Aspects of Costs Calculation in a Vegetable Production Farm

Teodor HADA
teohada@yahoo.com
1 Decembrie 1918 University of Alba Iulia, Romania

This paper deals with the aspects of the issue of costs calculation for a vegetable production farm in terms of theory and practice. Aspects of the active accounting regulations, applicable to vegetable production farms, are presented in the content. Features of the vegetable production are detailed, and the applicability of costs calculation methods is shown by the example of the “to order” method. In terms of accounting, there are presented the records made in the management accounting, in the financial accounting and also the conclusions to be drawn in terms of management accounting utility in financial decision making.

Key words: managerial accounting, wheat, corn, grains of corn, corn silage, alfalfa

1. Introduction

Obtaining results in the market economy following the economic activity is one of the conditions of economic management of the resources of economic agents. To this end, the accounting, as a scientific discipline joins the other management sciences. Managerial accounting is defined as “the process of identifying, measuring, accumulation, analysis, preparation, interpretation and communication of public and confidential information used by management to plan, evaluate and control within an economic entity and to ensure the use and keeping of the accounts of its resources”[1]. Elements of management accounting are “organizing a system for measuring the activity, calculating costs, providing information, facilitating decision making”[2]. Cost “means all expenditures relating to a given element: a product, a work, an order, an activity, a means of exploitation, liability, operational unit or service, for example... Cost is the monetary expression of resource consumption”[3]. Order 1826/22.12.2003 for approving the specifications on measures concerning the organization of management accounting shows the complete cost calculation methods, namely: on order, on stages, global and standard cost methods. In what follows, we study the structure, the method of cost calculation in agriculture and more specifically in a farm with vegetable profile.

2. Determine the production costs in a farm with vegetable profile.

2.1. Specific features of cost calculation in a farm with vegetable profile.

From the documentation performed on a farm with vegetable production derive the following specific features of determining costs in a farm with vegetable profile:

- Obtain the main products (wheat, corn, etc.);
- “With regard to the production costs, the agricultural units own a specific grouping, such as: works with tractors and hauled cars, works with combine harvesters, natural fertilizers management, irrigation works, etc”[4].
- Production is carried out in time;
- Weather factors influence the level of production costs;
- Products can be used both as fodder in their own farms as well as to be supplied to third parties;
- Tenancy as cost element.

2.2. Costs calculation for wheat, corn, grains of corn, corn silage, triticale, alfalfa at a vegetable production farm.

The cost structure for these products is as follows (the data are accurate for the year 2011):

| Table no.1 The Structure of expenditures for: wheat, corn, grains of corn, corn silage, triticale, alfalfa |
|-------------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Name of the Costs                              | Wheat           | Grains of corn  | Corn silage     | Triticale       | Alfalfa         |
| Materials (Diesel oil, seeds, herbicide, fertilizers) | 48,722.71       | 43,158.57       | 129,809.59      | 22,659.30       | 29,238.62       |
| Round wire                                      | 5,672.54        | -               | -               | -               | -               |
### International Conference “Risk in Contemporary Economy” ISSN 2067-0532

<table>
<thead>
<tr>
<th>Name of the Costs</th>
<th>Product</th>
<th>Wheat</th>
<th>Grains of corn</th>
<th>Corn silage</th>
<th>Triticale</th>
<th>Alfalfa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autumn field</td>
<td></td>
<td>10,269.20</td>
<td>10,269.20</td>
<td>37,997</td>
<td>12,323.04</td>
<td>-</td>
</tr>
<tr>
<td>Tenancy</td>
<td></td>
<td>8,117.80</td>
<td>8,117.80</td>
<td>30,035.86</td>
<td>9,741.36</td>
<td>4,058.90</td>
</tr>
<tr>
<td>Salaries +contributions</td>
<td></td>
<td>5,822.58</td>
<td>4,924</td>
<td>15,827</td>
<td>3,577.89</td>
<td>2,664.80</td>
</tr>
<tr>
<td>Other expenses</td>
<td></td>
<td>7,860.48</td>
<td>6,646.95</td>
<td>21,366.95</td>
<td>4,830.16</td>
<td>3,596.23</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>86,465.31</td>
<td>73,116.52</td>
<td>235,036.4</td>
<td>53,131.75</td>
<td>39,558.55</td>
</tr>
<tr>
<td>Residual products</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(wheat brush)</td>
<td></td>
<td>21,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total costs</td>
<td></td>
<td>65,465.31</td>
<td>73,116.52</td>
<td>235,036.4</td>
<td>53,131.75</td>
<td>39,558.55</td>
</tr>
<tr>
<td>Yields (kg)</td>
<td></td>
<td>79,950</td>
<td>117,000</td>
<td>1,691,050</td>
<td>106,530</td>
<td>198,000</td>
</tr>
<tr>
<td>Production per hectare</td>
<td></td>
<td>3,997.50</td>
<td>5,850.0</td>
<td>22,852.0</td>
<td>4,438.75</td>
<td>19,800</td>
</tr>
<tr>
<td>(cost per kg)</td>
<td></td>
<td>65,553.1</td>
<td>79,950</td>
<td>117,000</td>
<td>1,691,050</td>
<td>106,530</td>
</tr>
<tr>
<td>Cultivated area in</td>
<td></td>
<td>20</td>
<td>20</td>
<td>74</td>
<td>24</td>
<td>10</td>
</tr>
<tr>
<td>hectares</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grant received from</td>
<td></td>
<td>12,959</td>
<td>12,959</td>
<td>47,948</td>
<td>15,551</td>
<td>6,480</td>
</tr>
<tr>
<td>150 Euro per hectare</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From the above data results the following:
- The share in costs is held by material costs (Diesel oil, seeds, herbicide, fertilizers, depreciation, etc.);
- Tenancy appears as cost element paid by the entity for the leased area;
- Checking the self-produced manure as natural fertilizer for the produced crops;
- Obtaining of residual products (wheat straw);
- Obtaining the grant for the cultivated area of 150 euro per hectare although the law provides a 170 euro/ha subsidy.

2.3. The records related to expenditure in accounting
We present the records in financial accounting in total and on product (wheat).

2.3.1. Record the total expenditure in the financial accounting.
To determine the total expenditure, we have drawn up the following table:

<table>
<thead>
<tr>
<th>Expenditure</th>
<th>Wheat</th>
<th>Grains of corn</th>
<th>Corn silage</th>
<th>Triticale</th>
<th>Alfalfa</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials (Diesel oil, seeds, herbicide, fertilizers)</td>
<td>48,722.71</td>
<td>43,158.57</td>
<td>129,809.59</td>
<td>22,659.30</td>
<td>29,238.62</td>
<td>273,588.79</td>
</tr>
<tr>
<td>Round wire</td>
<td>5,672.54</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5,672.54</td>
</tr>
<tr>
<td>Autumn field</td>
<td>10,269.20</td>
<td>10,269.20</td>
<td>37,997.00</td>
<td>12,323.04</td>
<td>-</td>
<td>70,858.44</td>
</tr>
<tr>
<td>Tenancy</td>
<td>8,117.80</td>
<td>8,117.80</td>
<td>30,035.86</td>
<td>9,741.36</td>
<td>4,058.90</td>
<td>60,071.72</td>
</tr>
<tr>
<td>Salaries +contributions</td>
<td>5,822.58</td>
<td>4,924.00</td>
<td>15,827.00</td>
<td>3,577.89</td>
<td>2,664.80</td>
<td>32,816.27</td>
</tr>
<tr>
<td>Other expenses (amortization, manure, and other materials)</td>
<td>7,860.48</td>
<td>6,646.95</td>
<td>21,366.95</td>
<td>4,830.16</td>
<td>3,596.23</td>
<td>44,300.77</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>86,465.31</td>
<td>73,116.52</td>
<td>235,036.4</td>
<td>53,131.75</td>
<td>39,558.55</td>
<td>487,308.53</td>
</tr>
<tr>
<td><strong>Residual products</strong></td>
<td>21,000.00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>21,000.00</td>
</tr>
<tr>
<td><strong>TOTAL not including Residual products</strong></td>
<td>65,465.31</td>
<td>73,116.52</td>
<td>235,036.4</td>
<td>53,131.75</td>
<td>39,558.55</td>
<td>466,308.53</td>
</tr>
</tbody>
</table>
1. Record the material entries from suppliers.
   - Fuel
     \[
     \begin{array}{lcl}
     \% & = & 401 \\
     3022 & \text{Suppliers; } & 109,435.51 \\
     \text{Auxiliary materials} & 4426 & 26,264.22 \\
     \text{Input VAT} & & \\
     \end{array}
     \]

   - Seeds and herbicide
     \[
     \begin{array}{lcl}
     \% & = & 401 \\
     3025 & \text{Suppliers; } & 109,435.51 \\
     \text{Seeds and sapling} & 4426 & 26,264.22 \\
     \text{Input VAT} & & \\
     \end{array}
     \]

   - Auxiliary materials
     \[
     \begin{array}{lcl}
     \% & = & 401 \\
     3021 & \text{Suppliers; } & 54,717.77 \\
     \text{Auxiliary materials} & 4426 & 13,132.26 \\
     \text{Input VAT} & & \\
     \end{array}
     \]

2. Record the material consumption
   - Fuel
     \[
     \begin{array}{lcl}
     6022 & = & 3022 \\
     \text{Fuel} & \text{Fuel} & 109,435.51 \\
     \end{array}
     \]

   - Seeds and herbicide
     \[
     \begin{array}{lcl}
     6025 & = & 3025 \\
     \text{Seeds and sapling} & \text{Seeds and sapling} & 109,435.51 \\
     \end{array}
     \]

   - Material consumption
     \[
     \begin{array}{lcl}
     6021 & = & 3021 \\
     \text{Auxiliary materials} & \text{Auxiliary materials} & 54,717.77 \\
     \end{array}
     \]

3. Record unfinished crop as follows:
   \[
   \text{Variation in inventory} = 711 \\
   \text{Revenues related to the costs of inventories} = 273,588.79 \\
   \]

4. Record rent expenses under the lease contracts:
   \[
   612 = 462 \\
   \text{Royalties and rental expenses} = \text{Sundry creditors} = 60,071.72 \\
   \]

5. Record the expenditure on Salaries
   \[
   641 = 421 \\
   \text{Salaries} = \text{Employees - salaries payable} = 25,662.00 \\
   \]

   Record spending of 20.80\% on social security
   \[
   6451 = 4311.1 \\
   \text{Company's contribution to social security} = 533.80 \\
   \]

   Record the contribution of 0.279\% for work accidents
   \[
   6451 = 4311.2 \\
   \text{Company's contribution to work accidents and occupational diseases} = 72.00 \\
   \]
Record the contribution of 5.2% to health insurance

\[ \text{Company's contribution to health insurance} = 4313.1 \text{ lei} \]

6453

Company's contribution to health insurance

Record the contribution of 0.85% on holidays and allowances

\[ \text{Company's contribution to health insurance} = 4313.2 \text{ lei} \]

6453

Company's contribution to health insurance

Record the contribution of 0.5% to unemployment fund

\[ \text{Company's contribution to unemployment fund} = 4371.1 \text{ lei} \]

6452

Company's contribution to unemployment fund

Record the contribution of employer to the guarantee fund

\[ \text{Company's contribution to unemployment fund} = 4371.2 \text{ lei} \]

6452

Company's contribution to unemployment fund

6. Record expenses with amortization of equipment

\[ \text{Amortization of non - current assets} = 2813 \text{ lei} \]

6811

Amortization of plant and machinery, motor vehicles, animals and plantations

7. Record the consumption of manure

\[ \text{Other consumables} = 346 \text{ lei} \]

6028

Residual products

Record the consumption of materials

\[ \text{Auxiliary materials} = 3021 \text{ lei} \]

6021

Auxiliary materials

Record the production in progress

\[ \text{Revenues related to the costs of inventories} = 60,071.72 \text{ lei} \]

3 3 1

Variation in inventory

\[ \text{Revenues related to the costs of inventories} = 30816.27 \text{ lei} \]

3 3 1

Variation in inventory

\[ \text{Revenues related to the costs of inventories} = 49,973.31 \text{ lei} \]

3 3 1

Variation in inventory

Record the amount of costs from production in progress

\[ \text{Revenues related to the costs of inventories} = 487,308.53 \text{ lei} \]

3 3 1

Variation in inventory

Record the finished goods

\[ \text{Revenues related to the costs of inventories} = 466,308.57 \text{ lei} \]

3 4 5

Finished goods

Record the residual products

\[ \text{Revenues related to the costs of inventories} = 21,000.00 \text{ lei} \]

3 4 6

Residual products
2.3.2. Financial accounting records for wheat.

1. Material input
   - 14,616.81 lei 3021 = 401 Suppliers; 14,616.81 lei
   - 14,616.81 lei 3022 = 401 Suppliers; 14,616.81 lei
   - 19,489.09 lei 3025 = 401 Suppliers; 19,489.09 lei

2. Material consumption
   - 14,616.81 lei 6021 = 3021 14,616.81 lei
   - 14,616.81 lei 6022 = 3022 14,616.81 lei
   - 19,489.09 lei 6025 = 3025 19,489.09 lei

3. Record the tenancy expenses
   - 8,117.80 lei 612 = 462 Sundry creditors 8,117.80 lei

4. Consumption of round wire
   - 5,672.54 lei 6021 = 3021 5,672.54 lei

5. Salaries and related contributions
   - 4,478.46 lei 641 = 421 Employees - salaries payable 4,478.46 lei
   - 1,344.12 lei 645 = 4311 Company’s contribution to social security 1,344.12 lei

6. Other expenses
   - 5,502.33 lei 6811 = 2813 Amortization of plant and machinery, motor vehicles, animals and plantations 5,502.33 lei

2.3.3. Management accounting records for grains of corn

1. Production in progress
   - 43,158.57 lei 921 = 901 Internal transaction relating to expenses 43,158.57 lei

2. Relating expenditure
   - 10,269.00 lei 921 = 901 Internal transaction relating to expenses 10,269.00 lei
   - 8,117.80 lei 921 = 901 Internal transaction relating to expenses 8,117.80 lei

Concurrent
- 48,722.00 lei 331 = 711 Revenues related to the costs of inventories 48,722.00 lei
- 10,269.00 lei 331 = 711 Revenues related to the costs of inventories 10,269.00 lei
3. Conclusions

The data are real being calculated at a crop farm in the year 2011. All products are intended for internal consumption. The method of cost calculation on cultures is the method based on orders which has the advantage of locating the direct expenditures according to culture technology per product, but with the disadvantage of redistributing the overhead by distribution keys which do not always correspond to reality. Specific to these cultures are items such as seed costs, ploughing, fertilizer, and rent expenditures. Farm income is positively influenced by the subsidy received. The Decisions based on elements of management accounting are designed to determine benefits of making the products in private farm or buying them from the market.

References