

## Improvement of Internal Control System of Agricultural Enterprises

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**Abstract.** Tendencies observed in the development of agricultural sector in Latvia indicate not only to the economic growth but require also a detailed analysis and control that would ensure real prerequisites for the improvement of financial situation of an enterprise. The economic activity of agricultural sector enterprises is not a topical object in the research field. This leads to the lack of information in every enterprise in different aspects: accounting, asset management, documentation etc. The lack of information in its turn negatively affects flows of information in the enterprise; thus, leading to serious restrictions in internal control and consequently causing inefficient work of the system.

**The aim of the research** is to study the problems of internal control in agricultural production process and to explore the possibilities for improvement of internal control in Latvia.

The authors have advanced the following **tasks** to achieve the set research aim:

- to analyse opinions of different authors on the possibilities to improve the internal control;
- to study the objects of internal control and applied methods within a production cycle of an agricultural enterprise;
- to determine the objects and methods of internal control in crop and livestock production;
- to explore the problems of internal control related to the prime cost of agricultural produce;
- to determine the possibilities for improvement of internal control related to the use of material resources.

The authors identify the necessity for the analysis and internal control of agricultural production process. Therefore, the problem of understanding related to internal control is analysed in the research. Conclusions provide the insight into the application of internal control models from the practical point of view as well as they substantiate the necessity for the improvement of internal control models in agricultural sector enterprises.

**Key words:** internal control, risk-based internal control, control of the production cycle.

**JEL code:** M49

### Introduction

Efficiency of internal control system is affected not only by the applied methods and procedures but also by the extent to which enterprises understand the specification of their business activities. The research will outline possibilities for the improvement of internal control through the general analysis of enterprise activities. Risk factors having negative effect on the objects of control were determined summarising the data. The objects of control and risks affecting them are linked over time and space; hence, it may be concluded that they would depend on the specifics of an enterprise's activity. The research authors search for opportunities to improve the internal control in agricultural enterprises.

The authors believe that the control science should be exactly developed for certain groups of enterprises. It is necessary to distinguish areas or zones where the question of internal control requires advanced research. Such grouping will help determine general characteristics of industry and opportunity to prepare information applicable for industrial enterprises. It is possible to make grouping by types of business activity. Peculiarities of internal control are marked with peculiarities of business process. Therefore, enterprises that are engaged in only one type of business activity will have many contact points, which indicate features for the research scope of internal control. Discussions could lead to the opportunity to outline other features of classification that according

to the authors provide preconditions for the development of science.

The paper **aims** to study the problems of internal control of agricultural production process and to explore the possibilities for improvement of internal control in Latvia.

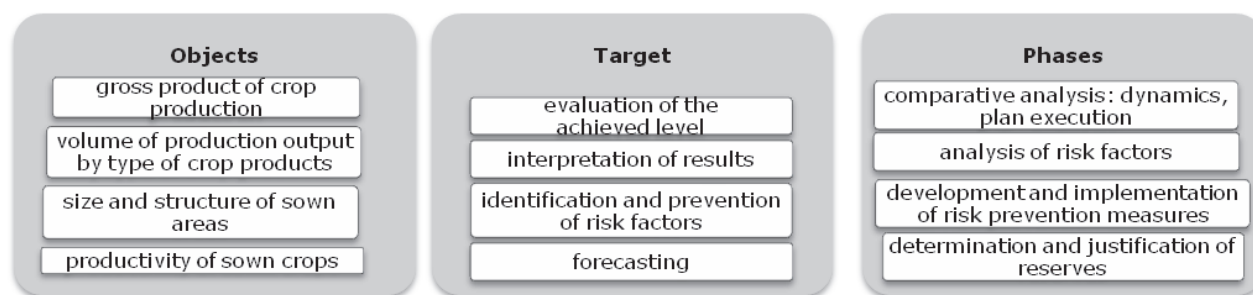
To achieve the research aim, the authors have used the following theoretical research methods as the analysis of literature and methods of data processing: methods of statistical analysis, methods of economic analysis, and economic-mathematical methods. The method of analysis and synthesis, a logically constructive method, and a monographic method were also used in the research.

The performed analysis and research are based on international standards, statistical data, foreign and Latvian research papers, data of Latvian and foreign periodicals, Internet sources, and unpublished data of enterprises.

The authors think that the main object of internal control in agricultural enterprises is exactly the cycle of production. The cycle of production joins all the processes with the common aim to produce finished goods or agricultural produce. The following procedure of control is recommended with regard to the production cycle:

- 1) to determine the validity of planning regarding primary production (crop and livestock). The possibility for the performance of planned tasks and

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Source: authors' construction based on Savickaja G., 2006

Fig. 1. Scheme for the analysis and internal control of crop products

Volume of crop production output		
Size and structure of sown areas: •specialisation of a farm •signed agreements on delivery •state aid •conjuncture of the market •availability of land and labour resources •internal needs	Loss of crop •climatic conditions •due to the fault of an enterprise •force majeure circumstances	Crop productivity •quality of soil •climatic conditions •fertilisation of soil •quality and type of seeds •times and techniques for sowing and harvesting •quality of soil cultivation •methods restricting diseases and malicious worms

Source: authors' construction based on Savickaja G., 2006

Fig. 2. Factors influencing the total volume of crop production output

- an increase in reserves of unaccounted agricultural produce are analysed during the control;
- 2) to check the use of land and animal resources to increase their productivity;
  - 3) to check the execution of developed plans in relation to cultivated areas, productivity of crops, improvement of animal breed characteristics and productivity, output, and prime cost of crop and livestock produce (Belov N., 2006).

The research dwells upon two directions of production – crop and livestock production. Methods of internal control and flow of information will differ by sectors mainly due to biological and technological processes. Hence, internal control of production process of crop and livestock production is analysed separately.

The following tasks are solved in the process of analysis:

- justification and adjustment of production plans;
- systematic control on the execution of plans;
- identification of factors influencing the production output and degree of their significance;
- determination of internal reserves;
- evaluation of the enterprise's activity related to the increase of production based on biased and unbiased factors;
- drafting of measures ensuring the use of defined reserves (Savickaja G., 2006).

## Research results and discussion

### Internal control of crop production output

The analysis of crop production process in agricultural enterprises is aimed to control the volume of production

output, to determine key risk factors and reserves of an enterprise as well as the most important is to increase their profitability. In general, the process of analysis and control is shown in Figure 1.

The data of Figure 1 lead to the conclusion that the implementation of control is started from the identification of control objects. The common objects of internal control are indicated in Figure 1; however, they may differ by enterprises based on their production specifics and management policy related to the production process. The subjects of control may be determined according to the data of Figure 1 or individually in each enterprise; thus, they are not particularly analysed within this subchapter.

The task of internal control is not only to determine the factors affecting the volume of crop production output and quality but also to analyse the level of influence resulting in identification of the main risk factors that require development of the preventive measures. G. Savickaja (2006) offers to apply statistic methods for such analysis.

According to the authors, statistical analyses are more effective to analyse factors. Expert analysis is also useful. It is preferable to use the opinions of several experts to oppose them and identify common and contradictory points. The mentioned methods for the analysis and control of factors influencing crop productivity are not the only possible methods. The choice depends on the management policy of an enterprise and the qualification of employed experts.

The analysis on the determination of the enterprise's reserves shall be done consistent with the following aspects: enlargement of sown areas, improvement

Sources of reserves for the increase of the volume of crop production output		
Enlargement of sown areas •felling of forests and bushes •plowing of grassland •permit for the use of the state land etc.	Improvement of the structure of sown areas	Increase of the yield of sown crops •more efficient use of fertilisers •introduction of more productive and more intensive crops •reduction of production natural loss •use of agronomic technical innovations •enclosing of sown areas from animals and insects •elimination of employees' fraud activity etc.

Source: authors' construction based on Savickaja G., 2006

Fig. 3. Directions of reserves for the increase of the volume of crop productivity

Volume of livestock production output	
Number of animals •specialisation of a farm •rates of natural increase of the herd •supply of animals with feed •existence of specialised premises •diseases and infections •market demand •purchasing prices of products •geographic location of the plant etc.	Productivity of animals •level of animal feeding •feeding quality •farm-produced feed level •structure of ration •indicators of animal breed •animal-keeping conditions •climatic conditions •qualification level of serving professionals etc.

Source: authors' construction based on Savickaja G., 2006

Fig. 4. Factors influencing the total volume of livestock production output

of their structure, and increase of crop productivity (Figure 3).

If an enterprise implements the policy of reserve determination, then the main task of internal control is to analyse the policy advantages, factors influencing its application, and the efficiency of its economic use. The enterprises not implementing this policy are recommended to analyse the efficiency of the use of enterprise's assets within the internal control. The analysis may be done according to the directions shown in Figure 3. The obtained results will allow identifying the unused reserves that in turn improve the efficiency of use of the enterprise's assets and the volume of production output.

The range of internal control issues offered by the authors enables the establishment of a logical and successive mechanism of control, which covers the entire production and the main values characterising its efficiency. The control of crop production volume is based on planned and existing agro-technical data that enable opportunity to control the compliance of production process with the accepted standards and to identify deviations and their causes; thus, generally improving the productivity of production process.

### Internal control of livestock production

The initial stages of livestock production and crop production internal control are similar. Purposes and stages of control are identical with the purposes and stages of crop production control.

Enterprises, which apply the performance scheme of internal control offered by the authors, may establish a suitable internal control model. However, the content of information and sources for its accumulation will be such elements of internal control system that have to be individually defined based on the specifics and experience of an enterprise activity.

Denoting the main risk factors, it is necessary to establish a set of measures that would prevent risk factors or reduce their negative effect on the livestock production volumes similar as for crop production. Besides, enterprises have to identify the degree of influence of each factor on the volume of production output. It is possible to apply statistic methods and experts' evaluation etc.

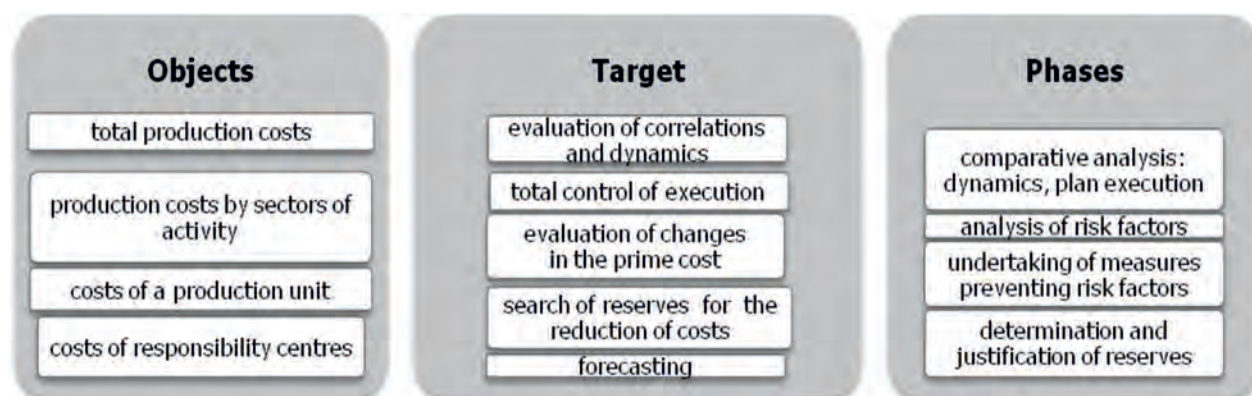
The mentioned factors of influence have already been largely indicated by the area of control's activity. It is very important to nominate the responsible persons, to draft technological procedure and to follow constantly the execution of the plan. From the part of management, it is hard to control completely the activities of specialists, since it requires special knowledge, which possibly the management does not possess. The evaluation of other experts should be considered in this case.

The analysis of current reserves in livestock production enterprises and evaluation of their application possibilities will have a positive impact on the volume of production output. The main directions for determination of reserves are outlined in Figure 5.

Sources of reserves for the increase of the volume of livestock production output		
Increase in the number of animals •increase in the share of milking cows in the herd •reduction of animal death rate •improvement of zootechnical policy	Efficiency of used feed  Improvement of measures controlling diseases and infections	Increase of animal productivity •improvement of animal structure •improvement of animal age structure •improvement of keeping conditions

Source: authors' construction based on Savickaja G., 2006

Fig. 5. Directions of reserves for the increase of the volume of livestock productivity



Source: authors' construction based on Savickaja G., 2006

Fig. 6. Scheme for the analysis and control of agricultural production prime cost

The main directions for the analysis of reserves are determined when analysing the degree of impact of each factor on the total volume of production. If the analysis outlines a factor whose increase or reduction of the characteristics would have a positive impact on the volume of production, it is useful to analyse the possibilities of an enterprise to influence this characteristic feature. It is economically reasonable to search for other ways to increase the production volume, only having knowledge on the enterprise's reserves.

The abovementioned leads to the conclusion that the control of livestock production volume requires a lot of knowledge related exactly to technological process. To reduce the impact of this factor on the efficiency of internal control, it is useful to develop technological procedure in enterprises, and to use the opinions of experts who are not employed by the enterprise. Based on the offered method, livestock production enterprises may develop or improve the mechanisms of internal control system and increase the results of their economic performance.

### Internal control of agricultural products prime cost

Reduction of costs is the target, which all enterprises are eager to achieve, since there is a direct link between the enterprise costs and its profit. The level of prime cost characterises the efficiency of production process and serves as one of its control indicators.

The authors believe that the analysis and control of prime cost provides feasible preconditions for the improvement of business efficiency.

The authors agree with the opinion of G.Savickaja that the control and analysis of prime cost have the following aims:

- control on the execution of the plan for the reduction of prime cost;
- analysis of factors influencing the prime cost;
- determination of reserves for the reduction of prime cost;
- probability analysis for the use of determined reserves and control on the application of measures for the use of introduced reserves.

It is useful to start the introduction or improvement of control measures from the definition of a control object (Figure 6). All the expenses analysed by different breakdowns will serve as control objects for the internal control of prime cost.

The process of prime cost internal control and analysis offers the application of phases that are similar to the analysis of crop and livestock production. In the opinion of authors, the mentioned phases allow achieving targets, and they are logical and practically applicable in agricultural enterprises.

V. Ovsijcuk and G. Savickaja in their research believe that the breakdown of costs by responsibility centres plays a significant role in the control of prime cost development. The authors agree with this opinion, since the establishment of responsibility centres enables provision of not only qualitative information or the breakdown principle of undertaken responsibilities but also increases the management activity in the process of cost control. The responsible persons administer their cost items and take full responsibility for the



sums included into these items. It means that the breakdown of cost accounting by responsibility centres includes not only the identified methods and techniques of internal control but also ensures creation of control environment and influences the self-confidence of employees.

The opinion of the research authors on the mentioned question coincides with the group of scientists who identify the concepts of "responsibility centre" and "place of cost formation". Identifying these two concepts, it is possible to implement internal control efficiently and create a logical scheme of internal control. Primarily, the place where costs are incurred is determined. It may be a department or a concrete object. Only after that, the persons who are in direct relation with the object of control are determined. Responsibility centres, i.e. persons which are responsible for the changes in the amount of costs, are determined within the analysis. Therefore, in the range of this research, the concept "responsibility centre" means specialists who control accounting of costs.

The control of costs may positively influence the level of agricultural production prime cost; however, it is not considered as one of the methods for its reduction. The control and analysis of reserves to reduce the prime cost of production are one of the methods.

Sources of reserves for reduction of prime costs may be as follows:

- reduction of the volume of production output;
- reduction of the level of eligible costs.

The mentioned sources allow concluding that the discussed processes (production, control of costs) contribute to the reduction of prime cost. G. Savickaja in her research has outlined this correlation in the following formula:

$$R \downarrow P = P_i - P_f = \frac{I_f - R \downarrow I + I_p}{VKP_f + R \uparrow VKP} - \frac{I_f}{VKP_f'} \quad (1)$$

where:

$P_f$  – actual level of production prime cost;

$P_i$  – possible level of production prime cost;

$I_f$  – actual costs of production;

$R \downarrow I$  – reserve for reduction of production costs;

$I_p$  – additional costs necessary for the use of resources;

$VKP_f$  – actual volume of production;

$R \uparrow VKP$  – reserve for the increase of production volume (Savickaja G., 2006).

According to the authors, the offered model precisely outlines the correlation occurred in the production process of agricultural produce. It is possible to determine objects of internal control and to develop efficient control mechanisms based on this model. Values of two indicators: reserve for the reduction of production costs and reserve for the increase of production volume

restrict the application of this model. Calculations are based on statistical methods and principles of the economic analysis. Studies of the research papers of several authors lead to the conclusion that algorithms of calculations are complex; it means that not all enterprises would be able to make analysis consistent with the theoretical guidelines. Agricultural enterprises have to assess the necessity for the control of prime cost level and they have to choose a suitable model of analysis and control that could be practically applied in a particular enterprise.

### Internal control of the use of material resources

Indicators of the production quality affect not only its sales price but the sales possibility in general. For example, several values of grain quality – humidity, diseases, maturity etc. are checked prior to selling grain. If an enterprise does not control materials used in the production process, then it increases the risk of impossibility to sell finished produce on the market. Hence, an enterprise may suffer losses from its business activity.

The process of analysis and control of material resources in agricultural enterprises does not differ from the implementation measures of control in enterprises of other industries. The items related to agriculture and agricultural process may not be disclosed through the balance sheet; hence, it may not be applied for the purpose of analysis. Therefore, it is necessary for agricultural enterprises to follow the theoretical standards and experience to be able to develop an efficient system for internal control of materials.

The analysis and control of material resources are implemented in the following directions:

- analysis and control of material resources support;
- analysis and control of material situation necessary for the production process;
- analysis and control of the use of materials;
- factorial analysis of materials capacity;
- analysis and control of the level of production deficiencies (Belov, N., 2006).

The research authors agree with the opinion of V. Jermolajeva who believes that exactly the economic analysis having the following targets plays an important role in the economy of material resources and the analysis and control of effective use:

- necessary volume of material resources for an enterprise;
- interpretation of indicators on the dynamics of fulfilment of plans;
- determination of factors influencing the deviations of the actual indicators from the planned ones;
- quantitative evaluation of influenced factors and evaluation of internal reserves.

Based on the determination principles of internal control, it is advisable for agricultural enterprises to identify the main materials that have the largest impact on the production process. It allows narrowing the time of control and to control clearly materials based on the nomenclature. Thus, the authors suggest applying the coefficient ( $K_n K_n$ ) for the provision of material resources:

$$K_n = \frac{\text{obtained materials}}{\text{amount of required materials according to the standard}} \quad (\text{Savickaja G., 2006}). \quad (2)$$

If the coefficient is over 1, then there is an excess in stock, if the coefficient is below 1 – there is a risk of ceasing production (Analiz materialjnih ..., s.y.). According to the authors, the use of this equation is very practical for agricultural enterprises. Naturally, it does not include complex calculations; however, the achieved result reflects actual provision of materials and raw materials for the production process.

### Conclusions, proposals, recommendations

1. Summarising the analysed problems, it can be concluded that the economic analysis, which includes also the statistical methods, plays a significant role in the implementation of internal control process in agricultural enterprises.
2. Objects of the production process in crop and livestock production differ due to the used resources, types of agricultural produce, and other factors.
3. Internal control and analyses of the agricultural production process have common aims and implementation phases.
4. For the implementation of internal control of agricultural produce, it is important to create and control production plans in enterprises. It is useful to develop technological procedure and to use the analysis of expert evaluation in enterprises.
5. In the range of internal control, special attention should be paid to the analysis of factors influencing the volume of agricultural production output that would enable enterprises to determine the main risks and to undertake preventive measures for risk elimination.
6. It is necessary to analyse and control reserves belonging to the enterprise in the scope of internal control to increase the volumes of agricultural production output.

7. Agricultural enterprises have to evaluate the necessity for the algorithm of calculations according to the level of prime cost control, and they have to choose a suitable model of analysis and control that is possible to apply in practice.

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