# Accounting and analytical support of internal management reporting on reclamation works

*Guzaliya* Klychova[1,*], *Alsou* Zakirova[1], *Shaukat* Khusainov[2], *Angelina* Dyatlova[3], *Ullah* Raheem[4] and *Elza* Sagadeeva [5]

[1] Kazan State Agrarian University, Karl Marx, 65, Kazan, 420015, Russia
[2] Russian State Agrarian University - Moscow Timiryazev Agricultural Academy, Timiryazevskaya, 47, Moscow, 127550, Russia
[3]Moscow University of the Ministry of Internal Affairs of the Russian Federation named after V. J. Kikot, Academic Volgin, 12, Moscow, 117997, Russia
[4] Kazan (Volga Region) Federal University, Kremlinskaya, 4/5, Kazan, 420008, Russia
[5] Bashkir State Agrarian University, the 50th anniversary of October, 34, Ufa, 450001, Russia

**Abstract.** In modern conditions, the objective need for the functioning of an agricultural organization is to maintain management accounting and the formation of internal management reporting. The internal management reporting contains information that is used by the management of the organization in making informed operational and strategic management decisions. However, in developing the format of internal reporting there are problems with the definition of a set of indicators necessary to assess the effectiveness of financial and economic activities of the enterprise. The purpose of the article is to justify the theoretical provisions and development of practical recommendations for the development of accounting and analytical support for the formation of internal reporting on reclamation work. Objectives of the study: to study the theoretical aspects, methodological tools, to determine the stages of formation of internal management reporting, to develop forms of management reports containing basic indicators to assess the effectiveness of reclamation activities. When writing this article, such methods as analysis of scientific and theoretical sources, system approach, method of comparative analysis, generalization were used. The approach suggested by the authors to the formation of internal management reports allows to form a system of accounting and analytical information, which allows to solve organizational, economic and production problems arising in the process of managing the enterprise. The system of indicators, contained in the developed formats of management reporting, is a tool that characterizes the effectiveness of management.

## 1 Introduction

The basis for sustainable development of society, and agricultural production in particular, is the implementation of environmental activities based on the practical application of

* Corresponding author: zakirovaar@mail.ru

resource-saving and low-waste technologies, through which maximum efficiency of management is achieved [1, 2].

Human agricultural activity significantly changes the properties of such key components of Agro-landscape as soil, surface atmosphere, flora and fauna, surface and groundwater [3, 4, 5]. Therefore, it is necessary to develop and justify a set of measures related to the control of reclamation works, reducing the negative impact on the natural environment [6, 7, 8, 9]. And for this purpose it is necessary to improve the existing approaches to methodological support of accounting, control and analysis of reclamation works.

Land reclamation requires the adoption of scientifically based effective management decisions, the basis of which is the information accumulated in the management accounting system. Management accounting, integrating with other management functions, such as control, planning, regulation, forms the information base necessary for optimal management of certain processes and operations [10, 11]. Systemic and complex studying of the big file of various data on activity of the enterprise on the basis of the information formed in system of the administrative account and the analysis, allows to establish expediency of a choice of directions of industrial and financial activity of the enterprise, to spend accounting and analytical works on definition of an actual financial condition of analyzed object [12, 13, 14]. The result of accounting management accounting is internal management reporting.

Just like management accounting, the formation of management reporting is not regulated by the state. As a consequence, each economic entity determines for itself those indicators, which will be included in the forms of internal management reporting [15, 16]. However, at the same time, there is a need to work out general theoretical provisions and methodological support of the process of formation of information contained in management reporting. Using the available developed tools, each organization will be able to form a quality information base for making effective management decisions, including the implementation of reclamation works.

## 2 Materials and Methods

The main factors that have a significant impact on agricultural production are global climate change, development of financial markets, energy and food security [17]. At the same time, solving the problem of food security is complicated by limited land and water resources, the need to ensure the conservation of natural landscapes and maintain environmental biodiversity [18]. To reduce the acute dependence of agriculture on these factors, it is necessary to carry out a complete scientific and technical modernization of the agricultural sector. Despite the wide use by agricultural producers of new highly productive drought-resistant crop varieties, resource-saving technologies in soil tillage, scientifically grounded systems of dry farming and other achievements of scientific and technological progress, neutralizing the negative impact of weather conditions, the lack of the necessary amount of moisture in the soil at a time determined by the biological growth of crops, their positive role is reduced to almost zero.

In this regard, the sector of land reclamation plays a huge social and economic role in obtaining consistently high yields on the territory of the Russian Federation and is of great importance for development, including a separate region - the Republic of Tatarstan.
Substantial damage to agricultural production is caused by systematic droughts, the only way to really combat them is to use artificial irrigation. In the territory of the Republic of Tatarstan after the drought of 2010, federal and republican programs related to the development of land reclamation and aimed at modernization and technological energy efficient renovation of the land reclamation complex are being implemented.

Thus, between 2017 and 2019, a number of land reclamation programs were implemented, which are shown in table 1..

**Table 1.** Capital Investments in Land Reclamation in 2017-2019

| Types of reclamation works | Years | | |
|---|---|---|---|
| | 2017 | 2018 | 2019 |
| For construction and reconstruction of reclamation systems and hydro-technological facilities from the RF budget for federal facilities, million. rubles | 145.6 | 142.1 | 60.3 |
| Overhaul of ponds and hydraulic engineering structures from the budget of the Republic of Tatarstan, million rubles. | 173.3 | 92.7 | 27.1 |
| Construction, reconstruction and overhaul of irrigated and drained lands, million. rub. | 88.7 | 62.3 | 77.9 |
| Creation of anti-erosion and field forest plantations, million rub. | 150 | 150 | 150 |
| Total capital investments | 557.6 | 447.1 | 317.3 |

A significant amount of reclamation work was carried out using subsidies provided to agricultural producers (Table 2).

**Table 2.** Grants are provided to agricultural producers in 2017-2019

| Types of subsidies | Years | | |
|---|---|---|---|
| | 2017 | 2018 | 2019 |
| On construction, reconstruction of water supply systems and drilling of wells - in the amount of 90% of the produced costs, million rubles. | 33.18 | 15 | 33.7 |
| For the purchased irrigation equipment and pumping and power equipment - at the rate of 70% of its cost, excluding VAT, million rubles. | 80 | 130 | 80 |
| For construction and reconstruction of irrigated and drained lands - up to 70% of the costs incurred (under the Federal Target Program "Reclamation Development" up to 2020), million rubles. | 68.2 | 86.6 | 76.8 |
| For development of melioration (irrigation and drainage) within the framework of development of export of agricultural products grown on reclaimed lands, million. rubles. | - | - | 56 |
| Total Subsidies | 181.4 | 231.6 | 246.5 |
| Extrabudgetary investment of farms, million rubles. | 354 | 93.8 | 251.9 |

Implementation of these programs allowed to restore more than 30 thousand hectares of irrigated land, which significantly increased agricultural production. With the funds from the regional target program for the restoration of hydraulic structures (HTS), 320 HTSs in need of repair or in emergency condition were restored. In 2016, mass production of the Kazanka sprinkler was mastered. This unit provides crops and has such technical characteristics as high energy efficiency, mobility and economy.

The Republic of Tatarstan has a large natural potential to ensure an increase in the area of irrigated agricultural land, increase gross production of vegetables, grain, fodder and other crops. In particular, 100% of vegetables and over 70% of potatoes are grown on irrigated lands. This fully meets the population's demand for these products regardless of natural disasters. By 2020, it is planned to plant intensive fruit and berry plantations in drip irrigation on the area of 2500 ha. Between 2014 and 2018, 608.9 fruit and berry orchards will be laid, including 142 ha of strawberries, 74 ha of raspberries, 152 ha of currants, 218 ha of apple trees and 22.8 ha of buckthorn trees (Figure 1).

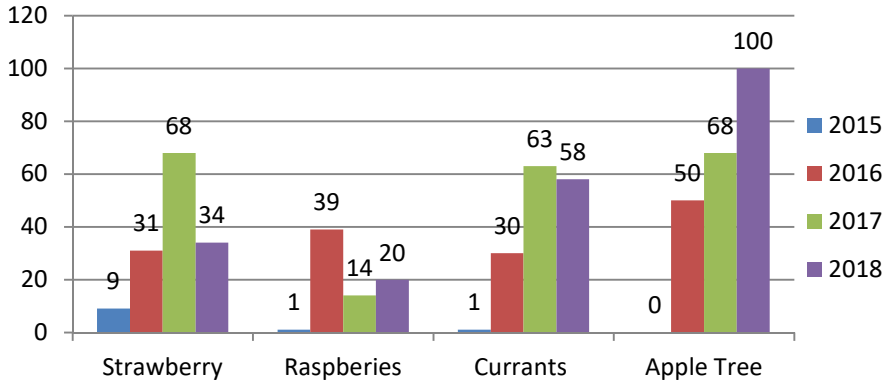


**Fig. 1.** Area of fruit and berry orchards on drip irrigation 2014-2018, ha

Drip irrigation allows obtaining the yield of 9-11 tons of berries per hectare. Thus, the yield of strawberries is 25 tons per hectare, raspberries - 10 tons per hectare, currants - 15 tons per hectare, apple trees - 60 tons per hectare.

In total, in 2018 the Tat melioration system performed works and services worth 1.98 billion rubles. Only 622.5 million rubles were allocated directly for the land reclamation, including 192.2 million rubles from the RF budget, 336.5 million rubles from the RT budget and 93.8 million rubles from extrabudgetary funds. During 2018, 3.4 thousand hectares of irrigated land were built and reconstructed. Thanks to government support, 26 farms built and reconstructed irrigated land.

In the Republic of Tatarstan, the Presidential Program for the Rehabilitation of Hydraulic Structures (GTS) is actively working, under which 35 ponds and GTS have been repaired. The rehabilitated ponds accumulate 89 million $m^3$ of water, and financing amounted to 173.3 million rubles. In addition, 14 wells were drilled for water, 5 water towers were manufactured and installed in 2018. The volume of financing for these types of works amounted to 16.7 million rubles, including 15.0 million rubles from the budget of the Republic of Tajikistan and 1.7 million rubles from extra-budgetary funds. According to the Presidential Program, 47775 ponds and GTS have been restored in 6 years. In 5 years, 180 farms on the area of 30 thousand hectares were built and reconstructed for irrigation. The rehabilitated ponds accumulate 89 billion $m^3$ of water. Yields and economic efficiency on irrigated land are increasing significantly (table 3).

**Table3.** Gross collection of products from irrigated lands

| Cultures | Irrigated areas FSBU " Federal State Budgetary Institution "Land Reclamation and Agricultural Water Supply Administration For the Republic of Tatarstan ". | Gross product collection, thousand tons. | Gross output collection, billion rubles. |
|---|---|---|---|
| Potatoes | 5.0 | 175 | 1.7 |
| Vegetables | 11.9 | 326 | 7.5 |
| Cereals | 2.8 | 14.1 | 0.14 |
| Fruit and berry crops | 6.2 | 79.7 | 9.7 |
| Feed crops | 12.0 | 60.2 | 0,38 |
| Total | 37.9 | 655.0 | 19.4 |
| Total Gross Crop Production, billion rubles | - | - | 104.7 |
| Share, % | - | - | 18.5 |

Thus, when watering during the season, potato yields increase 3 times and reach 300-500 centners/ha, carrot yields during irrigation increase to 700 centners/ha, and sugar beet yields exceed 800 centners/ha. The yield of cabbage on irrigation is 80-100 t/ha.

The Republic of Tatarstan is fully supplied with vegetables from irrigated lands. When irrigated, the cost of production is 2 or more times lower than on bogar. In the structure of the cost structure, irrigation takes no more than 10% of the cost of potatoes and 20-25% of the cost of vegetables. 1 ruble of direct costs on irrigation provides obtaining additional products worth more than 12 rubles. Occupying 1% of the arable land area for irrigation, 18.5% of gross crop output is cultivated (Fig. 2).

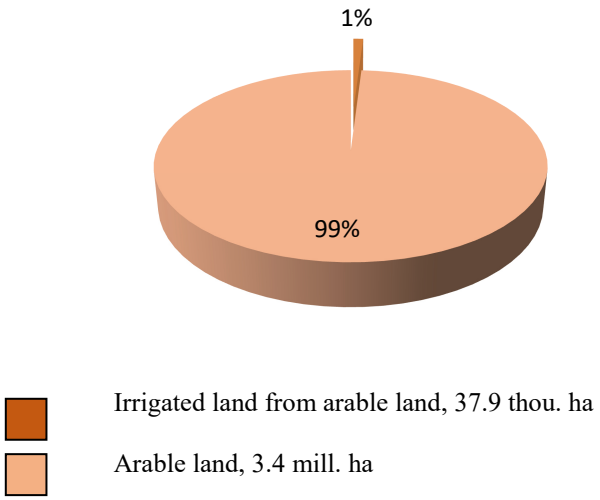


**Fig. 2**. Share of irrigated land in total arable area.

If the cost of potatoes is 5 rubles per 1 kg, 1 ruble of irrigation costs allows you to get 12.6 rubles net profit (not including the cost of sprinklers and pumps).

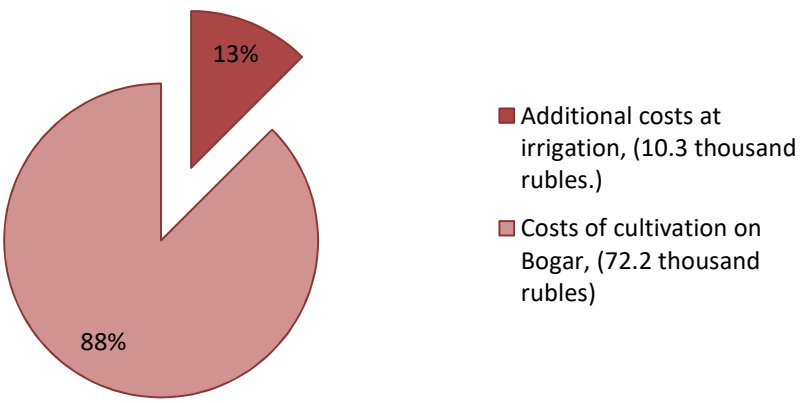


**Fig. 3.** Share of irrigation costs in total costs of potato production (per 1 ha)

As can be seen from Table 4, the yield of crops on irrigation is significantly higher than that of bogar.

**Table 4**. Comparative productivity of rain-fed and reclaimed lands.

| Culture | Yields on bogar, t/ha | Yields on irrigation, m/ha | |
|---|---|---|---|
| | | average | maximum |
| Cereals | 2.2 | 5.5 | 8.4 |
| Potatoes | 13.0 | 35.0 | 86.0 |
| Vegetables | 0 | 55.0 | 100 |
| Feed | 2.1 | 5.8 | 8.0 |

As part of the implementation of the sub-program of land reclamation development by 2021 it is planned to carry out reclamation of agricultural land on an area of about 440 thousand hectares, which will ensure a 90% increase in crop production compared to 2017.

In addition, as part of the project "Export of agricultural products", 36.8 billion rubles will be allocated for the development of land reclamation until 2024. With these funds it is planned to put into operation another 420 thousand hectares of new irrigation systems.

Vegetable and fruit-berry clusters have been intensively developed in the Republic of Tatarstan in recent years together with land reclamation agencies. Vegetable Valley" project was created to develop vegetable crops in Almetyevsk municipal district. The participants of this project (cooperative) are farmers who are part of the cooperative to grow vegetables on irrigation. Similar work is carried out on growing fruit and berry crops in the framework of the "Berry Valley" project. The advantages of these projects are: the ameliorative infrastructure (reservoirs, pumps, filters, a pipeline with hydrants, which provides water to all plots) has been established; there is state support; a fruit storage facility has been built where farmers (members of the cooperative) can grow vegetables on irrigation.

The cooperative) can cool, freeze and store their products until they are sold.

The implementation of these projects has become a kind of know-how in the agro-industrial sector, which allows obtaining a harvest of 9-11 tons of berries per hectare. Cooperatives apply advanced scientific developments in the cultivation and irrigation of berry crops using drip irrigation.

Under these conditions, the main functional element in the development of the agrarian sector of the economy is the investment process, which determines the level of technologization and efficiency of production. Intensification and economic stability of agricultural production are provided at the expense of volumes and forms of investments. Since agricultural and processing enterprises have low capacity for self-financing, approaches that will improve the investment climate in agriculture should be defined.

Also in the conditions of socially oriented business, in addition to economic and technological criteria, significant attention should be paid to environmental and social aspects [19, 20, 21]. For example, if investments according to technical and economic calculations are inefficient, but by social and environmental criteria are effective, this can help attract financial resources from budgets of different levels and, as a result, improve the investment attractiveness of an investment project [22, 23, 24]. Thus, the factors that determine the social criterion of efficiency of investments in the development of melioration systems may include the possibility of creating new jobs, as well as support for traditional forms of rural lifestyle.

All management tools, including accounting and analytical ones, should be involved in melioration when solving the whole complex of tasks on effective organization of investment process. One of the effective accounting and analytical tools of management is management reporting.

## 3 Results

At present, for the majority of enterprises the issues of management accounting become relevant, the result of which is the information accumulated in management accounts, intended for management and serving as a basis for making managerial decisions [25, 26]. Forms of management reports are prepared with a certain periodicity and are intended for solving frequently occurring typical tasks. Information in management reports is provided promptly and with maximum accuracy.

Internal management reports can be defined as a system of accounting and analytical information, which is presented in certain reporting forms in the form of settlement and accounting indicators and characterizes the external and internal environment of an agricultural organization and (or) its divisions. The format of management reports is regulated by internal regulations of the organization.

Distinctive features of internal management reporting include:

1. Integrity of the internal structure of the system of reporting forms. In each of their reporting forms, information is disclosed that gives qualitative or quantitative characteristics to a separate element of reporting. Each form of internal management reporting is represented by a system of formats that contain a system of indicators disclosing the internal structure of the reporting element and showing its interrelation with other elements of management reporting.

2. Hierarchy of information presentation.

For the majority of enterprises of agrarian sphere of economy division of responsibility for performance of various tasks between heads of structural divisions is characteristic. This division of responsibility is characterized by a certain hierarchical structure, which can be conditionally divided into the following levels:

Level 1 – operational. The information that comes in the planning process at this level is very detectable and directly relates to the current time. Decisions that are made in respect of the assets and liabilities of the enterprise are short-term. In organizations of agrarian sector of economy at the operational level of management, represented mainly by team leaders, all business operations are reflected in primary documents. The information contained in the perimeter documents is used by brigades in their management activities.

Level 2 - tactical. This level analyzes the effectiveness of material, human and financial resources, so that in the future it is possible to achieve better results in financial and economic activities. Specialists of tactical level of management, which include shop managers, various specialists, make decisions on purchase and storage of inventory, sale of finished products (works, services), cash flow forecasting. Accounting information comes to them directly from primary documents and registers of synthetic and analytical accounting.

Level 3 - strategic. At this level decisions are made for the long term in relation to the whole enterprise and the vector of its development in the future is determined. Decisions on the strategic level of management are made by the chief specialists and the manager regarding investments in various projects, development of new markets, budgeting and forecasting. The information is systematized and presented in the form of qualitative and quantitative indicators calculated according to special formulas or obtained from registers of accounting and primary documents. Intensive use of these indicators facilitates effective management decisions, timely identification of deviations and their prompt elimination.

3. The internal management reporting contains indicators that characterize both the external and internal environment of the enterprise. In contrast to financial reporting, which is focused on the internal environment, in management reporting, in addition to indicators characterizing the internal environment, there are indicators of the external environment, which together significantly affect the process of making managerial decisions.

4. Way of information presentation. When presenting accounting information in the process of agricultural enterprise management, it is necessary to carefully choose the method of its presentation. The way of presentation of the accounting information directly depends on its content, methods of reception and transfer, requirements which are shown by users to its content.

5. Also, internal reporting should be formed both for the enterprise as a whole, and for its divisions to track the dynamics of individual indicators, as the dynamics of indicators as a whole for the enterprise may not correspond to the dynamics of indicators for its segments.

6. Promptness of management reporting implies that information can be provided to internal users in a timely manner when it is necessary for making effective management decisions.

7. Management reporting should include only information that will meet the information needs of internal users. Moreover, the format of management reporting cannot be unified, since each manager needs its own set of indicators capable of meeting specific information needs.

The enterprise independently determines the content and composition of indicators contained in the reports, establishes forms and terms of reporting depending on the strategy, tactics, type of economic activity and other specific features.

The frequency of presentation of accounting information depends on the specifics of agricultural production and is determined by the period of time during which it will be relevant and necessary for making effective managerial decisions. For example, in crop production, formation of management reports and frequency of their presentation depend on such factors as seasonality of production and duration of production cycle. That is, users should receive data on the harvest, which is carried out in a short period of time, with each change in real time. At the same time, there are data that do not require such rapidity of presentation and concern, for example, production and sales of livestock products, the occurrence of marriage, deviations from planned or normative values. This information can be provided on a daily or weekly basis.

Monthly reports may serve as a basis for making decisions about the profitability of products manufactured, works performed, auxiliary or industrial production services provided.

Formation of accounting information intended for internal users is performed at certain stages of the accounting process.

1. At documentary registration of operations the information on enterprise activity is accumulated. As in the unified forms of primary documents the accounting information sufficient for acceptance of effective administrative decisions can not contain, necessity in modification of the initial form of the primary document and in creation of the new form of the administrative report can arise.

2. In the process of grouping and systematization of accounting information, technical processing of this information is carried out based on the current Plan of Accounting.

3. Certain forms of accounting, including management reporting, are formed, which contain information used in the management of an agricultural enterprise.

Reporting and accounting information is used in the process of analysis of the enterprise's activity.

4. Management report, as well as primary unified accounting documents, shall contain the following requisites: name of the document, name of the organization, qualitative and (or) quantitative indicators, conclusions and recommendations, date of compilation, title of positions, responsible for provided information, their signatures.

The following stages of internal management reporting are distinguished:

1. The purpose of presenting information to the management of the enterprise is determined.

2. The level of management that needs the information contained in the management report is determined.

3. The subdivision of the enterprise for which the management report is prepared is determined.

4. A list of indicators is formed that fully and objectively meet the management's requirements for information.

5 . Calculate indicators and include them in the management report.

The following types of management reports are distinguished in the economic literature:

- analytical reports. The information contained in these reports, opens a causal connection of results of work of the organization in separate directions of activity. At drawing up of analytical reports influence of external and internal factors of development of the enterprise in modern conditions is considered. These reports are necessary for disclosure of favorable opportunities and reserves for improvement of activity, leveling of risks and danger of efficiency reduction. They are formed at the request of management and contain information on the causes and consequences of the results of certain areas of activity, for example, in determining the causes of changes in the level of profitability and sales in various sectors of the market, in analyzing the use of production facilities, in assessing the causes of overspending or saving resources, etc.;

- topical reports. These reports reflect information on the volume of production and sales, the degree of fulfilment of orders received, material, labor and financial resource consumption, the amount of assets and liabilities, and other indicators controlled by the responsibility Centre. Thematic reports are provided as deviations occur, at any time. They provide information to the average management level on a monthly or quarterly basis;

- comprehensive reports are designed to characterize the activities of the entire organization and are generated based on the results of the work performed at intervals ranging from weekly to annual. They contain the following information: execution of plans and use of resources for the period, the structure of income and expenses, execution of cost estimates, profitability, cash flow, the amount of liabilities. Comprehensive reports are prepared for senior management and provide the basis for strategic decisions.

One of the main problems arising in determining the format of internal management reporting is the establishment of the number of indicators included in the reporting and affecting the visibility and comprehensibility of the information provided in these reports. In an effort to make reporting as analytical as possible, it is possible to overload it with too many indicators, which significantly reduces its visibility. To solve the problem of increasing analyticity and visibility of information contained in the internal reporting, it is necessary to develop a system of indicators that provides a comprehensive description of the enterprise's activities in terms of disclosure of information contained in the relevant elements of reporting.

When developing a system of indicators of internal management reporting on a particular object, information about which is disclosed using these indicators, should be kept a certain algorithm.

The first stage is to develop a system of real indicators that comprehensively characterize the whole object, disclosing information about its components. Such indicators include indicators that characterize the presence, movement and condition of the object and its parts.

The second stage involves the development of a system of reference information, which is necessary in the calculation of abstract indicators, in particular, indicators that characterize the results of activity, production factors, the state of the external environment of the enterprise.

At the third stage abstract indicators are developed, which complement the information about the object and characterize the presence, movement, structure, condition, efficiency of the object and its parts.

For acceptance of administrative decisions terms of granting of administrative reports and the period of realization of the accepted decisions should be considered. In this connection, the issues of formation and submission of information and availability of the management reporting format become particularly relevant.

Internal management reports should contain qualitative and quantitative indicators, which will facilitate the adoption of reasonable effective management decisions [27]. Thus on the basis of the information which is contained in such reports, interested users should be able to open and diagnose the reasons which have caused this or that value of indicators, and to reveal deviations from the established standard or planned indicators and their reasons.

In order to collect information and substantiate the volume of capital investments related to modernization, reconstruction and new construction of reclamation systems, as well as reclamation works, we believe it is necessary to apply an internal management report, which includes the following indicators (Table 5)

**Table5.** Main directions and estimated volume of capital investments in reclamation works

| Indicators | Quantitative value / or explanatory text |
|---|---|
| Availability of reclaimed land | 736 hectares |
| Availability of reclamation systems and structures (it should be emphasized) | - surface watering machines and plants<br>- stationary pumping units<br>- mobile pumping units<br>- sewer wipers<br>- reclamation mowers, etc. |
| Main directions of use of reclaimed land (to emphasize) | 1. Feed production.<br>2. Grain production.<br>3. Technical crops, etc. |
| Estimated area of reclaimed land after investment | 1104 ha |
| Proposed directions of use of new areas of reclaimed lands (it should be emphasized) | 1. Feed production .<br>2. Grain production .<br>3. Technical crops<br>4. Vegetable growing and others, |
| Volume of funds required for modernization, reconstruction and new construction of reclamation systems | 4543 thou rubles. |
| Estimated annual production volume on additional reclaimed land | 3510 thou rubles. |
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Based on the report's data, it is possible to preliminarily estimate the need for financing, the volume of proposed reclamation works and the volume of production on reclaimed land.

We consider it necessary to propose an internal management report to be used in agricultural formations, which will reflect all sources of financing for reclamation works in comparison with planned indicators with the fact (Table 6).

**Table 6.** Sources of financing for reclamation works, thousand rubles

| Sources of financing | Plan | Fact |
|---|---|---|
| Own . | 516 | 408 |
| The outside: | 5229 | 4135 |
| - grants payable on a non-reimbursable basis | 3660 | 2895 |
| - cash borrowed funds (loans, borrowings), | 523 | 413 |
| - investor funds | 1046 | 827 |

Sources of financing for reclamation work include:

1) own funds of agricultural organizations;

2) external funds, which include:

- targeted financing from budgets of different levels (federal, regional, local) and charitable contributions of different legal entities and individuals;

- borrowed funds represented by loans and borrowings;

- investments of legal entities and individuals interested in implementing the investment project.

When assessing the efficiency of reclamation works, commercial and public aspects should be taken into account. Commercial efficiency of reclamation investment projects is assessed from the point of view of the agricultural producer as the sole participant of the project.

Table 7 shows the form of the internal management report, which contains the main indicators to assess the economic efficiency of meliorative work.

**Table 7.** Measuring economic efficiency of reclamation works

| Indicators | Before investing in reclamation works | After the investment in reclamation works has been made |
|---|---|---|
| Increase in production received from reclaimed lands, thousand rubles. | 731.2 | 2340 |
| Annual (quarterly, monthly) amount of costs associated with the operation of land reclamation networks, thousand rubles. | 402 | 1122 |
| Volume of capital investments related to reclamation works, thous. rub. | - | 3744 |
| Net additional income, thous.rub. | - | 779.7 |
| Payback period of investments in reclamation works, years | - | 6 |
| Ratio of efficiency of investments in reclamation works | - | 0.17 |

The public efficiency of meliorative investment projects can be seen from the point of view of society. At the same time, the public efficiency is assessed for all projects.

Calculating the economic efficiency it is necessary to apply economic (public) prices, which reflect the public value of manufactured products and resources consumed in the free market conditions. A distinctive feature of public prices from the market is that they do not include taxes, duties, subsidies and other transfer payments, which are associated with the presence of monopolies, but at the same time take into account external effects and public benefits.

Therefore, when calculating public efficiency, economic prices of products, works and services should be determined at the level of market sales prices, except for excise duties, customs duties and fees, and labor resources should be estimated based on the average wage prevailing in the region increased by the amount of insurance premiums.

Public efficiency of investments in reclamation works is expressed by social, economic and environmental results.

Socio-economic result is expressed in the form of cost savings achieved in the use of labor resources and health protection of workers of the enterprise [28].

Ecological and economic result is determined by cost estimation of damage, which will be prevented as a result of investments in reclamation works (Fig. 4).

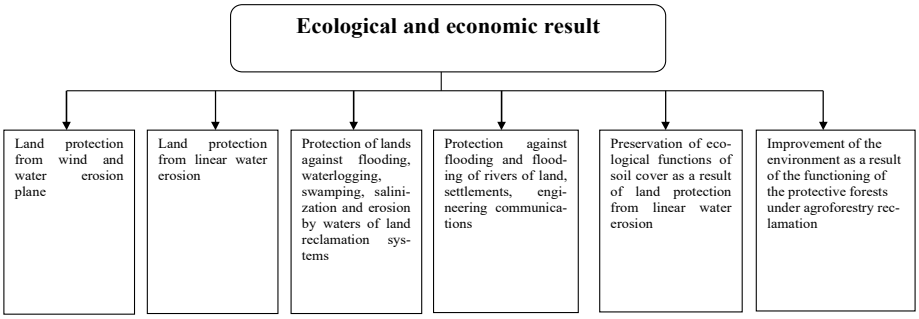


**Fig. 4.** Ecological and economic result of reclamation works.

Socio-economic result of reclamation works is determined by the following indicators:

- increase in the employed population, reduction of unemployment benefits payments and increase in insurance contributions to the budget;
- decrease in payments to the population from the Social Insurance Fund and lower health care costs as a result of protection of settlements from flooding and inundation;
- Decrease in the amount of benefits for temporary disability of the population as a result of flooding and flood waters of settlements.

Ecological and economic result of reclamation works is determined by the following indicators:

- cost evaluation of the environmental and economic result achieved by using animal runoff for irrigation of agricultural crops
- the cost of the fertile soil layer, which is increased annually as a result of land reclamation.

To characterize the production technological process of land reclamation, we consider it necessary to propose the following internal management report for use (Table 8).

The information and metrics contained in internal management reporting may vary according to the information needs of interested users. By comparing information about the various elements of internal reporting among themselves and with information about the external environment, it is possible to more accurately assess the activities of both the enterprise as a whole and its structural units. And as a consequence, to make informed managerial decisions for the purpose of increase of efficiency of functioning of the enterprise in the future.

**Table 8.** Indicators characterizing the production and technological process of land reclamation activities

| Indicator | Meanings or explanatory text |
|---|---|
| Presence of breakdowns in agricultural | No breakdowns in agricultural machinery |

| | |
|---|---|
| machinery and equipment | and equipment |
| Standard application of organic and mineral fertilizers | Organic and mineral fertilizers are applied in accordance with the regulations |
| Compliance of field work and harvesting with the phases of plant development | Field work and harvesting are carried out in accordance with the phases of crop development |
| The presence of an excess of resource consumption over the established norms | Resource consumption does not exceed established norms |
| Loss of working time caused by extraordinary circumstances | No loss of working time caused by extraordinary circumstances |
| Impact of diseases and pests on plant growth and development | Diseases and pests have no significant impact on plant growth and development |
| Breakdown of one or more reclamation systems and structures during the vegetation period | Reclamation systems and facilities are functioning as usual |

## 4 Discussion

In today's environment for effective planning and making informed managerial decisions, it is becoming increasingly important to provide management with complete and accurate information on the financial and economic condition of the enterprise and prospects for its further development in a timely manner. Specifics of agricultural production, in particular, the conduct of several types of activities, seasonal nature of production, the impact of natural and biological factors, have an impact on the processing, analysis and forecasting of indicators characterizing the activities of the enterprise.

In this regard, for the rapid and qualitative management of large and medium-sized organizations need the use of current software products and information systems, including the formation of internal management reports on land reclamation activities.

The process of automating the formation of internal management reports includes the following four main stages. The first stage describes the general concept of formation of management reports, defines goals and objectives. At the second stage, the design of the system of formation of management reports is carried out, the financial structure of the organization is developed, all business operations that are carried out by the organization are determined, its functions and functional reports are defined. At the third stage the automation system is chosen, the software product is defined. At the fourth stage implementation and adjustment of the system is carried out, participants of the process are trained, instructions for executors and forms of reports are developed, actual data are adjusted, economic operations are planned, approved reports are fixed, the plan-fact analysis is formed and deviations are revealed, reports are corrected and indicators are analyzed.

Before automating the formation of management reports, it is necessary to implement a competent management accounting system. The management accounting system involves identifying reserves for cost reduction, determining the real structure of income and expenses, planning the flow of cash and material flows, assessing indicators, liquidity, solvency, financial stability and profitability.

At this stage, the composition and periodicity of filling in accounting documents is determined, users of information are identified, and reporting forms and articles are developed.

The application of information technologies in the process of management reporting involves the functioning of an effectively built system of control over the achievement of planned indicators. This system, in addition to the timely submission of reporting data and the creation of reports, involves the analysis of identified deviations.

By analyzing the deviations identified, interested users make informed managerial decisions.

It is important to determine from which primary documentation data should be taken for reporting. It is also necessary to reveal interrelation of indicators in all reporting forms and clearly organize document circulation in the planning process. At the same time, it should be taken into account that the reporting system uses data provided by the enterprise accounting department.

At automation of formation of internal administrative reports it is necessary to use the software products possessing the following basic characteristics:

1. The program should support the maintenance of analytical accounting for expenses, departments, products, markets, projects.
2. The program should contain possibility of planning and the account of expenses on places of their occurrence and the responsibility centers.
3. The program should contain possibility of automatic tracing of document circulation.
4. The program should contain possibility of scenario planning and support mechanisms allowing to compare scenarios among themselves.
5. Maintenance of the information safety consisting in restriction of access to a database to various users and differentiation of access in a cut of accounts of incomes and expenses, the sales markets, let out products, etc.
6. The program should have a simple and user-friendly interface.
7. The program must be able to generate and transmit reports over the Internet.

For formation of internal management reporting, revealing deviations from planned indicators and the reasons influencing performance of plans, it is necessary to apply complex system of automation at which use of the information is entered once and there is no necessity for reconciliation of data of various systems among themselves.

The cost-effectiveness of the introduction of information technology can be measured through direct and indirect indicators.

At calculation of direct indicators define expenses for formation of administrative reports without application of software products and with use of the automated information processing.

Indirect indicators allowing to estimate efficiency of introduction of information technologies can be referred to:

- timely receipt of relevant information;
- increase in efficiency and flexibility of planning;
- improvement of the qualification level of personnel;
- acceleration of report generation and submission;
- a significant reduction in the number of errors;
- increase in manageability of the enterprise.

## 5 Conclusions

Thus, the approach proposed by the authors to the formation of internal management reporting, which contains indicators of the efficiency of reclamation work, allows to form a system of accounting and analytical information that allows to solve organizational, economic and production problems arising in the process of managing the enterprise. The system of indicators contained in the developed formats of management reporting is a tool that characterizes the effectiveness of management.

The accounting and analytical support of formation of management reporting assumes

- the rationale for the goals and objectives to be achieved through the information contained in internal management reporting;

- identification of sources of information on the basis of which the reporting is supposed to be generated;
- identification of the means of presenting the results of financial and economic activities;
- Structuring of various models with which it is possible to characterize activity of the enterprise as a whole and separate structural divisions ;
- Use of the information contained in the management reporting for estimation of financial and economic activity of the enterprise;
- estimation of influence of internal and external factors on change of financial and economic activity of the enterprise;
- control over the achievement of planned indicators.

For reasonable planning of indicators contained in the internal reporting, comparing them with actually obtained results, analysis of the impact of changes in planned indicators on the financial condition of the enterprise, it is necessary to apply information technology in the formation of management reporting. The automated system allows to create at the enterprise the general information environment necessary for acceptance of operative and reasonable administrative decisions, promotes increase of predictability and transparency of financial streams, clear definition of zones of financial responsibility, formation of objective information base.

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