

## ALTERNATIVES TO LAYING HENS BREEDING IN PEASANT HOUSEHOLDS

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### Abstract

*This study was held in several householdings in Iasi county, in different villages, under financial limitations, but where the peasants were intending to improve and make more profitable the existing laying hens' breeding system. The researched was relied on some minimum but essential measures: actual birds specialized on a specific production (eggs in our case), minimum number of 300 head, compliance with a minimum of technical operating and maintenance, compliance with minimum health requirements. Following the calculation of estimated investments for a number of 300 laying hens, it results that an egg costs 0.143 lei (under references values). The price of wholesale will be approximately 0.25 lei, which means a net income of 0.107 lei/one egg. The total income achieved in 77 weeks is 8,784.7856 lei. A holding of this type provide an additional income producer. Besides, after applying this study results, one more very important problem is solved: the higher capitalization of forage resources obtained in their own individual farms (eg maize).*

**Key words:** laying hens, profitable, household, investment, fodder

### INTRODUCTION

If we consider that the most research studies and debates are directed to big exploitations and producers in poultry industry (both eggs and meat production), who have the financial possibilities to employ specialists and who have a wide variety of poultry tools and equipments, then we may say that the middle and small producers are kind of deprived of accessing high technologies in this field. Lack of money, the economical incapacity to contract long-term credits, as well as the internal instability on our markets, are the main category of reasons which cause the lower investments in these type of farms, no matter of production direction. That's why I've considered extremely necessary to study and to write articles and papers about improving the specific works in poultry farms, about a minimum level of technology, machinery and equipments, presenting in the same time some offers for inputs and biological sources.

We are two years after Romania joins the European Union and the peasant households is the same. If we refer to populations of birds in these "farms" to discuss effective up

to 100 head, low productive birds, lack of application of sanitary veterinary rules, lack of technology and a feeding defect. Under these conditions, and negative economic profitability of these farms is reflected directly in the living standard of "farmers". As a possible improvement of farm households, especially given that no financial resources for development of large farms, the first step to be done is to make upwards of existing farm with a minimum investment.

### MATERIAL AND METHOD

This study was held in several householdings in Iasi county, in different villages, under financial limitations, but where the peasants were intending to improve and make more profitable the existing laying hens' breeding system.

The researched was relied on some minimum but essential measures:

- actual birds specialized on a specific production (eggs in our case);
- minimum number of 300 head;
- compliance with a minimum of technical operating and maintenance;

- compliance with minimum health requirements.

Minimum standards of maintenance and operation of laying hens are governed by Rule of 28/11/2001 Published in the Official Gazette, Part I no. 113 of 12/02/2002 and the Council Directive 1999/74/EC of 19 July 1999 laying down minimum standards for the protection of laying hens. Provisions of these rules shall not apply to holdings with fewer than 350 laying hens, farms growing youth replacement for laying hens.

By analytic method of efficiency calculating and based on the zootechnic patterns in this study, I analysed the available materials in every household, observing, identifying and adjusting them to breeding systems that I determined and I decided to be the best solution for that medium or small farm. All the steps I made together with these breeders/peasants were relied on the existing rules and regulations for laying hens rising and wellness.

The results and economic values for efficiency were determined by some formulas and efficiency index from specialized scientific papers.

## RESULTS AND DISCUSSIONS

To manage food systems can be used for feeding linear or circular but they face to ensure feeding of at least 10 cm/bird (feeding linear system) or 4 cm/bird (feeding system of circular). (**1. System Photo - drink and feed**, source: [www.flytesofancy.co.uk](http://www.flytesofancy.co.uk)) If the drink is water use plants with continuous drinking linear system (front watering the minimum 2.5 cm/bird) circular drinking system (front to drink minimum 1 cm/bird) and when using the drinking cup or pipe tip, will provide a cup or pipe up to 10 hens. To lay a nest is used for up to 7 hens (**2. Photo. 2 model nest**, source, *Hubbard ISA Parent Stock Management Guide, 2005*) and nests in the group to have at least one m<sup>2</sup> for a maximum of 120 hens. Perches rest will be no sharp edges and allocate at least 15 cm/bird. They will not be placed above the litter, the distance between the perch at least 30 cm distance between the wall and the perch of 20 cm and the bedding should be at least 25 cm<sup>2</sup>/bird.

For the operation of laying hens with access to paddock (**Photo 3, 4 paddock**

**source model**, [www.chicken\\_house.co.uk](http://www.chicken_house.co.uk), 2007) breeder should take into consideration the following:

- Access birds in paddock is made by trap size 35 cm high and 40 cm wide arranged throughout the length and shelter as a general rule should be for 1000 chickens an opening of at least 2 m;
- bird density should not exceed 9 laying hens/usable area in m<sup>2</sup>.

### Farmers' duties

- The number of birds will be viewed as obligatory at least once a day
- You will avoid sudden noises, and noise level should be reduced to the minimum possible, feeding facilities, air conditioning and other equipment will be used so as to produce as little noise;
- Lights will be uniform and at a level at which birds can be seen in the case of using natural light, admission of light must be located so as to ensure uniformity of light distribution;
- All parts and equipment shelters that are in contact with poultry should be cleaned and decontaminated effectively.

Livestock buildings, shelters poultry must meet the following general criteria:

- satisfaction of conditions imposed by the specific biological process poultry populations;
- making microclimate conditions of the specific activity of growth and exploitation of birds (humidity, chemical factors, variations temperature, etc..)
- resistance in construction time, the possibility of rehabilitation of the profile for which the building was designed;
- construction costs as lower.

Shelters for poultry, livestock are designed to increase the construction and operation of meat or poultry laying hens. Analyzing the data presented, set design parameters for the production halls: spațiile for birds, buffer chamber, the inside of the shelter, microclimate conditions (temperature, humidity, air speed, lighting, etc..), The feeding, watering, etc.. In the case of new developments to increase farm birds should be considered a set of rules to be followed to maintain good health staff to comfort the

people of the area and last for conducting the optimum technological processes .

Thus for calculating the surface shelter, that we need to herds of laying hens, are taken into account:

1. The overall
2. chick /m<sup>2</sup>
3. Area occupied by machinery (plus wholesome drinking).

Formula for calculation is applied to the following:

**St = Su + SNP Where: St.**

- is the total area of the shelter should be ensured for the growth and operation of poultry and existing machinery required for the production;

- Su area is occupied by machinery for feeding and watering equipment for, which calculates the relationship with  $Su = Nru \times Sut$  where Nru represents the total number of machines placed in the hall and Sut m<sup>2</sup> area is occupied by a single machine;

- SNP - is effectively used by the birds obtained by the relationship  $SNP = Et : Dp/m^2$  where Et represents the overall population and for holding Dp/m<sup>2</sup> mean density per m<sup>2</sup>.

From the town hall production for laying hens category appear nest, rest and Perches lane access for harvesting eggs. To maintain a state of good health for poultry and recommend arranging a paddock to be very grass have bower. Access to the paddock is made freely access via hand or mechanically. They have size 50/50 cm. In case of cold or wet paddock access is prohibited. As a surface for paddock must provide at least 6 square feet for a bird.

#### **Raising youth replacement (0-19 weeks)**

On the arrangement livestock equipment, shelters for youth category replacement are identical as for chicken meat.

#### **Growing and operation of laying hens (20-77 weeks)**

For a shelter with a capacity of 300 heads laying hens, density of 6.9 birds/m<sup>2</sup> we need the following areas:

**St = 58.925m<sup>2</sup> where Su = 8.925m<sup>2</sup> and SNP = 50m<sup>2</sup>**

Shelter capacity of 300 heads laying hens, must have the following dimensions: length 11.12 m and 5.3 m in width and height of 2.2 m. From the town hall production for laying hens category appear nest, rest Perches passage and access for harvesting eggs. To maintain a state of good health for poultry and recommend arranging a paddock to be very grass have bower. Access to the paddock is made freely access via hand or mechanically. They have size 50/50 cm. In case of cold or wet paddock access is prohibited.

The numerous to ensure front feeding is 8 pieces and drinking 2 pieces and 50 nest (6 laying hens on a nest). In draft 1 - a model for organizing shelter for laying hens is presented an overview of the equipment arrangement.

You mentioned that the dimensions shown above are indicative, they may change depending on the density of birds per square meter of surface area and equipment used. In terms of density is considered that a density of 5-7 laying hens/m<sup>2</sup> is sufficient. Problems occurred due to overloading density. Density too high can cause uneven growth of the number of birds, unable to ensure front feeding and watering, low percentage of lay. and rapid deterioration of permanent litter. Standing litter deterioration leads to a precarious state of health of herds of birds. For this reason had to be very careful in calculating the optimal use of space used by birds as failing this goal leads to important economic losses. If small number of birds (300 head) can use existing spaces in households, but must meet criteria on the optimal size, height (2-2.5m), is well insulated and heat to be easily cleaned and decontaminated.

#### **Perches rest**

Perches rest are placed in the halls of exploitation of laying hens, but the name you can tell by their role. Construction and dimensions as in photo 5 is played the necessary details. Perches rest are built of wood or other materials, but must be resistant to the weight carried by birds, are resistant to chemical corrosion factors of shelter and easily washable.

### Economic calculations

Table 1  
 Recipes used forage consumption and feed for a herd of 300 heads laying hens, for 0 to 16 weeks

Period	Type feed	Prescription % participation	In total consumption actually	Lei/total feed
0 starting -6 weeks	Maize	61	218,62	65,586
	Wheat	0	0	0
	Concentrate Atico type chicks 0-7 wk.	10	35,84	81,887232
	Soy grist	28	100,35	161,212275
	Pulvivit	1	3,6	11,5668
Growth 7-12 weeks	Maize	59	403,8	121,14
	Wheat	10	68,442	20,5326
	Concentrate Atico type chicks 7-18 wk.	10	68,422	156,33058
	Soy grist	20	136,884	219,90414
	Pulvivit	1	6,85	22,00905
Development 13-16 weeks	Maize	60	332,64	99,792
	Wheat	15	83,16	24,948
	Concentrate Atico type chicks 7-18 wk.	10	55,44	126,66931
	Soy grist	14	77,616	124,69010
	Pulvivit	1	5,544	57,2327577
<b>TOTAL</b>		<b>-</b>	<b>2151,6</b>	<b>1293,6</b>

**Price finished feed:** 6 weeks starting 0:0.878422 lei/kg, 12 weeks Growth 7: 0.77819 lei/kg, 16 weeks and Development 13: 0.703016 lei/kg.

**Ingredients' price:** Maize 0.3 lei/kg, wheat 0.3 lei/kg Conc. Atico type chicks 0-7 weeks 2.2848 lei/kg Conc. Atico type chicks 7-18 weeks 2.2848 lei/kg Soy grist 1.6065 lei/kg Pulvivit 3.2130 lei/kg.

Table 2  
 Cost of a herd of 300 heads laying hens 16 weeks period 0

Cost's type	Amount	Lei/ product unit	Lei/ entire amount	Lei/ chicken	Lei /300 chickens
Fodder	Starting	358,41	0,878422	314,84	314,84
	Raising	684,398	0,77819	532,6	532,6
	Growing	554,4	0,703016	389,76	389,76
<b>total</b>	<b>21516,6</b>	<b>-</b>	<b>1293,6</b>	<b>4,13</b>	<b>1293,6</b>
Buying 1 day chickens - transport	300 buc	2,9	870	2,9	870
Electricity	1200 kw	0,45	540	1,8	540
Medicated - decontaminate	-	-	80	0,27	80
Mortalities	3%	-	81,9	0,273	81,9
<b>TOTAL/herd</b>	<b>291 chop</b>	<b>-</b>	<b>2865,5</b>	<b>9,85</b>	<b>2865,5</b>

Table 3  
 Recipes fodder used for the consumption of feed a herd of 300 heads laying hens, 17 to 77 weeks

Period	Type feed	Prescription % participation	In total consumption actually	Lei/total feed
Pre-lay period 17-18 weeks	Maize	61	188,215	56,4645
	Wheat	15	46,2825	13,88475
	Concentrate Atico	10	30,855	64,2185115
	Soy grist	13	40,1115	64,43912475
	Pulvivit	1	3,0855	9,9137115
I 10-50 laying percent 19-20 weeks	Maize	50	169,125	50,7375
	Wheat	28	94,71	28,413
	Concentrate Atico	10	33,825	70,3999725
	Soy grist	11	37,2075	59,77384875
	Pulvivit	1	3,3825	10,8679725
II 70-94 laying percent 21-32 weeks	Maize	49	1186,878	356,0634
	Wheat	25	605,55	181,665
	Concentrate Atico	10	242,22	504,132486
	Soy grist	15	363,33	583,689645
	Pulvivit	1	24,222	77,825286
III 93-90 laying percent 33-44 weeks	Maize	50	1367,19	410,157
	Wheat	26	710,9388	213,28164
	Concentrate Atico	10	273,438	569,1065094
	Soy grist	13	355,4694	571,0615911
	Pulvivit	1	27,3438	87,8556294
IV 90-85 laying percent 45-55 weeks	Maize	59	1603,549	481,0647
	Wheat	20	543,576	163,0728
	Concentrate Atico	10	271,788	565,6723644
	Soy grist	10	271,788	436,627422
	Pulvivit	1	27,1788	87,3254844
V 85-74 laying percent 56-77 weeks	Maize	50	2526,48	757,944
	Wheat	31	1566,418	469,9254
	Concentrate Atico	10	505,296	1051,6725648
	Soy grist	8	404,2368	649,4064192
	Pulvivit	1	50,5296	162,3516048
<b>TOTAL</b>	-	-	<b>13574,22</b>	<b>2756</b>

**Price finished feed:** Pre lay 17-18 weeks: 0.670137 Euro/kg I, 10-50% lay, 19-20 weeks: 0.645079 Euro/kg, II, 70% lay 94, 21, 32 weeks: 0.695195 ROL/kg, III, 93% lay 90, 33, 44 weeks: 0.670137 Euro/kg, IV, 90 85% lay 45, 55 weeks: 0.63255 Euro/kg, V, 85% lay 74, 56, 77 weeks: 0.607492 Euro/kg.

**Ingredients' price:** Maize 0.3 lei/kg, wheat 0.3 lei/kg Conc. Atico type Layer 2.0813 lei/kg soybean groats 1.6065 lei/kg, Pulvivit 3.2130 lei/kg.

Table 4  
 Cost of a herd of 300 heads laying hens, 77 weeks from 17

Cost's type	Amount	Lei/ product unit	Lei/ entire amount	Lei/ chicken	Lei /300 chickens	
Furaje	Prelay	358,41	0,878422	314,84	1,05	314,84
	I	684,398	0,77819	532,6	1,78	532,6
	II	554,4	0,703016	389,76	1,3	389,76
	III	2743,38	0,670137	1838,5	6,13	1838,5
	IV	2717,88	0,63255	1719,2	5,74	1719,2
	V	5052,96	0,607492	3069,64	10,24	3069,64
<b>Total</b>	<b>12111,428</b>	-	<b>7864,54</b>	<b>26,22</b>	<b>7864,54</b>	
Electricity	1200 kw	0,45	540	1,8	540	
Medicated - decontaminate	-	-	150	0,5	150	
Mortalities	3%	-	235,98	0,7866	235,98	
<b>TOTAL/herd</b>	<b>291 chop</b>	-	<b>8790,52</b>	<b>29,3066</b>	<b>8790,52</b>	

Table 5  
 Total costs for 0 to 77 weeks/owner

Period of time	Costs/hen	Costuri/efectiv	Eggs/hen	Eggs/herd	Costs/egg (lei)
<b>0-16 Weeks</b>	9,85	2865,5	0	0	0
<b>16-77 Weeks</b>	29,3066	8790,52	274	82100,8	0,107
<b>Total</b>	<b>39,1566</b>	<b>11656,02</b>	<b>274</b>	<b>82100,8</b>	<b>0,143</b>

## CONCLUSIONS

This model is a top holding for development peasant household at the moment in a continuous decline. Respecting minimum standards, the products obtained can be traded legally, which means more income and higher capitalization of existing feed resources. The first step you should do "farmer" is holding and making effective use of human and material resources. We have no claim that all breeders to become laying hens or chicken meat and that is a solution for some people in rural areas.

Following the presentation of data on expenditure on a number of 300 laying hens that an egg costs 0143 lei. The price of wholesale will be approximately 0.25 lei, which means a net income of 0107 lei / or total income achieved in 77 weeks is 8784.7856 lei. A holding of this type provide an additional income producer. One thing very important: they are valued higher forage resources obtained by them (eg maize).

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## ILLUSTRATIONS APPENDIX



1. Watering and Nutritious  
source: [www.flytesofancy.co.uk](http://www.flytesofancy.co.uk)

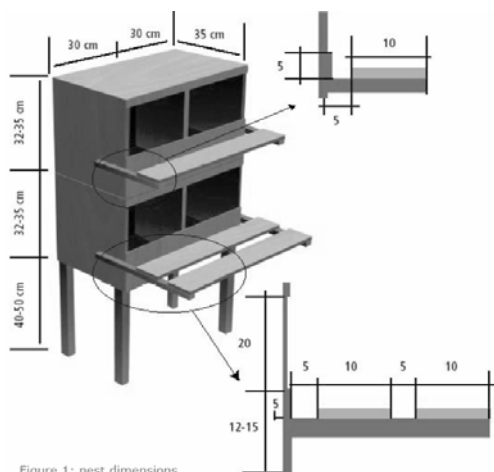


Figure 1: nest dimensions

2. Hatches patterns  
source: Hubbard ISA-Management  
guide Parent Stock, 2005



3. Paddock model

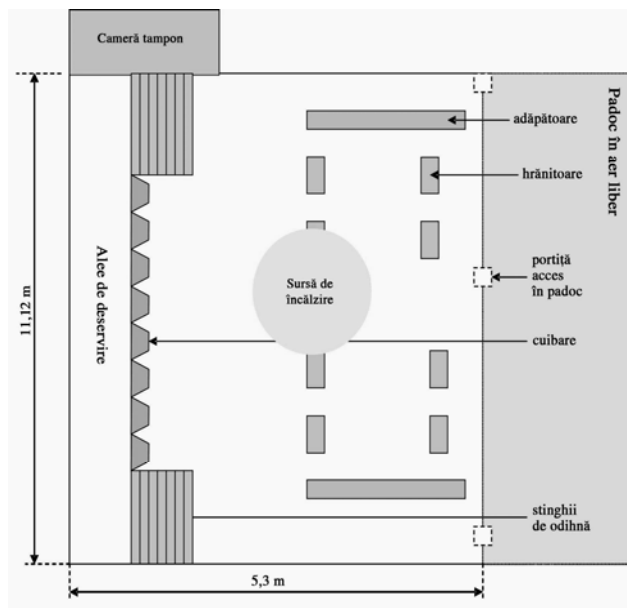
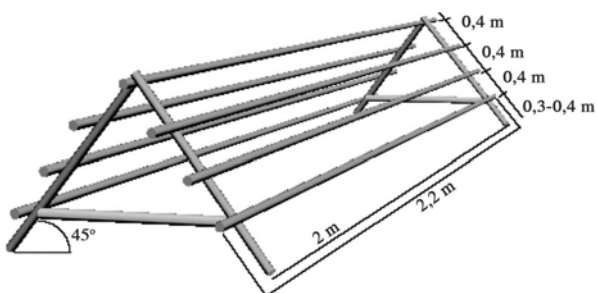
source: [www.chicken-house.co.uk](http://www.chicken-house.co.uk), 2007



4. Paddock model

source: [www.chicken-house.co.uk](http://www.chicken-house.co.uk), 2007

5. Perches rest  
 (source: Hubbard ISA-  
 Management guide  
 Parent Stock, 2005)



Sketch 1 - a model for  
 organizing shelter for  
 laying hens