MICRO-FARM FOR GROWING UP LAYING HENS

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Abstract

The theme of this study is a micro-farm for poultry farming in extensive system for egg consumption, with the purpose of achieving and capitalizing the production of obtained eggs. The micro-farms as the one that makes the object of this study will gradually replace the egg production of small farmers. The project provides an increased activity of the layers on the permanent bed plus blankets. Even if it is a relatively small, a familial poultry farm provides jobs for four peoples and its achieving high labor productivity: 1.8 million eggs, respectively about 27.5 thousand euros per person. The farm aims to carries finished products that can be delivered directly to the market, without including intermediaries in the relationship producer – market. Basically, the farm can deliver to the market fresh, dietetic eggs, the production of a day being possible to reach on the market until the next day. Most of the raw materials of which are provided the farming prescriptions can be ensured from the own farm, establishing a link between the agricultural production and the poultry, link enhanced and through the fowl manure that will increase the agricultural fertility of the area. In addition to the profits that can bring this agricultural exploitation to the small investor, these are found under the National Rural Development Plan for 2007-2013 and are adapting to the UE standards.

Key words: micro-farm of laying hens, rural development

INTRODUCTION

In Romania, according to the legislation in force, it is expected the establishment of farms, intended to replace gradually the peasnt households of subsistence, with the self-consumption of the achieved agricultural products. Analyzing the current system of producing commercial eggs for consumption, we must show that the egg production in the peasant households is maintained by hundred of years in an anachronic production process:

- are breeding local breeds of poultry, with very low genetic and productive potential;
- breeding is performed in shelters (cages) inappropriate, or even in outdoors, a total contraindicated system at birds, which are having a high metabolism and it isn't express neither the productive potential with which are endowed, because of the excessive cold in winter and torridity during the summer;
- in addition, feeding birds is weak consisting solely of cereals, not ensuring the necessary energy-proteins nutritive, to achieve economic curves of egg laying. From the existing statistics, a chicken raised in this extreme conditions produces per year about 120 eggs, only in summer, but consumes daily 120 g of grain, or 43.8 kg per year, which is at approx. 365 g forages per egg, compared with 280-300 eggs per year in the intensive breeding system, with a consumption of 140 – 150 g per egg. So a chicken raised in intensive system produces 2, 3 – 2, 5 times more eggs pr year, with forages consumption per egg of 2.4-2.6 times less.

In the world, this extensive system, non-economic, of breeding was abandoned from a very long time tin the countries with developed poultry, he barely existing only in the underdeveloped countries. Romania, which already has a very efficient poultry of industrial type, very competitive, with a tradition of almost 50 years, it must restrict in the following period, this type of breeding, which unfortunately, effectuates currently approx. 80% of the local production of eggs, and the approx. 5.5 billion of eggs that it produces annual, with an non-economic consumption of 200g per forage in addition per egg, achieves a supplementary consumption of about: 5.5 billion eggs x 200 g/egg= 1.1 billion tons of

cereals or the production on about 200 thousands hectares of arable land.

We have in mind and the negative influence of the peasant egg production. The 5.5 billion of eggs are made only in 7 months per year (April – September) and together with the 0.6 billion products of the industrial sector in the same time, ensures the country's population about 1 billion of eggs per month, that is almost 40 eggs per capita. In the other 5 months of the year, it is on the internal market almost only the eggs produced by the industrial sector (about 0.5 billion), providing only 10 million eggs per month, or only 4.5 eggs per capita.

This un-ensuring of the market determines the excessive increase of the egg prices during the cold season, as much as massive imports of eggs, which is destabilizing the domestic market, than can't be controlled with the very small amount of local eggs. The opportunity to achieve a micro-farm for growing up laying hens is justified on the one hand, because applying the intensive system of breeding [11], instead of the current extensive, the hennery, by the investment which we mean, will produce eggs in the economic conditions of the current industrial farms and throughout the year, and on the other hand, it has the advantage of using only the family labor, as well as and the cereals from own production, much cheaper than those on the market, and can therefore produce more economical even than the industrial poultry farms.

MATERIALS AND METHODS OF WORK

This study refers at the construction and putting in function of some halls with a surface of 1000 sqm, choosing this type of hall having in view the worldwide experience and the Romanian in the field. The hall can be used either to increase the permanent bedding, and in conventional batteries, but with the technical possibility of being transferred after 2012 in alternative batteries, as are allowed by the regulations in matter of EU.

Because the type of breeding in batteries is more expensive and more difficult in exploitation, it is recommended the breeding to soil, on permanent bedding [14], case in which the hall is populated by 8000 canaries of 16 weeks, that are kept in production until the age of 77-90 weeks, after they are sacrificed and replaced, after the hall disinfection, with a new series of 8000 canaries.

The hall of 1000 sqm considered in the study can be reduced by half (500sqm), with 4000 canaries at breeding. The terrain on which is located the building (of 500 or 1000 sqm) it must, however, have dimensions to allow for further development, by constructing of new halls of the same dimensions, in the idea that any business must consider the possibility of expansions, reinvesting the profit made during the onset of the business..

In essence, it is having in view the production of eggs for consumption in the breeding system on permanent bedding, which requires:

- Construction of closed halls, without windows, provided with a ventilation system to ensure an appropriate microclimate both in the summer and winter time. In addition, the closed hall allows a program of light according to the breeding technology, and provides a very good bio-security, due to limitation of contamination of the birds with pathogenic organisms, compared with the breeding in open air or even in halls provided with windows;
- The system of a nutrition is provided from tron-conic nutritional, in which the forages are distributed through a system that extracts the forages from a bunker (silage), central exterior or interior, and transports them mechanically in the tron-conic feeding machines, accessible to birds, but which eliminates the waste:
- the watering system is composed of a source (own or the municipal network), from the pipeline of the hall, a pressure control system, and from inner pipelines on which are fixed the automated watering of drip type;
- the lighting system is represented from an internal electric network, which are arranged under ceiling, electrical lamps, preferably fluorescent, for saving the electricity;
- the floor of the housing is formed in relatively proportion of beds and permanent bedding. Throughout the hall, longitudinal,

are located the nests of egg laying, with manual or mechanical harvesting of the eggs.

The main characteristics of the investment

To achieve a proper strength of the construction as well as and a great functionality of it, is considering it locating on a health terrain, with a suitable soil structure [7], without the risk of suffering due to the phreatic waters or of the rainwater, choosing a slightly higher ground as level towards the surrounding area, with a building located with the angle from the longitudinal wall – back and lateral wall – behind in the direction of the predominant cold wind, of winter, in order of a better control of the winter air conditioning.

Structure design

- The usable area of the hall (excluding the room service) is of 1000 sqm, of which 84 m length and width 12 m, using the 28 modules type of 3 m length and a surface of 36 sqm. The service room can be provided, also, from a module type of 3m. The average height of the hall is 2.5 m and its volume of 2500 cubic meters (1000 x 2.5), in a single level.
- The concrete foundations, with a good waterproofing between the soil and wall construction, it must have the lower edge below the freezing point of the area;
- The walls made from sandwich-panels, with a corresponding parameter of thermal insulation, are set on concrete pillars, which confers resistance to the construction;
- The roof must give a perfect thermal insulation (since 70% of the hall's heat is lost through the roof) and fluid insulation. A roof with a good thermal and fluid insulation may be made unnecessary the existence of bridge construction.

Networks

The feeding installation [10]. For the 800 canaries (an then laying hens), are available 150 tron-conic feeding machines, that is a feeding machine for 40 birds. The tron-conics feeding machines will be placed on four feeding lines, of which two on bed and the two on the permanent bedding, Since the double row of nests divide the hall longitudinal, in two compartments (one quarter of the hall), for each of these will exist therefore, a row of tron-conic feeding machines on the bed and a row for the permanent bedding, these being intercalated with the two rows of watering of drip type.

In the hall of 8000 of heads, the maximum consumption of 125g/head requires a daily quantity of:

8000 x 0.125 = 1000 kg of forage

After the feeding machine type and the forage program of the breeder, the distribution installation for the forages is turned on automatically, making the full at the feeding machines. If we accept the automatic startup of the installation of 5 times in 24 hours (according to the light program), to permit automatically starts of the installations at the hours 5,9,13,17:30 and 22, every time all the feeding machines being fueled with approx. 1,25 kg of combined forage (1,25 x 5 = 6,25 kg). At every two rows of feeding machines there is a distribution facility that at each start supplies the 80 feeding machines of the two lines by 100 kg (80 x 1,25 l kg = 100kg). Of the two distribution facilities, one supplies the lines of feeding machines on the bed and the other on the two lines of permanent bedding, as each have the tron-conic feeding machines located at different heights (50% on bed , 50% on the permanent bedding). It can be disposed and four lines of feeding, if the installation is provided by the manufacturer, especially if the supply is made with a spiromatec.

It is provided a stock of combined forages that is the existence of a central bunker with the capacity of three tons (or about approx 6 cubic meters, if the hectolitic weight of the combined forages is of 50 kg on hl, or 500 kg per cubic meter). A lesser amount is contraindicated [9], given the length of the weekends, but also a larger one because the forages can distort the initial nutritive value after 4-5 days from production.

The central bunker, located outside or inside, will be supplied after a weekly program of the form:

Monday – 2 tons

Wednesday – 2 tons

Friday – 3 tons

If it's chosen the solution of the metallic bunkers (silos) exterior, these are supplied,

usually, with the auto-bunker, especially if the forages are transported in bulk, with this way of transport, from a specialized FNC. If it's chosen the solution of internal bunkers, they will be made below ground level, having the same volume of approx. 6 cubic meters.

In both solutions, there will be helical conveyers of extraction of the contain forage and its training towards the bunkers related to the two distribution facilities, maximum rates 100 kg at each (total 200 kg) at the time set for automatically start of the distribution facilities of the combined forages. During summer when the hens usually feed in the morning, evening and at night, when the temperature from the hall is lower, the program of automatic start of the feeding installations will be conformable changed.

The watering plant

The source of alimentation with water (own household of water or communal network) must be permanently controlled by laboratory testing, for its healthfulness.

The first water storage will be created from a hydrosphere, warehouse located at height to ensure the fill in network, or a hydrophone, which has the same purpose. The hall supply with water is made through a metallic adduction pipe, buried in the ground below the freezing point.

The necessary of water of the hall is usually of 1.5 times the amount of food, ie: 125 x 1.5 = 187.5 m/day

During the summer or in the conditions of feeding with forages having high nutritive density (or high percentage of salt) the consumption may increase to three times the consumption of forages: 125 x 3 =375 ml/day.

Given and the eventual loses from the network, as well as and some washing and hygiene needs, is calculated a necessary of 0.5 l per hens, 4000 l for all the birds in the hall.

Inside the hall, is made a reserve of water for several hours, of about one cubic meter, stored in a buffer tank, provided with an overflow facility and with pipeline that supply the two installations of feeding of the hall (or four installations (lines) if such facility is provided by the manufacturer.

The indoor plant of watering is composed of the 4 lines of watering, each provided with 250 droppings, amounting in 1000 droppings on the hall, ensuring in this way, the access of 8 hens at each drip. The four lines of watering are intercalated in the hall with the four lines of feeding, so that in any position wick be in the hall, a chicken can found at maximum 2 meters from her a feeding or watering facility. By one watering line must be placed in the front of the row of nests, because the fowl, immediately after laying, feels the need to drink. A special care should be taken to the proper functioning of all the drips, but especially of the lines near the nests, thus the fowls are getting their claws wet and are dirtying the nest so and the produced eggs. The drips height it must be increased on the measure that the canaries are becoming fowls and their increasing their stature, and the height should be fixed at the height of the beak stretched and of the neck in oblique position. A too high or to low position doesn't allow a normal watering of the birds.

The air conditioning. Basically, a hall having a good thermal inertia, it isn't necessary the heating of the layers halls, some difficulties wit maintaining the optimum temperature in the shelter being only in the short period of winter when the outside temperature drops bellow -10^0 C and , exceptionally, under -20^0 C. There are now facilities of maintaining the temperature and technological humidity in the hall, the respective devices allowing the control for a heating and water imposed by the producer. It is recommended that these facilities to be included in the project, otherwise compromising a good part of the production (and the healthy of the birds), by leaving these parameters at the appreciation of the breeder, who is susceptible of many times human errors, including due to the limited presence of him inside the hall.

There can be accepted two ventilation systems:

- with electric fans and orifices of admission on the longitudinal walls of the halls;
- ventilation-tunnel, with forced evacuation of the air through one of the side walls, with orifices of inlet arranged on the longitudinal walls, with different surfaces of the inlet orifices contracted

on the measure of approaching the side wall on which the fans are laid-down.

It is recommended the first system, whereas the second is contraindicated in the cold season. The fans should be able to have the capacity to ensure the birds at least 5 cubic meters air per kg body and with a possibility of decrease this necessary up to 0.7 cubic meters during winter.

For the 8000 fowls, weighing on average about 2.5 kg/head an have together 20.000 kg, are therefore required 100.000 cubic meters, of air during summer and 14 thousands, in winter.

The difference from winter to summer may be made by:

- 20 fans, each of 10 thousand cubic meters during summer;
- the same fans, with variable speed, allowing access to only 14 thousand cubic meters during winter, or
- groups of fans, which operate in totality, and in winter jus as many (3-4) as we need to ensure the minimum air required.

Of course, between these minimum and maximum dimensions are intermediate situations and not only a complex installation can order the optimum regime of ventilation.

During summer, it can be required from the supplier of equipments installations of humidification of the air, because the outdoor air very dried is introduced in hall to a very low humidity, uncomfortable for the birds.

Lighting installation

At the hall with width of 12 m, are necessary two rows of electrical light bulbs, preferably fluorescent, with three meters between a lamp and another, providing 3.2 W per sqm of housing, according to the following account:

1000 sqm x 3.2 W/sqm = 3200 W

3200 W: 60 W/bulb= 54 bulbs

54 bulbs: 2 rows=27 bulbs/row

84 m (length of the hall) : 3 m (between lights)= 27 bulbs/row

The lighting installation must be provided with watches of PARAGON type, which controls the light extinction and light ignition at the hours provided in the technology, preferably with the simulation of the dusk and dawn (decreasing and respectively progressive increasing of the light intensity)

The electrical lamps must be placed under ceiling, at approx. 2 m above the birds, and the power grid to eliminate any possibility of producing short-circuit, causing fires and electrocutions.

The beds and nests

The proportion of 50% among the beds and bedding, recommended in this study, it's not required, the bed and nests supplier can change this proportion, depending on their characteristics and costs [13]/ The beds must be made of plastic, being resistant to support the birds weight and of the personnel, comfortable for birds and easy to wash and disinfect. They are located at a height sufficient high for the dejection layer that is formed in a cycle of production.

The nests, in number of 8 birds/nest, or 1000 per hall, are placed in two rows, back to back, and on two levels, on the median length of the hall. At each level, between the nest rows, there is a band of egg collection that transports them to the head of the hall, for manual or mechanical collection, after the desire.

In a hall of 8000 fowls it can be produced, in the peak of laying about 7000 eggs. The installation of egg harvesting can be operated at fixed hours, in the idea that over 80% of eggs are produced in the morning until 14 o'clock.

If is renounced at the harvesting plant, which is quite expensive, then the rows of nests are distanced at minimum 1.2 m between them leaving a alley provided with a floor, on which it can be operated a trolley, were are arranged the cartons (casings) on which the eggs will be manually harvested (to harvest 7000 eggs, are necessary 3-4 hours/human). In the service room it can be located a simple facility for sorting, stamping and packing of eggs, the eggs production can be delivered directly to market. It is, however, need of a space to storage the eggs before delivery, in which can be achieved a temperature of maximum 14^0 C.

The main machineries of endowment of the constructions

The housing for birds, as was described in this study, doesn't have other high-tech equipments, beside those shown: water supply, with electricity from the network, with deposits

for forages and –eventually – a plant, small, simple for collection-stamping and sorting eggs, and their storage to recovery.

The small umber of eggs achieved makes possible the organization of sorting and storing the eggs even in the service room, with the dimension 3 x 12 = 35 sqm.

What would be recommended for such micro-farm would be a simple installation of producing the combined fodder [6], justifiable as:

- the recipes for laying hens are very simple to manufacture, these not having to be granulated, like in the case of chickens for meat;
- within an agricultural exploitation can be provided at leas the necessary cereals for feeding the birds.

The necessary is as follows:

With 8000 laying hens at populating is made and annual effective of production:

8000 x 78.80% usage = 6304 effective laying hens

6304 hens x 289.5 egg/fowl= 1,825 million eggs

1.825.000 eggs x 160 g forage/egg = 292 tons of consumed forages

292 tons x 60% cereals= 175 tons cereals

175 tons: 5 tons/ha = approx. 35 hectares of arable land

For the crop rotation and to obtain and the oilseeds necessary to obtain grit [12], under contract with the oil factories, it is needed:

a) 292 tons x 15% soya grit = 44 tons grit soya

44 tons: 70% extraction = 62 tons soya bean

62 tons: 2,5 tons/ha=25 ha harvested with soya

b) 292 tons x 10% sunflower grit = 29 tons sunflower grit

29 tons: 60% extraction= 48 ton seeds

48 tons seeds: 2 tons/ha= 24 ha harvested with sunflower

c) Other crops for crop rotation: 35 ha

Therefore, to ensure 85% of the ingredients necessary to feeding the 8000 birds it is necessary a surface of about 120 ha. This calculation is useful for the case in which the breeder wants to produce economically through its own resources, the agricultural ingredients required to draw up the recipes of forages within an own installation.

Regardless, however, by the origin of the three ingredients of vegetal origin (cereals, grit of soya, sunflower grit, which amounts 85% of the prescription, is required a installation to produce the combined fodder with an annual capacity of about 292 tons, with an weakly average of about 6 tons and of top for 7.5 tons or1.5 tons in average for the 5 working days of the week.

The achievement from own production of form purchases locally of the approx. 292 tons of fodder ingredients would require a warehouse with an area of 300 square meters, to ensure the necessary per year or of 150 square meters to ensure the necessary on 6 months, which is considerable. Otherwise, the contracted and purchased ingredients from early, to pay the lowest price, it must then to be stored in rented spaces from which to extract periodically the necessary for maximum a month (approx. 30 tons), for which it must a storage space of about 30 square meters and another similar for placing the installation of producing the combined fodders. It results that is necessary of an annex construction of about 60 sqm.

Micro FNC will be constructed from:

- small mill, with capacity not exceeding then 500 kg, for grinding cereals (and eventually soya grits)
- a scale for dosing the receipt components;
- a mixer of approx. 300 kg per batch

Informative, the recipe structure [12] will be:

- 60 % corn (or other cereal)
- 15% soya grit
- 7% calcium carbonate;
- 8% pre-mix of protein-vitamin-mineral, containing the pre-mix vitamine-mineral, the salt, dicalcium phosphate, fish flour, eventual synthetic amino acids or enzymes, according to the necessary resulted from optimizing the recipe on the computer

The drawn recipe contains 16.7% brute proteins and 2700 kcal metabolizable energy and can support, with a good laying hybrid, the annual production of 285 eggs per fowl (average percentage of laying – 78%).

The Micro-farm of laying hens can't be build in a locality, but to a considerable distance from it, according to the local existent conditions and of the approval of the veterinary-sanitary organs and of environment [5]. Therefore, the place of settlement must be chosen near an access way and to a way of access and to be near enough to a source of supply with electricity and water. Even digging of a well must have at its base a study concerning the depth of the layer of phreatic water, flow and water quality.

Also, beside the above mentioned facilities, are still necessary:

- a building located at the entrance in the micro-farm, provided with a service and rest room, a sanitary filter provided with shower and with protective clothing and a WC, all with a dimension of 35 square meters (7x5 m);
- the terrain in which will be placed the housing will be surrounded with a fence to prevent the access of the persons or animals undesirable within the farm and will be sufficiently big fir the eventual development of the farm.

Data concerning the labor market and the project management

Being a family farm, the majority of the actions necessary for the proper course of the activity will be made by the family members.

Mode of employment of the personnel

Caretaker of hall birds

- 1 hour for poultry surveillance and of the equipments of hall;
- 1 hour for the supply with forages of the hall;
- 3 hours for the collection of the eggs;
- 3 hours for sorting-marking-packaging the eggs (about 15 boxes x 260 eggs) per day

Auxiliary worker 1

- 3 hours for sorting-marking-packaging the eggs (about 15 boxes x 360 eggs) per day;
- 3 hours for manufactured combined fodders ;
- 2 hours for handling various materials – forages

Auxiliary worker 2

- 3 hours for manufacturing combined fodders
- 2 hours fro handling various materials – forages
- 3 hours for household action inside the farm;

Tractor driver – mechanic

- 6 hours transport of forages, egg, other materials;
- 2 hours reparation – maintenance of the hall

It is preferable that the employer to fulfill and the tasks of tractor driver, to track personally the reception-delivery of the goods and products.

The other three posts will be occupied by other family members of by permanent employees.

These four jobs may be considered as new created.

The products of the micro-farm

The farm makes products destined to market and products that are self-consumed, as follows:

1. Products that are self-consumption

The mixed fodders: are made 292 tons of combined fodders within a micro-FNC, the average daily quantity produced in the 5 working days of the week being of 1.2 tons and maximum 1.4 tons. Daily, two workers serve time of 3 hours this micro-FNC, for grinding, dosing, blending and storage of the combined forage resulted.

Lucerne green mass: The land inside the farm (approx. 3000 sqm) will be sown with lucerne, from which will be obtained about 6000 kg green mass during summer. It will be given in form of hands, daily, small amounts of lucerne (5-10 g per fowl and day), for both the expanding of the necessary of vitamins and protein, and to give a concern to birds.

2. Products that are being sold

- eggs for consumption: of the 1825 thousand of eggs, are reaching on the market around 1815 thousands, the rest of 10 thousand (0.5%) being perishables.
- Of the 815 thousand of deliverable eggs, 90 thousands (about 5%) are non-recoverable in shell eggs, which it can be turned into paste (about 250 eggs per day or approx 12 kg of paste). Are broken in a sterile area, are being putted in cans and stored in a freezer to be delivered to some units of alimentary industry or public alimentation;

- the rest of 1.725 thousand of eggs are sorted, marked and packed as prescribed to HG 415/2004 and are delivered under contract to some commercial nits, or on open casings of 30 eggs, or in closed casings, according to the conditions imposed by the beneficiary;
- from the exploitation results and 7500 fowls reform, of the 8000 introduced at breeding (losses 500 heads – 6%). At an average weight of 2.2 kg/fowl, results 16500 kg of living birds. Indicating that the production cycle is of 64 weeks (4 weeks as canary, 57 weeks as layer and 3 weeks sanitary void) and only in this period results a series of reformed fowls. In average, for a year are obtained 13.200 kg living birds (52/64 = 81.2%; 16500 x 80% = 13200 kg of living birds).

In the same period results from exploitation a very valuable natural fertilizer [3].

The amount of poultry manure, per production cycle, is 1.5 times towards the consumed forage, meaning approx. 50 kg of poultry manure, or of approx. 380 tons per production cycle. This waste can fertilize 38 hectares of arable land annually, administrating each 10 tons per hectare.

RESULTS AND DISCUSSIONS

In the tables 1, 2 and 3 are synthetically represented the incomes, expenses and the profit that can be achieved by a familial micro-farm for breeding the laying hens (8000 fowls/cycle).

From the presented calculations results that a profit rate of over 26% is possible, in the conditions of a proper management and of producing the combined forages in a simple installation, by the farmer.

Concerning the annex constructions, they are reduced to two: micro-FNC for the production of combined fodders and the micro station of sorting eggs, each with the afferent warehouses.

Table 1. Revenue forecast

Product	UM	Quantity	Average price	Total
			Euro cents	Thousand euros
Eggs	pieces	1725	6	103,9
Eatable paste of eggs	kg	4.262	90	3,9
Reform fowls (share per year, 16.540 x 81,25)	kg	13.440	55	7,4
Manure (380 x 81,25)	kg	308.000	1,37	4,2
Total revenue	x	x	x	119,4

Table 2. Expenditure forecast

Expenditure	UM	Quantity	Average price	Total
			Euro cents	Euro cents
Canaries of 16 weeks (share per year, 8000 x 81,25)	pieces	6500	3,56	23,15
Total combined forages	tons	292	x	50,92
d.c. – recipe 21-4	tons	11	150	1,65
– recipe 21-5	tons	281	175	49,27
Straw for bedding	tons	4	8,2	0.32
Electricity	KWh	26.000	11	2,85
Mediciens and disinfectants (15 lei/egg)	x	x	x	0.74
Wages	emplo yees	2	2,74	5,46
Liquidation	x	x	x	4
Indirect expenditure (3 %)	x	x	x	2,77
Total costs	x	x	x	90,38
Sorting-package expenditure	x	x	x	3,82
Total general costs	x	x	x	94,20
Total general revenue	x	x	x	119,4
Profit brut total	x	x	x	25,20
Profit rate	%	x	x	26,7

Note: In the conditions of some raw material market and of the very various products and unstable, the revenue and expenditure forecast has some dose of uncertainty

Table 3. The calculation of production costs, of the selling price and of the gross profit for the egg product

Specification	%	Production costs
		Euro cents/egg
Cost of the canaries of 16 weeks (130.000 lei share per year)	25,6	1,27
Forages cost (160 g/egg)	56,4	2,79
Straw for bedding	0,4	0,02
Electricity	3,2	0,15
Drinkable water	0,2	0,01
Medicaments	0,8	0,04
Wages	5,9	0,30
Liquidation	4,4	0,22
Indirect expenditure	3,1	0,15
Total production costs	100	4,95
Costs of sorting-marking-packaging		0,21
Total costs at the sorting station gate		5,16
Secondary production (egg paste, reform fowls, garbage)		0,39
Real price at the sorting station gate		4,77
Selling price		6,03
Achieved profit		1,26
Profit rate	%	26,5

Note: Considered production indicators: the average annual production of eggs and year: 289,5; specific consumption of forages (g/egg): 160; losses through mortality: 6%

Is up to the farmer's appreciation and of the constructor if there still are necessary the following annex-constructions:

- household of water, especially if the water supply is made from a proper drilling;
- outside silo to store the forages, before being distributed in the hall;
- purification tank (septic tank)
- platform for dejection

In the study were made references to these annex constructions, but, after case, they can be made or not.

Also, two of the facilities, which were taken into account, may be omitted at achieving the objective:

1. *Of the Mirco- FNC*. If the farmer doesn't benefit of a own production of forages or it isn't located in an are of cereal, he can terminate at its own production of the combined fodders, ensuring the necessary from a FNC specialized in the area. But the forages it will cost with 10-20% in addition, due to the higher costs of production, of the practiced profit by FNC and of the supplementary expenditure of the transport. Increasing with 15% of the combined fodders price will influence with approx. 8.5% the egg prices (56.4 x 15%), decreasing the profit rate at 18% (26.5 – 8.5).

2. Micro-station of egg sorting. If the organization of this activity wouldn't be possible, due to the too small volume of the activity, it may appeal to a sorting station from a society that developed this activity, because the unsorted and unstamped eggs will not be allowed on the market.

There will disappear the costs with sorting (0,21 Euro cents/ egg), but the egg prices towards the beneficiary sorting station won't be more than 4,77 Euro cents.

The economic resolve, referring to these two facilities, can be made by organizing in a professional group (cooperative) of several egg producers from the same area [1], case in which it's possible the achievement in common of these utilizes, including the canaries production and providing cereals and oilseeds. Such cooperatives are very numerous in countries with developed poultry and it is one of the best solutions for supplying with forages and biological material, but and of superior capitalization of the production.

In Romania are currently produced 1.2 billion eggs in industrial conditions, which can be marketed according to HG 415/2004, i.e. to be sorted, marked, packaged, kept at the temperature of maximum 14^0F and marketed properly.

Those about 5.5 billion eggs produced in the small peasant households can't be marketed under HG 415/2004, not fulfilling none of the conditions provided by EU regulations. Therefore, after some of the eggs are used for incubation and pulling out canaries of a day, the rest are self-consumption or is offered occasionally to the relatives and acquaintances from the urban environment of the agricultural producers. Once with the establishment of the agricultural exploitations, are encouraged micro-farms as that is making the object of the current study and the agricultural exploitations will gradually replace the egg production of the small agricultural producers, of which number and activity will gradually decrease in the following period. Let us admit that, however, the small agricultural producers will continue to produce eggs for own-consumption, and the urban population – in number of 11.9 million currently, but will gradually increase – it will supply only form the current agricultural producers, at which it will be added the producers of the agricultural exploitations (poultry). But the current poultry producers risk reducing their production by half in the following years, as a result of the interdiction of the current batteries in which are breeding the layers, i.e. to reach at approx. 600 million eggs, which will not ensure only about 50 eggs per urban capita, toward with 250 eggs that are necessary for a rational feeding [4]. Perhaps they will set up some poultry complexes of layers, or there will be introduced alternative batteries, allowed by EU, in one of the current poultry complexes, but with some capacity increases it will be insignificant in a period in which the industrial poultry can provide only 20% of the egg production necessary to the population.

The establishment of poultry exploitations it isn't only the interest of the new poultry producers from Romania, but especially, is of national interest. The lack of the eggs from the internal market leads normally at massive increase of the request compared to the offer, the excessive increase of the price at eggs and the export interest from the countries with surplus of eggs towards the Romanian market. This is unacceptable, because Romania is a country strongly cereal, it has favorable pedo-climatic conditions of breeding birds and a rich experience in the birds breeding, especially, in the eggs production for consumption which practically is the easies, more accessible activity in poultry. This also one of the reasons for which the decision authorities from Romania, encourages particularly the agricultural establishment of exploitations specialized in producing eggs for consumption.

Due to the insufficient market, on the market existing three categories of eggs (egg for complex, peasant eggs and import eggs), is found big differences of price from one month to another, from a seasons to another and from one county to the other.

The urban consumers may consume 2.9 billion eggs annually (11.9 million x 250 eggs). Currently are industrially produced only 1.2 billion, with perspectives that this number of eggs to decrease in the next period. This data confirm the potential of the Romanian market of eggs [8] to support the increase until the doubling of the currently internal industrial productions, putting in function of poultry exploitations which applies intensive-industrial principles of breeding, being present and in the opportune next period and of high perspectives. There is still a problem, related to the location of the future poultry exploitations: currently many counties of the country don't produce eggs or they produce in very small quantities. Only in the following counties are bein produced significant quantities of eggs: Bacau, Bihor, Brasov, Braila, caras Severin, Cluj, Constanta, Dambovita, Galati, Giurgiu, Hunedoara, Ialomita, Iasi, Maramures, Satu Mare, Sibiu, Valsui and Valcea, totaling 18 counties.

The rest of 24 counties don't produce eggs of industrial type, being sentenced at under consumption or to their transport of those from other counties, operation which increases the product price and leads to losses, the egg being easily perishable and with the loss of freshness.

CONCLUSIONS

The implementation of a micro-farm for laying hens will have favorable effects, both on the development of the area and of the business environment. As shown, 85% of the raw materials of which are conditioned the forages recipes are forages produced locally: corn, barley, soya grit and sunflower grit, and for economic achievement of those, by practicing a rational crop rotation, it is necessary a surface of about 100 ha arable terrain. Whether are produced in the same farm, whether they are purchased from other agricultural producers, is established a functional link between the agricultural production and the poultry one of the area, link strengthened and through the garbage of bird, the most valuable on the scale of the animal production, which will increase the agricultural fertility of the respective area, but without polluting it, as in the case of other livestock exploitations (example, the industrial increase of the pigs or even the increase of the birds in batteries). Even if is a small hatchery, a familial poultry farm ensures jobs for four persons, who realize yet a very high productivity of the work: 1.8 million eggs, in value of approximately 4 billion lei, i.e a billion lei per worker.

The farm carries out finite productions that can be delivered to the market, without including intermediaries in the relationship producer-market. Basically, the farm can deliver to the market eggs very fresh, dietetic, the production of a day may reach on the market next day. The egg production target is addressing to the consumers from the nearest urban center [8], including through large supermarkets, which contributes to a supply of the population with products of a recognized value, because just the eggs and milk, from all the alimentary products, are considered as complete aliments, which contain all the nutritive factors necessary to the organism; as proof, life and normal development at infants and of the embryos from the egg is perfectly maintained, miraculously, only with these two aliments.

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