата производна сезона јатото не ја постигна предвидената телесна маса и во 87-та недела просечната маса на кокошките беше 1768 g. Намалената маса услови малку пониско производство од предвиденото според технологијата, така што производството на јајца по вселена кокошка беше 335 парчиња, а масата на јајцата по кокошка изнесуваше 20,9 kg. Просечен дневен оброк изнесуваше 133 g. Во текот на целото производство јатото беше здраво, а угинувањата со шартирање достигнаа 4,8%. Држителот на кокошките се одлучил за митарење на јатото кога просечното неделно производство на јајца било 57,56%, а процентот на јајца со лушпа со слаб квалитет достигнал 4,85%. Форсираното митарење е спроведено според планот за редукција на храната, водата и осветлувањето направен за ова јато, а поради многу ниски надворешни температури, како и температурата во самиот објект, програмата е приспособувана во текот на работата. Митарењето траеше 6 недели, коковчињата изгубја 22% од телесната маса, а периодот на второто пронесување траеше 2 недели. Во втората производна сезона 93% од јајцата беа со тежинска категорија СС, С и А. Јајцата со мека лушпа се сведени на 0,8%, потрошувачката на храна изнесуваше 135 g по една кокошка на ден, а во текот на шестмесечното производство се произведени 170 јајца по една кокошка. Угинувањето и шаркот во текот на митарењето и производството во втората производна сезона изнесуваше 6,4%

**Клучни зборови:** несилки; митарење; производство на јајца.

## INTRODUCTION

Molting is a natural process for birds that happens every year. In the course of molting, hens lose their old feathers, and grow new. The production of eggs stops during molting. Depending on

the time when molting starts, we distinguish "late molters" and "early molters". Hens referred to as "late molters" will lay for 12 to 14 months before molting, while others, referred to as "early molters," may begin to molt after only a few months in

production. Late molters are generally the better laying hens.

Induced or forced molting is a method that enables planning of egg production. Webster in his studies (Webster A. B., 2003) explores the physiology and the behaviour of hens during induced molting. The purpose of forced molting is to renew the reproductive system of hens and to carry out a complete rejuvenation.

The reproductive system of hens goes through a complete regression during molting and the production must stop. Due to the correlation between the reproductive system regression and the body weight loss, the program of molting we used here was based on the loss of body weight.

The producers choose to start with the induced molting because of commercial and economical reasons, when the egg price is low, and the hen price is high (D. D. Bell, 2003). Depending on the age of the flock when molting is implemented for the first time, it can be molted for two or three times.

By keeping flocks of two production seasons, the needs for the young hens are reduced for 47% because the lifetime of hens is extended. Farms that perform regular molting of hens, exploit 5.7 instead of 8.4 flocks in ten years. The most often method of induced molting is starvation.

The results achieved from the second production are at least 80% of production from the period

before the molting, and sometimes better results are obtained than in the first production season.

## MATERIALS AND METHODS

Molting was conducted in a manufacturing facility for bearing hens, with a capacity of 8640 pieces, and populated with 8574 pieces of eighteen weeks old hens.

Poultry was put in cages, each of them for five hens. There were 66 cages in total, each with 4 hens in it.

For this work, a flock of 8260 hens, 87 weeks old, was used.

Program for molting was made after weighing 200 hens out of 40 randomly selected cages.

Control weighing was performed only on hens from marked cages.

Housing lists were made daily (evidence of using food, water, egg production, deaths, length of light during the day, temperature).

Behaviour of poultry was followed during the entire period of work.

Each corpse went through a pathoanatomical examination.

By the end of production, weighing once a week, grit every three days, everything like in the first production season.

Table 1

### *Molting program*

Days	Food (g/hen)	Water	Light (length and strength)		Remark
			(Hours)	(W/m <sup>2</sup> )	
1–4.	No food	No water	Dark)	Ø	
5–8.	25	At will	2	1	Ø
9.	25	At will	2	1	Weighing
10–15.	25	At will	4	1.5	Weighing
16–18.	50	At will	6	1.5	On the 18th day blood tests for controlling titer and taking samples for bacteriological examinations
19–25.	100	At will	8	1.5	On the 25th day giving grit (rock)
26–30.	110	At will	8	1.5	Vitamins
31–38.	115	At will	12	2.5	Weighing on the 31st day. Grit every three days
39–42.	120	At will	14	3.5	Weighing
43–58.	125	At will	15	3.5	

## RESULTS AND DISCUSSION

The age of the flock has a large impact on the results of molting. According to the results of Carey (Carey et al, 1987) it is harder for younger flocks to stop the production and lose feathers. On the other hand, older flocks have smaller potential for renewal, and the quality of egg shells in the other production season is decreased.

We decided to induce molting in the 87<sup>th</sup> week because of a reduced supply of hens on the market, and their high price. The production of eggs in the flock was 57.56%, and there were 4.85% eggs with a weak, low quality shell. Before the molting started, the flock had 3.66% deaths, for 69 weeks in a cage. The production of eggs per hen was 335 pieces or 20.9 kg of egg masses. The average meal per day was 133 g of standard food mixture for bearing hens, with 16.5 % proteins.

Weighing 200 hens from randomly selected and marked cages from different locations in the object, we found that the average weight was 1768 g. That weight was lower than the one technologically anticipated for that category. Based on these values and because of the low temperatures in the facility, we decided that this flock needs a 25% maximum loss of weight. The starvation program was made based on this.

According to other studies (Leek et al., 1982; Ocak et al, 2004) the regression of the reproductive system and successful molting is possible with the loss of weight up to 35%. The results of our studies (Maslić-Strižak et al, 1997, 1998) the loss of weight of 20 – 25% is sufficient for a successful production in the second production season.

In our program we predicted that the first four days chickens stay without food, water, and light. The length of period without food depends on the initial weight of hens before molting and on the accommodation of hens (Mingan et al, 1999), quality of the facility (with or without windows), season, etc. On the 5<sup>th</sup> day we decided to provide 25 g of food and 2 hours of 1 W/m<sup>2</sup> light. In that way a slow loss of weight and a total cessation of load, with a regression of reproductive system were achieved. On the 9<sup>th</sup> day we checked the weight of hens again and noticed a loss of 18%, meaning that a suitable program for this flock was applied.

The cessation of egg production on the 11<sup>th</sup> day was somewhat faster than other authors had (Baker et al., 1983), since in their studies a total cessation happened 14 to 17 days from the begin-

ing of molting. The difference that occurred in our work is the result of the age of the flock when the molting started.

On the 15<sup>th</sup> day, the loss of weight was 22%, and the average weight was 1375.5 g. The achieved weight was sufficient for the meals to increase to 50 g of food, and the light to 6 hours and 1.5 W/m<sup>2</sup>. Due to large amounts of stress among hens, caused by a forced molting process, it is necessary to perform regular health controls, so we checked blood serums, with a method of enzyme – linked immunosorbent tests, for infectious bronchitis, plague and mycoplasma. The results were satisfactory. Simultaneously, the flock was tested on salmonella, because according to the data from a previous study (Gary D. et al., 2011) it is a great risk for hens during molting.

The controls showed no health problems, so the preparations for bearing started without delay. To prevent the problems with weak quality of the egg shells, the hens received grit since the 25<sup>th</sup> day. Brake (Brake et al., 1984) gave increased amounts of calcium – stone before the molting, but according to our results giving grit after the starvation period results in satisfying quality of egg shells in the second season. Meals were increased gradually, and on the 31<sup>st</sup> day hens had an average weight of 1557 grams. By increasing the meals, the amount of light during the day was also extended, and it reached 8 hours with 1.5 W/m<sup>2</sup>. On the 32<sup>nd</sup> day we started the light stimulation by increasing it to 12 hours and 2.5 W/m<sup>2</sup>, and the amount of food to 115 grams. With this program, the hens' weight was 1685.5 grams on the 39<sup>th</sup> day, which is enough for an intensive production. The light was extended to 14 hours, and meals to 120 grams. On the 42<sup>nd</sup> day, the egg production was 5%. The length of the molting process is different in different flocks and it depends on external and internal factors. The rate of molting is affected by the environment temperature, low temperatures cause fast loss of weight which can lead to poor production in the second production season, and that is why it is necessary to control the weight of hens during the process and adjust the length of the program to it.

The body mass in the second production season has the same influence on the results of production as it had in the first one, and the quality and quantity of meals should be adapted to it. This flock had a higher average weight in the second production season than it had in the first one, dur-

ing the removal of spoilage from the production it was 1896 grams.

In this work, molting lasted for 6 weeks (for 5 % of production), respectively 58 days until the peak of production. 3050 grams of food were used per hen until the first egg. The flock did not have health problems and during molting a total of 1.8% of hens were dead or rejected, and during the second production season deaths were 1.6%.

The second production season lasted for 37 weeks and 170 eggs or 11.05 kg of eggs per hen were produced. Out of all produced eggs, in weight categories SS, S, and A were 93% of eggs, and there was 0.8% of eggs with low shell quality.

### CONCLUSIONS

Molting is used to prolong the production life of hens, and it can be used on a healthy flock, adapted to the conditions in which that flock lives.

Molting makes it possible to obtain an egg with less investment.

In this flock, the amount of food spent for bringing it to the second production season was 47.88% of the food spent for raising an 18 weeks old hen.

Total deaths during molting and the second production season were 3.4%.

The production of eggs in the second production season can reach to 94% of the first season.

The size and quality of eggs in the second production season are satisfactory.

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