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Computing the cost of the agricultural products: A case study

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Agriculture constitutes a specific sector of the Romanian economy. It does not contribute significantly to the increase in the gross domestic product, however, it is expected to fulfil three important functions: economic, social and environmental. The cost computation for the agricultural products is different from other activity sectors. Most of the papers addressing managerial accounting issues refer to manufacturing companies. The ones conducted in the services entities usually refer to not for profit organizations. We consider that our work is a research paper which brings contribution to the field as there is a very small number of works in the area. When computing the performance of an economic entity we have to refer to its costs and revenues. Our target in this paper is to establish the cost of the production obtained in a farm. The farm has a complex production, dealing with crops and also with livestock. Using as a research methodology the case study, we also aim to present the documents that the persons responsible have to fulfil in the normal production process.

Key words: Agriculture, cost computation, crops, livestock, farm expenses.

INTRODUCTION

The companies present in the agricultural field develop their activity within production farms and service sectors. Establishing precisely these factors enables fixing the responsibilities regarding resource consumption and, implicitly, the cost calculation at every subunit level.

In the case of agricultural entities, within which the activity is delimited on production farms, the bookkeeping can be organized as follows: at the unit level, the accounting on farms and at the farm level, the operative bookkeeping following the budget record for revenues and expenses, every expense element being split on categories of cultures, animals and types of auxiliary and processing activities. At the unit level, first, the costs calculated within the farms are received and afterwards an average cost is calculated, at the total unit level.

The features of the production process condition sets the bounds for the consumption of resources, respectively for the production obtained, fact which leads to the different approach of rules system from one branch

to another, function of their specificity. The production expenses and costs calculation accounting subordinates to the same principles, having as objective the most accurate establishment of the specific cost.

LITERATURE REVIEW

Results obtained in the agriculture research suggest that a typical feature of this industry is economical differentiation of agricultural enterprises and product sectors. In contrast to the expectations at the time of entering the market environment, a more significant levelling of economic results has not yet taken place. Just as before 1990, natural conditions are still the crucial factor of the differentiated efficiency of agriculture and its product sectors, followed by the legal form of farming, agricultural land concentration; as well as the performance of managers, that is, the organisation and management of enterprises (Chrastinova, 2008).

At international level, according to the International Financial Reporting Standards, the biological products (living plants and animals) should be assessed at the fair value less estimated point-of-sale costs, unless fair value cannot be measured reliably (IAS 41). The exception to fair value model appears if there is no active market at

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the time of recognition in the financial statements, and no other reliable measurement method. In this case, the cost model is used for the specific biological asset only. The biological asset is measured at depreciated cost less any accumulated impairment losses. Fair value stops at harvest. IAS 2 is applied afterwards.

In Romania, we do not apply the fair value model prescribed by IAS 41. The rules for the assessment of the biological products are similar to the ones presented by IAS 2 for all the inventories.

Our opinion is that at national and even international level the cost computation is important for the internal users of the accounting information. So, we suggest that the fair value should be used for the external reporting, while for the internal one we should present more detailed information. The information is included also in the cost computation.

In our country, the cost calculation is regulated by the Romanian laws in force (Law 82/1991, OMF 1826/2003, OMF 1752/2009). According to Law 82/1991, the management accounting organization must be adapted to the specific activity. Depending on the undertaken activity, the managerial accounting shall insure, mainly, the recording of operations related to collecting and apportioning costs to destinations, activities, centres, production phases, cost centres, profit centres, whichever the case may be. It shall also insure the calculation of the acquisition cost, production cost, processing cost of the goods entered into production or of the finished goods, the cost of the executed jobs, rendered services, work in progress, fixed assets in progress etc., from the production centres, commercial centres, service centres, financial centres and other areas of activity (Jinga et al., 2010). According to the legal regulations in force in Romania, costs can be calculated by using one of the following methods: standard costing, process costing, job costing, global absorption costing, direct costing or other methods implemented by the legal person, depending on the organization of the production process, the particularities of its activity, particularities of the technological process and internal requirements (OMF no. 1826/2003).

The cost efficiency will help to introduce a new dimension to farmers and policy makers on how to increase production by determining the extent to which it is possible to raise efficiency of farms with the existing resources base and the available technology in order to tackle the food insufficiency problems (Paudel and Matsuoka, 2009).

When computing costs for decision making, several methods can be used. One of them is the variant costing. Skorecova and Farkasova (2008) focus on the importance of using the variant calculation methods in the management of companies' performance under the conditions of multifunctional agriculture. They consider that the method is useful in the circumstances of asserting control, in modern information systems as well

as in technologies. The same method is used by Nhundu et al. (2010). They also refer to average total cost and opportunity cost.

Nowadays, the managers of the agricultural entities have to take into account the needs and the opinions of the consumers and to identify ways to protect their interests on the long term (Bone and Corey, 1998, quoted by Istudor et al., 2008). This is why we consider that the target costing becomes an important way to compute the cost of the agricultural products.

General features regarding the cost calculation for agricultural production

The production within the agricultural entities can be expressed in a natural-material form (in the case when the calculation subject are, mainly, crops and animals categories), and respectively in a conventional form (which describes an intermediary unit of calculation due to the fact that in the end the total agricultural production is calculated still in relation to the natural-material unit). Concerning the first form, due to the variety of manifestation types, the calculation subject has a complete composition without the possibility of being generalized at different levels. In the case of the second form, there is the possibility of presenting the calculation subject in a generalized manner, such as expenses parts (production farms) or equivalent figures (nutrition units).

By nature, the farm production can be classified in: crops, livestock and industrial products; young and growing in weight animals, including weight gain, and mature animals; services and works provided by farms with means belonging to other units or farms (Carbunescu et al., 1988). Functions of these criteria and of nature, the elements which differ are the documents used for the operative bookkeeping.

The production structure within agricultural entities is comprised of production farms (crops, livestock, industrial and mix) and auxiliary sectors (mechanical sector, chemicalization sector, hydro-amelioration sector etc.). Subdividing the activity of the agricultural entity represents the support for the delimitation and responsibilities increase in achieving the entity's goals as an economic entity.

The operative bookkeeping of production expenses and of the production obtained at the farms level – data source for costs calculation

At the farms and auxiliary sectors level, we notice the organization of an operative bookkeeping of the production expenses, of the production obtained and of the revenues through the use of the operative bookkeeping document "The revenues and expenses budget execution registry" (Băviță et al., 2008). Within

Table 1. The expenses item: Materials.

Registration document	Explanation	Farm total	From which, on activities				
			Wheat	Corn	Tractors	Combine machines	Collective to the farm
Consumption notes	Chemical fertilizers	50,000	30,000	20,000	0	0	0
Consumption notes	Consumed fuel	10,000	0	0	8,000	2,000	0

this document, items of expenses elements are: materials; salaries; employer's contributions; depreciation; works and services provided by third parties etc. Recording the production and revenues is also provided by opening individual items on product types. The expenses are recorded per the total farm and per activities within the farm, depending on its profile, thereby: crops; livestock, tractor activity and agricultural machinery; the activity with combine machines; the administration activity of natural fertilizers; crops irrigation; the activity of administration and management of the farm.

For a farm with a vegetable profile we provide the example shown in Table 1.

Reflecting the expenses in accounting is accomplished based on the documents prepared by the farms, received from other agricultural subunits or from other economical entities. The individualization of expenses on types of activities in the moment of registration in the operative bookkeeping imposes a higher attention for identifying as accurately as possible the consumption of materialized life and work. Consequently, in relation with the calculation subjects (cultures and animals categories), the production expenses of the farms can be direct (for example: expenses with seeds, expenses with fuel, expenses with chemical fertilizers) and indirect (for example: expenses with tractors and towed vehicles; expenses with combine machines; expenses with natural fertilizers etc.).

In terms of methodology, the organization system of the operative bookkeeping of production expenses is, thereby, structured function of the necessary data for the unitary production cost calculation. The organization method of the accounting for production expenses and obtained production used for agricultural entities is the calculation method on cultures, animals' categories and auxiliary activities.

Cost computation for the agricultural production

The characteristics of the agricultural production process and the organizing of the bookkeeping system related to the consumption of resources influence the cost computation of agricultural products.

"Setting the date at which the computation of cost may be performed" is a first problem, which arises when setting the cost of agricultural products. Establishing the

production cost of agricultural products at short time periods is difficult due to the mismatch between the period when resources are consumed and the moment the production is obtained. This discrepancy can be differentiated according to production profile but also the activities within the branches. This is quite visible in the branch of the plant production industry and this is also influencing the livestock, as it provides the animals food.

In animal husbandry, the mismatch varies by species and categories of animals. For instance, the mismatch is more pronounced in the case of species and categories of animals such as mature sheep, swine breeding than in the case of categories of young and fattening animals like milk cows, where there is synchronization between costs and obtained production. Even though the synchronization between costs and production manifests for some animal species and categories, it still has a relative character, situation caused by biological features of the animals. For instance, for animals intended for fattening, the nutrient consumption units per kilo of weight gain are differentiated in the first period (when it is greater) compared to the last period (when it is lower). For dairy cows, after calving, the milk production (the main product for this category) increases gradually, and after a certain period becomes relatively stationary, while the daily consumption of feed has a somewhat constant level.

The time-lag between costs and production, the quantitative irregularity of production, the costs incurred especially in the process of administrating and managing farms and agricultural entities, occurring after obtaining production, are criteria to be taken into account in determining the moment when the unit cost computation may be performed.

The unit cost computation of production may be conducted monthly. The computation is performed cumulatively throughout the year period, after the production was obtained. Because of the peculiarities of the agricultural production process, the information provided by the unit cost of production calculated during the year are limited and this is why it should not be considered a definitive cost. At the end of the year we obtain the real production cost, by dividing the total expenses to the production obtained.

"The mutual transfer of goods between crops farms and livestock farms, as well as the consumption of the own production of the same farm subunit" raises problems for unit cost computation for the agricultural products.

The complexity of agricultural production causes an

exchange of activities between production farms or between farms and ancillary sectors, a solution in evaluating these activities being necessary. The actual level of the effort made by the farm subunit is the essential coordinate for the evaluation of this activities exchange, which would be considered in the computation of the unit cost.

Since during the year the cost computed by farms and ancillary sectors is not a definitive cost, the "standard costs" may be used for evaluating the consumption of products from own production or the labour from ancillary sectors. At the end of the year, when the definitive computation of agricultural products costs is performed, it is necessary to include in the cost computation this "internal consumption" at the actual level.

Another issue with implications for the unit cost computation for the agricultural products is represented by "the possibility of obtaining both the primary and secondary products from certain crops and types of animals".

The possibility of obtaining two or more primary products from certain crops and livestock categories leads to a system of criteria to identify the main product and the products that are considered to be secondary production. This separation requires first the selection of calculation procedure and secondly, assessing the secondary production.

The computation of the unitary cost rely on the data related to the direct and an indirect expenses incurred during the period concerning the cost objects (the categories of crops and animals of the farm) and the data related with the production obtained, registered and grouped in each farm. The grouping of data on production costs of farm activities offers the possibility of performing post-computations. Essentially, these works consist of successive operations of allocation of expenses, which at the time of their recording have not been identified on cost objects.

In a generalized form, post-computations, in the order of succession, are as follows:

- A. Centralization of production costs and obtained production data.
- B. Allocation of indirect costs to cost objects.
- C. Establishing domestic consumption and other cost items been assigned to cost objects.
- D. Computation of the production unit cost.

A. Centralization of production costs and obtained production data: is a step of grouping the data from the farm records, preparing, for this purpose, a "Summary of production costs and obtained production". Since the computation of the production unit cost starts with this action and the subsequent control based on correlations is difficult to perform, this step is requiring a careful analysis of the data that are centralized, as this is a starting point in the calculation.

B. Allocation of indirect costs to cost objects: is a

complex step, requiring the allocation of both the costs from ancillary sectors and the indirect cost of the farm. The allocation is carried out in the following steps:

(i) Allocation of tractors and agricultural equipments expenses: The diversity of works performed through tractors and other agricultural equipments is homogenized by a conventional measure unit called "hantru" (hectare standard ploughing – HSP) based on differentiated coefficients considering the complexity degree of the performed works. Tractors and agricultural equipments expenses are allocated on farms' activities based on the expenses established for conventional unit (HSP) and the works volume expressed as HSP on beneficiary activities.

$$\text{Expenses/ HSP} = \frac{\text{Total expenses with tractors and agricultural equipments}}{\text{Total volume of works expresses in HSP}} \quad (1)$$

The expenses thus calculated for each conventional unit (hantru) are multiplied by the volume of works expressed in hantri for agricultural products (wheat, corn, etc.) and for other activities of the farm.

(ii) Allocation of combines expenses: This kind of expenses collected in operative accounts refers to harvesting some agricultural products. The allocation of these expenses is performed considering the quantity of products harvested with the help of these machines. If combines have been used for harvesting only one agricultural product, then all the combines' expenses will be allocated only to that agricultural product, without any allocation computation. Only when they are used for more than one product allocation computations must be performed:

$$\text{Combines expenses/tonne} = \frac{\text{Total of combines expenses}}{\text{The quantity of harvested products}} \quad (2)$$

The amount of expenses established per tonne harvested is multiplied by the number of tones harvested for each product where the combines have been used.

(iii) Allocation of irrigations expense: These expenses are allocated over the irrigated cultures proportional with the water volume expressed in cube meters:

$$\text{Expenses/m}^3 \text{ water} = \frac{\text{Total irrigation expenses}}{\text{Water volume expressed in m}^3} \quad (3)$$

Expenses calculated for each m³ of water are multiplied with the water volume expressed in m³ used for irrigating cultures.

(iv) Allocation of expenses for natural fertilizers applied to land crops: Allocation of these expenses is established proportional with the cultivated land (without taking into

account if the surface received or not natural fertilizers because of the persistence of the fertilizer and the rotation of the crops). This kind of expenses consists of the book price of fertilizers and of transport and splitting expenses.

Natural fertilizers administrated to trees plantations and wineries are not considered indirect expenses, being accounted for as direct expenses:

$$\text{Expenses with natural fertilizers/ha} = \frac{\text{Total expenses with natural fertilizers}}{\text{Total cultivated land}} \quad (4)$$

(v) Allocation of farm overhead: As common allocation base for cost objects is chosen the total of expenses established till this stage on cost objects:

$$K \text{ farm overhead} = \frac{\text{Farm overhead}}{\text{The sum of the allocation basis of cost object}} \quad (5)$$

This coefficient is applied to the allocation basis of each cost object.

By following the above steps, it can reach the assignment of the both direct costs and farm overheads to cost objects. If the full cost is computed, the general overheads and the distribution costs should also be assigned.

The general overhead costs of the agricultural entity are assigned to the production farms based on an allocation basis that is common to the farms, such as: the total of the direct costs and farm overhead, the income recorded for each farm etc. The general overheads of the agricultural entity allocated to the farms become the subject of the allocation to the cost objects of the farm by using the same method as for the farm overheads.

If the distribution costs were not identified for each cost object, then they should be allocated using the method presented above.

(C). Establishing domestic consumption and other cost items assigned to cost objects: The interdependence of industries that generates the consumption of domestic products, the possibility and the necessity of computing the production cost for young and fattening animals which are weighted for two cost units (kilo of weight gain and kilo of live weight), the existence of unfinished production etc., determine that in addition to direct costs and farm overhead mentioned above, to include other items of costs, respectively:

(i) The products from the own production of the farm: The products from the own production of the farm consumed in the same period may be: feed, seed, milk for calves etc. Thanks to the bookkeeping of the farm, it is easy to include in the production costs the value of the finished goods used in domestic consumption.

(ii) Costs incurred during the previous period: Costs incurred during the previous period include the unfinished

goods and the share of the anticipated expenses. The value of unfinished goods is assigned to cost objects (crops, animal categories) as a result of the inventory and assessment operation at the end of the previous financial year. The unfinished goods structure in the crops industry includes the value of crops sown in autumn for the next year harvest and the value of autumn fields. The unfinished goods structure in the livestock industry includes the existing young and fattening animals and the costs incurred during the fourth quarter for production sheep category.

(iii) The value of input for young and fattening animals: In the case of young and fattening animals the cost of production is computed per kilo of weight gain and per kilo of live weight. The production expressed as kilos added has a corresponding value in the direct and indirect costs corresponding to the period and the category of animals.

In the case of production expressed as kilos of live weight, which is based on the initial weight, the weight input and the accumulated weight gain, the unit cost computation requires that the value items related to total weight to be also considered, as for instance: the value of the existing young and fattening animals; the value of the inputs from own production (calves from the milk cows); the value of the inputs from the subunits of the entity; the value of the inputs from movements from the category below the age; the value of the inputs from acquisitions.

These items are included in the costs at prices that vary by source of origin of animals. Any losses from natural disasters should be deducted from the costs, resulting in computing the costs related to the obtained production.

(D).The computation of production cost per unit: is the final stage of calculation. To determine the unit cost of production, two terms have to be taken into account, respectively production costs and obtained production. Crops production refers to the production resulting from the harvest, as expressed in appropriate units (t/wheat, t/corn etc.).

The measurement of livestock production raises some specific issues because of the objective of the calculation of production unit cost. Thus, for young and fattening animals, the weight gain and the total weight should be known. The weight gain is determined by monthly weighing of animals for fattening (cattle, sheep and swine). If there were no movements during the period, the weight gain results on the relationship:

$$Sp = Gf - Gi \quad (6)$$

where:

Sp = accumulated weight gain during the month.

Gf = animals weight at the end of the month.

Gi = animals weight at the beginning of the month.

Table 2. Cost computation for the crop production.

Number	Items
1	Beginning WIP
2	Direct costs
3	Tractor expense
4	Combine expense
5	Natural fertilizer expense
6	Overheads
7	Cost of by-products
8	Production cost (1 + 2 + 3 + 4 + 5 + 6 – 7)
9	Quantity (tons)
10	Production cost per unit
11	General overhead allocated to the farm
12	Production full cost (8 + 11)
13	Full cost per unit (12/9)

Table 3. Cost computation for the milk.

Number	Items
1	Direct costs
2	Farm overhead
3	Manure
4	The value of the produced calves
5	Total production cost for milk (1 + 2 – 3 – 4)
6	Production (litters of milk)
7	Production cost per unit for milk
8	General overhead
9	Full cost for milk (5 + 8)
10	Full cost for 1 l milk

More often, during the month, there are movements in animals stock that should be taken into account in calculating the accumulated weight gain, which in this case is computed as follows:

$$Sp = (Gf + Gis) - (Gi + Gin) \quad (7),$$

where:

Gis = weight of input animals during the month;
Gin = weight of output animals during the month.

For the categories of young and fattening animals, in addition to measure the weight gain is also necessary to know the total weight of the animals for that category, which is calculated according to the relationship:

$$Gvt = Gi + Gin + Sp \quad (8)$$

The computation of the unit cost of products is made by applying differentiated procedures based on the features of production. It is a practice of agriculture entities to

Table 4. Cost computation for the weight gain.

Number	Items
1	Direct costs
2	Farm overheads
3	Consumed milk
4	Manure
5	Production cost for the weight gain (1 + 2 + 3 – 4)
6	Weight gain
7	Production cost per kilo of weight gain (5/6)
8	Value of input from own production
9	Value of the calves from the beginning of the year
10	Value of acquisitions
11	Total value for total weight (5 + 8 + 9 + 10)
12	Kilos of calves at the beginning of the year
13	Kilos of calves produced
14	Kilos of calves bought
15	Total kilos of calves (6 + 12 + 13 + 14)
16	Production cost per kilo of live weight (11/15)
17	General overhead
18	Full cost (5 + 17)
19	Full cost per kilo of weight gain (18/6)
20	Total value for total live weight (11 + 17)
21	Full cost per kilo of live weight (20/15)

compute the production unit cost using: simple division method, the remaining value method and quite limited, the equivalence index method (fodder crops).

Based on those stated above, the cost computation for the crop production is shown in Table 2

Also, the scheme of determining the cost of production in the livestock sector is shown in Table 3 for the main product, the milk and in Table 4 for the secondary product, calves.

RESEARCH METHODOLOGY

From the methodological point of view the research relies on a case study, research methodology which is frequently used at international level especially in the management accounting. In this respect, Scapens (2006) considers that in the managerial accounting there is a "methodological diversity that includes critical and constructive (interpretive) researches as well as positivist and functionalist researches."

In the 1980s management accounting researchers began to explore the gap between management accounting theories and practice (Scapens, 1984, 1985). Previously it had been assumed by researchers that once practitioners understood the 'theory' they would change their practices. However, it was increasingly recognised in the 1980s that despite exposure to the new management accounting theory, practices were not changing. Researchers understood little about the nature and determinants of management accounting practices. Some of them responded by undertaking surveys of management accounting practices – to establish the nature of those practices – and others began conducting case studies (Cooper et al., 1983; Scapens et al., 1987). The last approach is the one that is most used today and

Table 5. Direct inventories expenses.

Expenses	Raw materials	Materials	Fuels	Changing parts	Seeds	Animals food	Other materials	Finished goods	Total
Overheads (common farm expenses)		7,602.40	1,112.30	18.28			46.45		8,779.43
Heifers						557.25		1,827.10	2,384.35
Milk cows						4,714.08	221.62	10,478.00	15,413.70
Calves 0-6 months						701.50	101.50	2,108.50	2,911.50
Female calves 6-12 months						391.20			391.20
Female calves 12-18 months						315.75			315.75
Female calves over 18 months						451.95		898.80	1,350.75
Sunflower			2,000.00	396.36	13,268.41				15,664.77
Lucerne		285.43	3,039.59						3,325.02
Grain maize			2,500.00	474.95	16,888.27				19,863.22
Silo maize		233.62	2,765.54	287.00	12,197.46				15,483.62
Compound feed	9,227.15			373.12					9,600.27
Vegetal		10,784.00	12,379.68	443					23,163.68
Livestock		28.74	4,441.26						4,470.00
Nissan			189.68						189.68
Grand total	9,227.15	18,934.19	28,428.05	1,549.71	42,354.14	7,131.73	369.57	15,312.40	123,306.94

used for this paper as well.

In this paper we will present an illustrative case study, as we intend to illustrate the way in which particular theoretical categorisations can be observed in practice (Humphrey and Lee, 2004). One of the researchers was an actor, as he intervened in the case and was an active participant in the issues being researched.

Case study

The farm has as a profile raising milking cows and cultivating crops. It has its own fields and rented fields. The farm produces the forage for livestock that is their culture of lucernes, corn, wheat or barley. Thus, for 2010 it has 166 ha of silo maize, 160 ha of barley, 140 ha of lucernes, 160 ha of corn, 695 ha of wheat.

As for the livestock, the farm has 895 heads of dairy cows, 194 heads of heifers, 98 heads of female calves

older than 18 months, 361 heads of female calves between 6 and 18 months, 29 heads of calves younger than six months. Their main customers are Danone and Hochland. The bookkeeping is made on consumption places and objects. Responsibility centres were thus created for animals' categories (milk cows, heifers, calves etc.) and types of crops (corn, wheat etc.). A part of the crops production obtained is used in the farm, for their own animals, a part is given as rent to the owners of the land and a part is sold. The data we are going to use for this case study belongs to the year 2008.

The direct expenses with the inventories used are shown in Table 5. In Romania, the expenses are registered in the financial accounting according to their function. The first apportionment of the expenses registered during the period is presented in Table 6. The document concerning the movement of the young and fattening animals is presented in Table 7. These data were recorded in Tables 8 to 11 (presented as an example).

The work in progress at the beginning of the period for crops was autumn fields is shown in Table 12.

The amount of milk obtained during the month was 68,390 litres, of which milk for calves was 8,850 l and milk for sale was 59,540 l.

Milking is recorded on a daily bases in Milking Journal completed by each caretaker as shown in Table 13.

The apportionment of the overheads is made according to the value of the direct expenses, while the apportionment of the administrative and selling expenses is made according to the production cost. The apportionment of the overheads, administration and selling expenses is presented as shown in Table 14.

The finished good for the livestock is the milk for the cows and the increase in weight for the young animals. The cost of a litre of milk is: 41,082.62 lei/68,390 litres = 0.6 lei/l. The increase in weight for the young animals is presented in Table 15 (using the methodology presented in Table 3).

Table 6. Expenses registered during the month.

Expenses	Total	Livestock	Crops	Overheads (common farm expenses)	Administration	Selling
Raw materials consumption	9,227.15		9,227.15		0.00	
Other materials consumption	98,767.39	7,454.85	54,709.75	36,413.11	189.68	
Small tools inventories	747.53				509.53	238.00
Materials expenses	836.14				836.14	
Utilities	3,366.41	1,514.88			1,851.52	
Rent	13,238.85			13,238.85	0.00	
Insurances	1,697.46	484.85	573.28	296.53	342.80	
Publicity	373.52					373.52
Transport	18.30				18.30	
Telephone	1,470.38				882.23	588.15
Bank services	432.90				432.90	
Other services	99,689.10	1,000.00		14,904.17	63,847.11	19,937.82
Other taxes	46,347.78	45.19	56.60	29.12	46,206.18	10.70
Wages expenses	21,838.26	6,025.26	7,546.15	3,882.44	2,958.06	1,426.34
Taxes on wages expenses	7,159.90	1,958.21	2,452.50	1,261.79	1,077.31	410.08
Other expenses	13,920.92				13,920.92	
Exchange rate differences expenses	-690.34				-690.34	
Interest expenses	3,032.53				3,032.53	
Depreciation expenses	15,698.76	7,451.83	2,659.42	3,989.13	904.16	694.21
Finished goods used in the farm	15,312.40	15,312.40			0.00	
Total	352,485.00	41,247.00	77,225.00	74,015.00	136,319.05	23,679.00

Table 7. The movement of the young and fattening animals.

Animal category	Stock at beginning of period	Input				Output				Animals at the end of the period
		Calving	From other categories of animals	Gain	Input total	Output from other categories	Abattoir	Other output	Output total	
1. Heifers										
Heads	93					26	2	1	29	64
kg	50,220			480	480	15,210	850	400	16,460	34,240
settlement price/kg	7			7	7	7	7	7	7	7
Amount	351,540			3,360	3,360	106,470	5,950	2,800	115,220	239,680

Table 7. Contd.

2. Female calves > 18 months									
Heads	14		2		2				16
kg	5,348		700	32	732				6,080
Settlement price/kg	5		5	5	5				5
Amount	26,740		3,500	160	3,660				30,400
3. Female calves 12-18 months									
Heads	12					2		2	10
kg	3,600			100	100	700		700	3,000
Settlement price/kg	5			5	5	5		5	5
Amount	18,000			500	500	3,500		3,500	15,000
4. Female calves 6-12 months									
Heads	92		2		2		1	1	93
kg	16,560		200	15	215		100	100	16,675
Settlement price/kg	5		5	5	5		5	5	5
Amount	82,800		1,000	75	1,075		500	500	83,375
5. Calves 0-6 months									
Heads	38	27			27	2	3	5	60
kg	2,090	810		245	1,055	200	105	305	2,840
Settlement price/kg	3	3		3	3	3	3	3	3
Amount	6,270	2,430		735	3,165	600	315	915	8,520
6. Steers for fattening									
Heads	1								1
kg	170								170
Settlement price/kg	5								5
Amount	850								850

Conclusions

In the last twenty years, but especially after joining the European Union, the Romanian companies struggle to stay competitive in a multicultural environment. In order to do this they have to provide competitive prices, time of delivery or

execution, trained teams, keeping in the same time the right costs (Olaru and Herlemann, 2008).

Securing fair incomes for the farmers is at present a very important issue, widely discussed in Europe. Any such discussion shall be supported, however with some tools which will effectively support any, further steps aimed at resolving this

issue. The cost of the agricultural products is one of them. This research paper presented a computation model for the agricultural products obtained in a farm with complex production. The cost computation in this type of economic entities will be a step forward for Romania as in this moment in 35.9% of the cost is not computed whatsoever

Table 10. Contd

3	Female calves 12-18 months	Heifers > 18 months	2	700	5	3,500	3	Pătraşcu	4	Pârvu
4	Female calves 6-12 months	Heifers 12-18 months								
5	Calves 0-6 months	Heifers 6-12 months	2	200	3	600	5	Pavel	6	Cătălin

Table 11. Act of death-disappearance-cut of the animals' No. 82. From: December 20 200N.

No.	Species Category	Identification number	Sex	Heads	Total weight (kg)	Unit price (Lei)	Livestock value (Lei)	Recovered products			Caretaker		Death, vanishing or cutting causes
								Unit	Unit	Unit	Team number	Full name	
0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1.	Calves 0-6 months	8037; 8014; 8020	M	3	105	3	315						Cutting for sale Veterinarian
Person in charge						Unit price lei Value of the goods recovered			For the goods recovered the document number ... was issued				

Table 12. Work in progress.

Crop	Amount
Sunflower	20,352.57
Lucerne	8,234.68
Grain maize	28,362.84
Silo maize	19,357.43
Compound feed	5,714.91

Table 13. Milking Journal No. 31. Month: December 200N. Caretaker: Popescu Ion. Number of cows assigned to take care of: 25.

Day month	of	Number of cows milked	Obtained quantity				Calves obtained
			First milking	Second milking	Third milking	Total quantity of milk	
1		18	75	45	90	210	
2		18	60	75	105	240	
3		18	75	75	90	240	2

Table 13 Contd.

4	18	75	30	120	225	
5	18	90	30	120	240	
6	18	75	45	90	210	
7	18	60	75	105	240	
8	18	75	75	90	240	
9	18	85	34	136	255	
10	18	85	34	136	255	1
11	18	75	45	90	210	
12	18	60	75	105	240	
13	18	75	75	90	240	
14	18	90	36	84	210	
15	18	108	36	96	240	
16	18	108	54	78	240	
17	18	75	45	105	225	
18	18	60	75	105	240	
19	18	75	75	60	210	2
20	18	90	36	114	240	
21	18	108	36	96	240	
22	18	108	54	93	255	
23	18	75	45	135	255	
24	18	60	75	75	210	
25	18	75	75	90	240	
26	18	100	40	100	240	3
27	18	120	40	50	210	
28	18	75	45	120	240	
29	18	60	75	105	240	
30	18	75	75	105	255	
31	18	115	46	94	255	
Total	X	2.542	1.676	3.072	7.290	

Table 14. The computation of the full cost.

Elements	Inventory cost	Livestock	Vegetal	Overheads (common farm expenses)	Total indirect expenses allocated	Work in progress	Input value from own production	Production cost	Administrative expenses	Sales Expenses	Full cost
Heifers	2,384.35	1,935.33		2,035.40	3,970.73			6,355.08	3,078.17	534.69	9,967.94
Dairy	15,413.70	12,511.01		13,157.91	25,668.92			41,082.62	19,898.93	3,456.50	64,438.05

Table 14 Contd.

Calves 0-6 months	2,911.50	2,363.21		2,485.40	4,848.61		2,430	10,190.11	4,935.72	857.35	15,983.18
Female calves 6-12 months	391.20	317.53		333.95	651.48		1,000	2,042.68	989.40	171.86	3,203.94
Female calves 12-18 months	315.75	256.29		269.54	525.83			841.58	407.63	70.81	1,320.01
Female calves over 18 months	1,350.75	1,096.38		1,153.07	2,249.45		3,500	7,100.20	3,439.08	597.38	11,136.65
Livestock	22,767.25				0.00						
Sunflower	15,664.77		3,255.63	13,372.23	16,627.86	20,352.57		52,645.20	25,499.43	4,429.32	82,573.95
Lucerne	3,325.02		691.04	2,838.40	3,529.45	8,234.68		15,089.15	7,308.64	1,269.53	23,667.31
Grain maize	19,863.22		4,128.20	16,956.24	21,084.44	28,362.84		69,310.50	33,571.49	5,831.46	108,713.45
Silo maize	15,483.62		3,217.98	13,217.59	16,435.58	19,357.43		51,276.63	24,836.54	4,314.18	80,427.34
Compound feed	9,600.27		1,995.24	8,195.27	10,190.51	5,714.91		25,505.69	12,354.03	2,145.93	40,005.65
Crops	63,936.90				0.00						
Total	86,704.15	18,479.75	13,288.10	74,015.00	105,782.85	82,022.43	6,930	281,439.43	136,319.05	23,679.00	441,437.48

Table 15. The computation of the cost per kilo.

Items	Heifers	Female calves > 18	Female calves 12-18	Female calves 6-12	Calves 0-6
1. Production cost for the weight gain	6,355.08	7,100.20	841.58	2,042.68	10,190.11
2. Weight gain	480.00	32.00	100.00	15.00	245.00
3. Production cost per kilo of weight gain (1/2)	13.24	221.88	8.42	136.18	41.59
4. Value of input from own production		3,500.00		1,000.00	2,430.00
5. Value of the calves from the beginning of the year	351,540.00	26,740.00	18,000.00	82,800.00	6,270.00
6. Value of acquisitions					
7. Total value for total weight (1 + 4 + 5 + 6)	357,895.08	37,340.20	18,841.58	85,842.68	18,890.11
8. Kilos of calves at the beginning of the year	50,220.00	5,348.00	3,600.00	16,560.00	2090.00
9. Kilos of calves produced		700.00		200.00	810.00
10. Kilos of calves bought					
11. Total kilos of calves (2 + 8 + 9 + 10)	50,700.00	6,080.00	3,700.00	16,775.00	3,145.00
12. Production cost per kilo of live weight (7/11)	7.06	6.14	5.09	5.12	6.01
13. General overhead	3,612.86	4,036.46	478.44	1,161.26	5,793.07
14. Full cost (1 + 13)	9,967.94	11,136.66	1,320.02	3,203.94	15,983.18
15. Full cost per kilo of weight gain (14/2)	20.77	348.02	13.20	213.60	65.24
16. Total value for total live weight (7 + 13)	361,507.94	41,376.66	19,320.02	87,003.94	24,683.18
17. Full cost per kilo of live weight (16/11)	7.13	6.81	5.22	5.19	7.85

(Jinga et al., 2009).

In the future researches we shall try to use different computation methods, such as the target costing.

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