

# Methodological aspects of an improvement of calculation information system in agricultural companies

## *Metodologické hľadiská zdokonaľovania kalkulačného informačného systému v poľnohospodárskych podnikoch*

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**Abstract:** Phenomenalistic data of the development of prime costs in agriculture-oriented companies in Slovakia indicate that they have considerably increased in the main production, intracompany services and the company as a whole. Therefore, the management of a company has to apply an economic approach to cost management. Recommendations to build up a control structure of the cost system in the agricultural primary production are presented and its rational connection with actual costing, which uses algorithms of unconventional calculation methods, is analysed. In the cost system control structure, costs are recommended to be divided in two levels, namely by groups of activities and classification by elements of cost and by the relationship to outputs covering agricultural products. Using a general model, the objectives analysed are implemented in the livestock production aimed at dairy cow breeding.

**Keywords:** cost, cost management, output, activity, production

**Abstrakt:** Faktografické údaje o vývoji vlastných nákladov v poľnohospodárskych podnikoch na Slovensku poukazujú na ich značný nárast v hlavnej výrobe, vnútro podnikových službách a celopodnikového charakteru. Manažment podnikov je preto povinný usilovať sa o ekonomické prístupy k riadeniu nákladov a ich kontroly. V príspevku predkladáme odporúčania k budovaniu evidenčnej štruktúry nákladového systému v poľnohospodárskej prvovýrobe. Nadväzne sa uvažuje o jeho racionálnom prepojení na kalkulácie vlastných nákladov využívajúce algoritmy netradičných metód kalkulácií. V evidenčnej štruktúre nákladového systému navrhujeme štruktúrovanie nákladov v dvoch rovinách: podľa skupín činnosti (aktivít) a druhového členenia nákladov a vzťahu k výkonom, ktorých obsahom sú poľnohospodárske produkty. Predpokladané závery implementujeme rámcovým modelom v živočíšnej výrobe zameranej na chov dojníc.

**Kľúčové slová:** náklady, riadenie nákladov, výkon, činnosť, výroba

## INTRODUCTION

Successfulness of agricultural produce in the market is conditional on their quality and an amount of costs. The costs under conditions of the growing competition more and more often mark up the prices of products or services. Prices along with costs have a great impact on the prosperity of business. Knowledge of costs of different articles for the needs of the management is becoming an important part of their managing work.

The competitive environment makes the management regulate costs within the company and search for ways of reducing them, respecting the interests of business activities. Managing a company in conditions of market economy raises a need to know the origination of costs, their objective groundwork, as well as their impact on income. Approaches to the cost management by individual activities affecting, to a decisive measure, a result of production processes require it. A pragmatic level of the

information representation of costs supposes their orientation to production processes. However, this requires the application of some methodological aspects to improve the calculation information system.

## GOAL AND METHODS

In the contribution, we proceed from viewing the current control structure of costs and approaches to actual costing used in agricultural companies. In the context with given objectives concerning an audit of cost management, we present some suggestions of creating the architecture of the control and costing system in order to improve it.

The proposals submitted are based on phenomenalistic data of the development dynamics of prime costs, which were monitored over the period covering 1993–1999 in a group of agricultural companies as selected by the Research Institute of Agriculture and Food Economics.

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The contribution presented at the conference Agrarian Perspectives X – Sources of Sustainable Economic Growth in the Third Millennium: Globalisation Versus Regionalism (CUA Prague, September 18–19, 2001).

The method of directed interview with the company managers has been used to verify the methodological problems. The conclusions of analysis are limited within a discussion in the company investigated.

## RESULTS AND DISCUSSION

Today, agricultural companies pay insufficient attention to the intracompany management and the methods of both valuation and accounting inside the company. They stem from the hitherto used practices and algorithms, which are provided by the current programme products for the purposes of control and calculation representation of costs. The management of agricultural companies does not take a more serious interest in the factual aspect of the matter.

The cost registered by elements in finance accounting cannot meet in its entirety the needs of the intracompany management. Although the cost classification used is related to outputs from the point of view of calculation, it does not provide the objective expressive power of prime costs. In practical terms, it is reflected in the regulation of costs within a production process and appears as a problem in providing the real valuation of assets, acquired by the entrepreneurial unit owing to its own activity.

We consider prime costs to be the basis of pricing in a company. When expressing them, we stem from the principle that they are related directly to a given output, i.e. we can directly or indirectly assign them, through an allocation system, to output. From this point of view, it is necessary to:

- re-evaluate continuously an individual direction in making a structure of output cost,
- eliminate a significantly high proportion of overhead costs,
- undertake the economic management of costs and their check as a matter of principle,
- ensure an effective control support of cost evaluation and check according to the company's cost flow,
- utilize the philosophy of cost monitoring and allocation in the calculation information system for cost management and improvements of calculation procedures, using the so-called non-traditional methods of calculation.

The amount of costs significantly affects their value results. The rate of profit over 50% has currently been achieved in the Slovak agricultural companies but the volume of costs is growing. The data of the development of prime costs presented in Table 1 show there is a 17.2% growth of the cost of agricultural production, whilst that of plant production increased by one quarter over the period under study. Very important is the rise in the cost of other services in the companies investigated. The evaluation percentage amounting to 53.2% indicates the groundwork for our objective to re-evaluate approaches to reifying production inputs and cost management audit. The development dynamics of prime costs of all companies is 18.1% per ha agricultural land.

Table 1. Prime costs per ha agricultural land in Slovakia

Parameter	Year			Index 1993/99
	1993	1996	1999	
Crop production	8 590	10 529	10 717	124.7
Livestock production	14 472	16 124	16 316	112.7
Agricultural production	23 062	26 653	27 033	117.2
Other services	8 485	11 575	12 995	153.2
Overhead costs	6 616	6 638	6 304	95.3
Total company	41 464	48 782	48 957	118.1

Further development and stability of the transformed agricultural companies is inevitably depending on economic interventions of the government in the agricultural sector. Each company may contribute to pushing across its agricultural produce in the market, both domestic and foreign, by discovering its own reserves, which, in principal, can be done at two levels:

- improving production (performance) parameters of the biological inputs in production (biological material),
- economic cost management.

Seeking reserves in the cost area should be directed to reifying inputs, thus economizing production inputs. The output cost management from the aspect of classification by elements cannot be considered effective. Cost evaluation has to be closely linked up to production processes and their technological items. This requires a perfect identification of activities – the operations performed and their aggregation into process points, i.e. the activities following each other within a production process, or being of the same character in several products.

Output cost reduction has to be directly related to seeking the causes and base of their origination. The above-mentioned objective enabling the economic cost management is based on knowledge of costs by individual activities or groups of activities, depending on the technologies used in the crop production and the livestock production. In this respect, the information representation of the cost structure has a support role in the work of the company management. The criteria used for monitoring and calculation purposes of cost evaluation have to contribute to improving the pragmatic level of usage of inputs for the needs of regulation of cost.

Architecture of accountancy as the basic resource of information on costs for the needs of intracompany management has to stem from a thorough knowledge of the organisation system of an agricultural company and its particularities. The production-related business activities, operation activities and other services organised in intracompany divisions with the aim to implement certain outputs (products, services) make space for its information representation. The control structure of a system of costs has to provide their classification in compliance with the criteria shown in scheme (Figure 1).

We suggest that it is very important to provide monitoring costs within the production process classified by

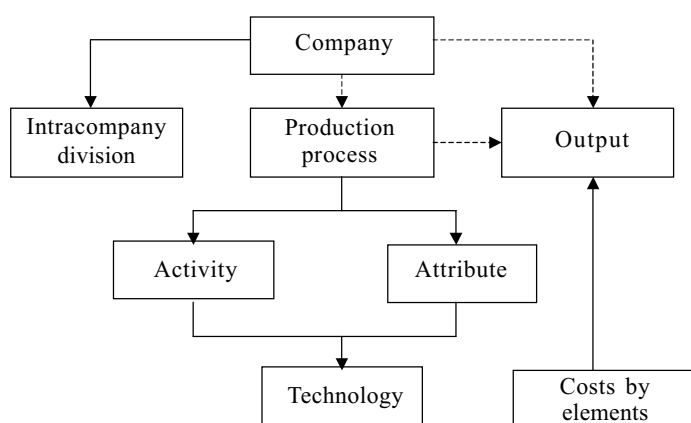


Figure 1. Scheme of cohesion of registration criteria of the cost system of a company

activity – operation, and clustering them in the so-called activities which are characteristic of the relevant production and the technology used for crop cultivation or animal husbandry and others. We consider monitoring the costs by elements a secondary criterion within the activities or a group of activities relating to the technology used in the production process. It is decisive to know reasons for the origination of costs of a certain activity and then their structure by elements. So, an assumption of evaluating the need to invest in production by the activities performed and thus to check cost management appears in a company.

The following is a model of the control substructure of cost system in the animal production specialising in dairy cow breeding:

1. Milking
  - labour costs
  - repairs and maintenance
  - milking unit depreciation
  - sanitation
  - biotechnical check of milking unit
2. Feeding
  - fodder consumption (including pasture feeding)
  - feed concentrate consumption
  - mineral nutrition
  - labour costs (workers taking care of feeding and feed loading)
3. Animal tending and manure disposal
  - labour costs
  - repairs and maintenance
  - tangible investment assets depreciation
4. Improvement activities
  - efficiency testing
  - insemination costs
5. Veterinary activities
  - veterinary works
  - drug consumption.

In creating the control structure of a cost system in an agricultural company, it is necessary to take into account concrete conditions and particularities of production processes.

The proposed approaches to the cost system architecture are linked up with algorithms of non-traditional methods of calculation of output cost by activity. The implementation of the method Activity – Based – Costing (ABC) can be considered as

- a possible approach to evaluation of output costs
- for the needs of cost management in a company.

The basic philosophy of this method consists in a two-degree allocation of the final product (output) costs through activities. So, space generates for monitoring and costing inputs at a level of groups of activities – attributes, which discloses secret reserves, particularly those of fixed cost, and makes it possible to evaluate their objective justification, subsequent cost reduction, and an improvement in calculation of total cost for the needs of pricing.

Definition of the cost flow structure in an agricultural company has to be regarded as an important methodological problem of calculated costs. It is associated with different production activities, particularly auxiliary (operation) activities such as intracompany services and works, and with the activities related to non-production area and the entire company (overhead). Direct costs can be directly calculated to output. For intracompany services and overhead cost, it is necessary to define allocation keys of individual direction, thereby making it possible to judge the cause of connections of the origination of costs in a company in the relation to the entrepreneurial activity. Definition of suitable allocation basis is a crucial problem to the objective allocation of cost to final products and therefore it demands a separate consideration.

## CONCLUSION

There exists a need to search the new methods in cost analysis from development of costs in Slovak farms. Base change we suppose in connection between calculation and production process and assistance works. Direct cost calculation is necessary to concentrate further on

the main parts of used production. There belongs the methodological approach to records and costs structure of calculation system mentioned in the article.

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