COST MANAGEMENT IN THE ORGANIC FARMING

V. KOPRIVLENSKI

Agricultural University of Plovdiv, 12 Mendeleev Street, 4000 Plovdiv, Bulgaria
E-mail: koprivleniski@au-plovdiv.bg

Abstract. The organic farming differs from traditional one in that it rests on some particular principles, such as: preservation of the soil fertility; preserved environment; production of high quality organically-grown food products; a closed cycle use of the farms own resources and labour; minimisation of the non-restorable resources; providing the farmers with adequate farm incomes. It is not easy to compare the annual economic performance of the organic and traditional production, because the organic farming strategy is usually being applied for a longer period. This makes necessary the cost management analysis to include investigation of an entire, complete production cycle. The environmentally sounded farming should be directed to increasing the net income through achieving a higher efficiency and minimising the production cost, including the marginal costs. The purpose of this paper is to consider some theoretical and methodological approaches used in differentiating and determining the production cost in the organic farming in compliance with its specificity, to help making proper decisions in its management. The paper presents a comparative analysis of the production cost in the traditional and organic agricultural production. It has been developed a methodological approach of differentiating the production cost into fixed and variable ones, according to the organic farming specificity. A scheme of making report and record of the fixed and variable costs in the organic farm is offered. Some strategies of increasing the production efficiency in the organic farms are presented.

Keywords: organic farming, cost management.

AIMS AND BACKGROUND

The purpose of this paper is to consider some theoretical and methodological approaches used in differentiating and determining the production cost in the organic farming in accordance with its specificity, to help making proper decisions in its management.

To exactly determine and properly differentiate the production cost, it is necessary to take into consideration some specific features of the organic farming that exercise influence on their size and mode of use.

PECULIARITIES OF THE PRODUCTION COST MANAGEMENT IN THE ORGANIC PRODUCTION

The organic agriculture differs from the traditional one in that it rests on the following major principles:

1. Preservation of the soil fertility;
2. Prevention of all the forms of contamination;
3. Production of high quality food products;
4. A closed cycle use of the farm own resources and labour;
5. Minimising the use of non-restorable resources;
6. Providing of best breeding conditions for the domestic animals;
7. Providing the farmers with adequate incomes from their farms.

It is not easy to compare the annual economic performance of the organic and traditional production, because the organic farming strategy is usually being applied for a longer period. The methods of sustainable agriculture are based on the larger diversity of the crops grown and materials used in the production. Therefore, this requires the analysis of the results to cover a complete production and resource management cycle, instead of drawing conclusions and making inferences based on the different crops one-year production. In the analysis it is important to take into consideration that in the biological production each preceding crop provides the conditions of growing the following crop, etc. Moreover, the sustainable agriculture should be directed to increasing the net income through achieving a higher efficiency and minimising the costs (including also through increasing the additional income from each unit of production, i.e. the marginal revenue). Vice versa, in the traditional agricultural production, the strategy is the net income to increase through raising the productivity (for example, through receiving higher amount of produce from each additional unit cost or the additional costs to cause producing of higher quantity of additional produce). In other words, the aim in the traditional agricultural production is each additional unit cost to generate higher quantity of additional produce. Researchers take different views about whether the unit costs are higher or lower in the organic farming as compared to those in the traditional one. Some of them hold that the unit costs are lower in the organic agriculture\textsuperscript{1,2}, while others maintain that the unit costs are higher\textsuperscript{3}.

Table 1 presents a list of the production cost and the differences among their size in the traditional and organic farming. The costs of fertilisers and pesticides, as well as the labour and management costs are the key variable quantities. At that, it was found that in case of high level of total production cost, the decrease in the fertiliser and pesticide costs, is not sufficient to balance the necessary additional labour and management costs. It should be noticed that there exists a continuous rise in the prices of the mineral fertilisers and herbicides, which leads to increasing the production costs in the traditional agriculture. When this trend remains, the owner of the organic farm is able to pay better for the labour and nevertheless to be competitive with the production cost.

Many small organic farms falling under the system of the food industry, have equipment and fixed capital (fixed tangible assets), which are not used rationally and are fully depreciated. Therefore, the farmers may use these assets for producing biological produce with low marginal cost price, since these assets do not burden the production cost with obsolescence.
Table 1. Costs of production in the traditional and organic agriculture

<table>
<thead>
<tr>
<th>Costs with a relatively low share in the organic farming</th>
<th>Costs with a relatively high share in the organic farming</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical pesticides = 0</td>
<td>biological control of pests</td>
</tr>
<tr>
<td>Fertilisers = 0</td>
<td>biological maintenance of soil</td>
</tr>
<tr>
<td>Costs of agricultural machines</td>
<td>seeds and planting material</td>
</tr>
<tr>
<td>Costs of using different services</td>
<td>labour (for mechanised weed control)</td>
</tr>
<tr>
<td>Meliorative equipment</td>
<td>labour (for mechanised activities)</td>
</tr>
<tr>
<td></td>
<td>labour (management)</td>
</tr>
<tr>
<td></td>
<td>total costs connected with the lower yield in the transition from traditional to organic farming</td>
</tr>
</tbody>
</table>

Some researchers point out that the labour costs in the organic farms are usually higher with about 15% (Ref. 4), although to a certain extent, this depends on the crops average yields. For example, there is an insignificant difference among the labour costs in the grain production carried out by the traditional and organic technology. However, the labour costs in the vegetable production are usually rather higher in the organic farms due to the manual labour activities. Some authors\(^5,6\) point out that the management costs and the labour costs connected with using of machines and equipment, are also higher in the organic farms.

It is possible for example, in the organic grain production, the operating (direct) costs to be low while the total costs to be high. That is so, because the crop rotation in the organic farming requires higher costs connected with the machines and equipment, as well as with growing the rest crops in the rotation. If adding the costs of transiting from traditional to organic production, then the fixed costs may rise considerably and shift the yields break even point to a position, where the additional incomes from a unit of produce may not cover the additional costs of receiving it. That is why, it is very important to watch closely the level of the fixed (FC), variable (VC) and total costs (TC) that may considerably influence the economic efficiency of the organic farming.

**FIXED COSTS IN THE ORGANIC FARM**

These are connected mainly with buying and owning of fixed tangible assets in the farm. The fixed assets participate many times in the production, preserve their naturally material form during the operation and carry in parts their value over that of the finished produce. These are in principle long-term investments that provide the material conditions necessary for the normal course of the production process.

The fixed costs are unavoidable and can not be changed by the manager notwithstanding if or not they participate in the production. In other words, they are included in the prime cost of the produce regardless of the production result.
For example, a certain farm may have production capacities of producing 5000 t but due to unfavourable conditions it has produced only 3000 t. The lower size of production will not cause reducing the size of the fixed costs. They are constant quantity for a given period (1 year, 3 years) of growing the crops or breeding the animals, etc.

The fixed costs are notable for the following major characteristics:
– the manager can not change them in a short run;
– they do not depend on the size of production;
– with increasing the size of the produce they reduce in a unit of it;
– in a particular production it is difficult to calculate the fixed costs, because of which they are called yet indirect and are usually allocated as total economic costs.

The fixed costs include: the depreciation cost, costs of interest payments, maintenance charges as well as the overhaul, tax, tariff and insurance expenses. That costs are connected with owning of resources, such as: farm buildings and facilities, power producing and transport means, machinery, domestic and draught animals, orchards and vineyards, farm equipment, installations and other fixed assets.

The fixed costs include also the land rent, preliminarily specified rents of using the fixed assets, rents for different services and the labour cost (after signing the labour agreements). The water, electric power, thermal power, telephone and other expenses paid as a specified (month, annual, etc.) tax, also pertain to the fixed costs.

The fixed costs play a very important part in making management decisions, because they represent considerable share of the investments in the present day organic farm. This requires taking a strict account of their size in equipping the production.

It should be noticed that significant differences were not found among the fixed costs in the traditional and organic type farms.

VARIABLE COSTS IN THE ORGANIC FARM

The variable costs are investments that are directly used and transformed into final produce. Therefore, they are known as direct production cost. The main criteria to determine these costs as variable ones are:
– they can be managed or their size depends directly on the manager decision;
– they directly influence the amount of the produce or are incurred only in case of carrying out production;
– their a per unit value remains relatively constant quantity under unchanged production conditions;
– they can be easily related to the production of one particular product (wheat, tomatoes, meat, milk, eggs, etc.).
In the organic farm, variable costs are these for seeds, seedlings, planting material, natural fertilisers, forages, chemicals, medicines, and veterinary services (in the animal husbandry). The costs connected with the fixed assets: fuels, oils, grease materials and some other current expenses also pertain to the variable costs. The labour costs (for paying the hired seasonal workers) are variable as well.

The electric and thermal power, water, telephone and other expenses paid according to the amount used belong to the variable costs. Here are also the marketing costs connected with the produce sorting out, sizing, package, transport and commission payments.

One of the most significant differences among the conventional and organic farming systems lies in the variable costs value. The slight increase in the cost of seeds, seedlings, manual labour and scattering of manure in the organic systems is compensated for the much lower cost of mineral fertilisers and pesticides. What is more, not all rotation crops require such additional investments.

In the vegetable and earthed-up crops it is possible to observe an increase in the seasonal labour cost connected with the weeding practice but this depends on the mechanisation level of the particular farm.

The savings from plant protection may be considerable, mainly in the grain crops, where the only possible problems in the organic farming may arise with the weeds. In growing of some vegetable crops, such as carrots, onions and others, there also exist similar problems connected with the weed control.

In the organic farms it is usually attached a great importance to the mechanical methods of control and the pre-sowing preparation of soil to clean it beforehand from the weeds. However, this may lead to rising the cultivation costs.

In cattle breeding, the variable costs may be reduced mainly through eliminating the mineral fertilising and sprayings in the forage crops growing. This may reflect on reducing the cost price of the final animal produce.

The emphasised possibilities may reduce the variable costs in the organic agriculture and make them considerably lower compared to those in the conventional methods of production.

In the organic farm management, the use of the fixed and variable costs requires their accurate reporting and recording. For this purpose, the following scheme can be used:

```
Fixed costs
1. Salaries of the full-time workers in the farm
2. Depreciation costs
3. Cost of interest payments
4. Maintenance and overhaul costs
```
5. A land rent
6. Other rents
7. Taxes
8. Fees
9. Insurance costs
10. Other fixed costs

Variable costs
1. Wages for part-time workers
2. Seeds, seedlings, planting material
3. Natural fertilisers
4. Costs of biological pest and disease control
5. Fuels
6. Oils and grease materials
7. Water, electric power, telephone (according to the amount used)
8. Forages
9. Veterinary services
10. Maintenance costs
11. Package
12. Marketing costs
13. Other variable costs

The above offered scheme of reporting and recording the production cost is illustrative and may be changed and filled out according to the farm production specificity. The economic results of the farm depend directly on the level of the fixed costs and the size of the variable costs, which needs their accurate report and calculation.

COMMON STRATEGIES FOR INCREASE THE EFFICIENCY OF ORGANIC FARMING PRODUCTION

The general sentiment among organic growers is that most crops can be grown profitably, though some still face production issues that need further investigation. Even small-scale organic growers can be profitable with a diversified mix of crops, so long as there are appropriate marketing mechanisms to efficiently sell relatively small quantities. In fact, staying small can improve economic stability by minimising farm costs and debt service payments in a poor year.

The single most important determinant of profitability for sustainable farm enterprises is the management skill of the operator. A critical element of sustainable agriculture management is taking time to observe local conditions (both on farm and in the market place) and being creative with the possibilities presented. While good management and creativity are also important for industrial agriculture, they are especially important for organic agriculture.
A number of common strategies can be employed to increase the profitability and stability of sustainable farms:

- Produce a diversity of crops and livestock;
- Use little or no off-farm chemical fertilisers or pesticides;
- Employ numerous soil building strategies;
- Minimise capital costs;
- Emphasise net return over gross production.

CONCLUSIONS

Organic practices use cheap and locally available resources. The productivity of agricultural systems can be improved in the absence of factors over which farmers have little control: mineral fertilisers, synthetic pesticides, improved seeds (breeds) and access to credit. Organic agriculture techniques replace external inputs by ecological services and farmer management skills. In resource-poor areas, organic agriculture is an alternative in the search for an environmentally sound solution to the problem of food insecurity.

As a final note on production costs, organic farming is sometimes excluded from government subsidy program payments, as they are typically geared to industrial farming methods (e.g. technical assistance, equipment subsidies). Further, because organic farms rely on crop rotations, they have less flexibility to participate in government subsidy programs. As government subsidies decline, this will be less and less of an issue in the future. A policy change towards increasing government subsidies and practices, supported by investments, will be fundamental in the adoption of organic agriculture in resource-poor areas.

REFERENCES


Received 10 September 2008
Revised 25 October 2008