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**LABOR RATIONING AS A FACTOR OF INCREASING LABOR
PRODUCTIVITY**

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Abstract

The article discusses the issues of labor rationing and organization on the example of agricultural enterprises of the Omsk region, located in various natural and climatic management zones within the research theme of the Ministry of Agriculture and Food in the Omsk region. It presents the survey results of the established practice of labor rationing in the industry of crop production at the field mechanized works to assess the validity of used labor standards. The authors monitor the editions of reference and normative documentation related to the regulation of labor processes in the branches of agriculture by types of work, and methodological materials on the definition of labor standards and norms used in the work on labor regulation in the organizations under study. The research uses the calculation and experimental method of labor rationing, which involves timekeeping observations of labor processes with their breakdown into labor methods and actions. Researchers show the importance of considering the entire set of factors in measuring labor costs. The article also presents the results of the observations which revealed shortcomings in the organization of labor processes in terms of its rationalization leading to an increase in non-productive losses of working time, unreasonableness of the established labor standards in enterprises, affects the productivity of performers, as well as the results of the enterprise as a whole. There is an assessment of possible ways to eliminate the identified problems. The authors show the directions of rationalization of labor regulation processes organization in agricultural enterprises.

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Keywords: Business process automation, labor rationing, labor productivity, labor standards



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1. Introduction

The efficiency of production processes depends on many factors, the key of which is labor productivity. Thus labor productivity, in its turn, depends on a level of automation and mechanization of processes, on qualification of the personnel, on a sphere of the enterprise activity and many other aspects of the labor organization which have standard forming character. In this regard, labor productivity is a consequence of the quality of its rationing.

The transition from the state economy to the market economy entailed the transformation of the management structure and labor standardization system of enterprises (Lapteva & Zakharova, 2017). Labor rationing functions shifted to the sphere of economic entities that lacked specialists-rationers specially trained for this purpose. In this connection, the enterprises rationed labor according to the normative and methodical materials prepared in the period of the USSR. Due to the appearance of new types of equipment, new professions in the period of "dawn" of the Russian economy, labor rationing has become an urgent need in the activities of enterprises. This problem is particularly acute in agricultural organizations.

In modern economic conditions of management, labor rationing as a measure of remuneration of labor is one of the necessary elements of the economic mechanism of an efficiently functioning enterprise. The objectively established working hours for the work performance in production help to establish reasonable labor standards, thus controlling the production process flow, rationalizing the processes of labor division and cooperation, labor placement, organization and maintenance of workplaces and minimizing non-productive losses of working time (Krymov et al., 2017; Swinnerton & Schoepfle, 1994). Scientifically grounded labor standards contribute to wage differentiation, allow planning production processes. This leads to an increase in labor productivity and, as a result, an increase in profitability of an agricultural organization.

The necessity of labor rationing in crop production is also relevant because the labor standards in various natural and climatic conditions of management depends on norm-forming factors associated with the quality of soil cover, topographic features and, accordingly, the system of agriculture.

2. Problem Statement

The decline in the efficiency of agricultural production in many enterprises of the Omsk region requires managers to seek ways of reducing production costs and, above all, by increasing productivity and encouraging employees to work more efficiently.

Reduction of costs is possible due to reduction of non-productive losses in working time, which are identified in the process of rationing through observation of the technological process, which ultimate goal is to establish scientifically sound norms and standards of labor (Kulkova, 2015; Svechnikova, 2019).

During the Soviet period, there was a large number of methodological developments in the field of labor rationing, normative acts and regulatory reference materials reflecting the features of the planned economy, and actively used by enterprises in their activities. Many enterprises still use them. However,

they are significantly outdated. The government regulated the labor rationing system through the creation and implementation of standard industry and regional labor standards for various types of work in agriculture until 2005. At the current stage of economic development, activities related to the issues of organization, rationing and remuneration of labor belong to the competence of economic entities. This is an undeniably positive aspect, but a number of management functions in this area need a state level control. This concerns the creation of methodological provisions for the design of a labor organization system when creating new enterprises, the establishment of inter-sectoral labor standards, coordination of scientific research related to the problems of labor relations (Sklyarevskaya, 2012).

On the territory of the Russian Federation, there are currently several research and consulting organizations providing services in the field of organization, rationing and remuneration of labor (LLC Central Bureau of Labor Standards, Moscow; LLC Alrino, Tomsk; LLC "Format-Center", Yekaterinburg, etc.). The Omsk region has accumulated extensive scientific and practical experience in organizing and regulating labor in agricultural production based on the research of scientists from the Omsk Agricultural Institute named after S.M. Kirov, performed during 1930-2000. The Siberian Research Institute of Agriculture made a great contribution to the development of this sphere. These works resulted in the developed methodical regulations on development of regulations for labor and resource costs in crop production across natural and climatic zones of the Omsk region. The owners of the region's enterprises still use many developments by Omsk scientists. The currently existing normative and reference materials, standard collections of norms and standards contain norms defined for various organizational, technical and natural conditions that are constantly changing. The last decade has seen changes in the field of technical equipment in agriculture: the production uses advanced machinery and multifunctional machines to minimize the resources used, often imported. In addition, there are improvements in technological and organizational processes in the production of agricultural products. However, most regional enterprises use regulatory directories that do not contain data for setting labor standards in renovated conditions and for new equipment. Consequently, labor standards are tentative and usually overestimate, which leads to failure to meet established production targets and creating conflict situations in the organization.

Thus, the existing regulatory base of agricultural enterprises in the Omsk region does not fully correspond to the modern level of technology, techniques, practices and methods of labor organization, and the existing organizations that provide services for the labor rationing, cover a limited number of subjects.

All the above mentioned indicates the necessity to provide the specialists of agricultural enterprises of the region with the appropriate methodological recommendations on the labor rationing and organization.

3. Research Questions

The notion of labor rationing was put into operation by the Regulation on the organization of labor rationing in the national economy, approved by the Decree of the USSR State Committee of Labor and the All-Union Central Council of Trade Unions Secretariat dated June 19, 1986 No. 226 / P-61, according to which rationing is considered as “a function of production management, including the determination of

the necessary labor costs (time) for the performance of work (production of a unit of production) by individual workers (teams) and the establishment on this basis of labor standards ” (Goskomtrud, 1986).

GOST 19605-74 “Labor organization. Basic concept. Terms and definitions” defines labor rationing as “establishment of cost measures for the production of a production unit or production output per unit of time, performance of a given volume of work or service of production facilities under certain organizational and technical conditions” (Federal Statistic Service, 1974).

There are a number of researchers in the field of labor rationing, who interpret this process depending on the goals and objectives of research. So, some of them consider rationing as “objectively necessary activity to streamline the labor process, organizing, regulating and stabilizing the socio-technical system of an enterprise”, others consider rationing as “a type of enterprise management activity aimed at establishing optimal relationships between costs and labor results”, the third consider rationing as “establishment of normative expenses of work as norms of time for performance of certain works or production norms per unit of time” (Labor Code, 2001; Redikultseva, 2014; Samoilov, 2004; Stukach et al., 2014; Stukach et al., 2017; Wilkinson & Hughes, 2000).

Summarizing the existing approaches to the definition of this process, we propose to interpret the labor rationing as an element of the system of scientific work organization based on the regulatory framework, consisting of a set of techniques and methods to establish a scientifically based measure of labor costs of an employee to perform a unit of work or create a unit of production in specific organizational, technical and natural conditions of management, considering the applied technology of production.

The result of the rationing process is a developed array of norms and standards of labor used by an entrepreneur as a measure of employees' labor to determine the level of remuneration for his labor (Veselovsky & Abrashkin, 2012). Thus, it is possible to use the labor standard in different modifications, depending on their field of application. For example, the time norm is the cost of working time for the production of a unit or the performance of any operation, work reception; the production norm is the volume of production or work, services to be performed by one or a group of workers per unit of working time; the norm service is the number of production facilities serviced per unit of working time, the number norm is the number of workers required to perform a given volume of work, etc.

In contrast to labor standards, labor regulations are established for standard, average conditions and used for a long time without revision.

In the process of labor rationing in crop production it is necessary to identify and systematize all the norm-forming factors - factors that affect the amount of labor costs and, consequently, the labor standard. The higher consideration of factors of norm formation resulted in the more precise determination of the labor standard. The factors are usually distinguished by natural, organizational and technological, technical and socio-economic factors.

When rationing field mechanized work to natural factors include the type and mechanical composition of the soil field, the topography of the field surface and its configuration, the length of the race, the level of rockiness, obstacles inside the field. Traction, energy, design and performance characteristics of tractors and agricultural machinery and mechanisms are technical factors of norm formation. Organizational and technological factors are the technology of the operation, the duration of

the shift time, the method and allowed speed of the tractor unit, the seed rate, the depth of treatment, etc. Socio-economic factors include the level of qualification and experience of the performer, work and rest schedule, etc.

4. Purpose of the Study

The purpose of this scientific study was to study and generalize the conceptual basis of labor standardization, considering the regulatory and legal aspects of the study of the current state and established practice of labor rationing and organization in agricultural enterprises of various natural and climatic zones of the Omsk region on the materials of accounting and interviewing specialists of organizations, as well as to analyze the validity of used norms and regulations in the implementation of field mechanized work and, thus, to develop recommendations for the organization and implementation of labor rationing, considering the existing level of technical equipment, technologies used in production and management processes, qualification of workers, modern trends in the field of automation and digitalization of business processes in the agricultural sector of the Omsk region

5. Research Methods

As part of the study to analyze the feasibility of the used labor standards in crop production, we have conducted labor rationing in a number of technological operations of field mechanized work. To perform the rationing process, we chose the analytical and research method, which implies timekeeping observations of the technological process broken down into labor operations and working methods. Timekeeping, as a method of measuring the cost of working time to perform operational work that the employee has to perform at the workplace, according to the requirements of technology, provides the use of the data obtained to monitor the performance of employees, to identify non-productive losses of working time at each stage of the production process.

For timekeeping observation the rate-fixer used a clock with a stopwatch and an observation sheet, which front side reflects the place of observation, the type of field work, information about the performer, the characteristics of the machine and tractor unit in all parameters and the whole set of norm-forming factors. In the working part of the observation sheet, the observing rate-fixer recorded the duration of work operations and, if necessary, individual work steps. Observation starts from the beginning of the working day and determines the actual time spent on the preparatory and concluding work, as well as during the working shift costs of maintenance of the unit and the workplace because in a rational balance of working hours of the shift the actual data include these labor costs as an average value for the number of observations. The rest time and personal needs of the performer are included in the balance of working hours according to the norms as a percentage of the shift time.

In the process of work, it is important to correctly define fixing points by the boundaries of work operations and methods. This will enable the most accurate determination of time standards for individual labor activities. Observation is carried out at least three times to ensure the objectivity of the assessment. When fixing the current time in the observation sheet, the rate-fixer records the hour, minutes, and seconds, because some work methods last several seconds and are repeated many times. Besides

observation of the performer's work, the rate-fixer determines the average speed of the unit while performing the operative work and also calculates the fuel consumption. A number of farms in the Omsk region use modern technology with motion sensors, and there is no need to measure the speed.

After several observations, the rate-fixer processed the observation sheets: he encrypts each of the cost elements of working time in accordance with the generally accepted classification, then summarized the costs of the same name and recorded in a summary table on the calculation page of the observation sheet. Special attention is paid to the duration of operational time and time spent on non-productive types of work (machinery repair, waiting for machines to unload grain, random work, etc.). The data of several observations are placed in a separate summary table, the average indicators of time spent on the elements are displayed and compared with the indicators of rational balance of shift working time. Then there is a calculation of elementary costs per 1 hectare. Then, it calculates the production norm for the studied type of work on this unit by dividing the time spent on operational work per shift according to observations by the standard cost of this time per hectare. For convenience and effectiveness, the data of the observation sheets were entered into the Microsoft office Excel program. When processing the results obtained and calculating output rates in this program, the spreadsheets are interconnected and calculations are performed automatically.

6. Findings

Researchers conducted a study of the current state and practice of labor rationing in crop production directly in agricultural enterprises of the Omsk region. The Ministry of Agriculture and Food of Omsk region determined that it is necessary to examine at least ten farms in each natural and climatic zone. Given that Omsk region is located in four climatic zones, the survey covered 40 enterprises. Previously, they developed a questionnaire to survey managers and specialists of enterprises on the labor organization and rationing. The survey data showed that 87% of farms keep records of working hours by main types of work, but rationing in the crop production sector receives the most attention. At the same time, they use reference books of standard regulations by types of work in crop production issued in 1978, 1992 and 2000, and in JSC Solntsevo of Isilkulsky district they use regulatory and reference materials of 2008 apart from the mentioned publications. Among the surveyed enterprises, only seven have labor standards developed by the farm. In organizations, it is usually the economist of the enterprise or the foreman of the tractor and field brigade who is responsible for rationing. Norms of production are updated in case of changes in working conditions in 75% of the surveyed farms, 27% of respondents noted that they update annually. If the enterprise buys new equipment, it sets production standards in the field experimentally, based on the factory characteristics of the equipment. We should note that for over 20 years the enterprises has not carried out field passportization and, as a result, determining the norms of labor in the field work does not consider the technological properties of fields, which affects the quality of their determination.

To analyze the feasibility of labor standards used in the practice of farms, there were timekeeping observations of field mechanized work on the harvesting of grain crops and the preparation of hay of perennial grasses. The observation sheets reflected the whole set of normative factors and was performed in three repetitions in each of the farms. They considered the working conditions and work organization.

Thus, in the majority of farms the shift duration was 10-12 hours, sometimes it was longer if the weather conditions made it necessary. As a rule, mowing time started after dewdrop, so the preparatory and final time at the beginning of the shift reflected mainly the labor costs for preparing the equipment for work and, according to actual measurements, was from 110 to 235 minutes. After the end of the work at the end of the shift, the equipment stayed in the field, so the preparatory and final time was not included in the cost of moving to the field from the farm. The technology of work and organization of work in farms differed by the methods of harvesting (direct and separate combining), the methods of movement of the unit (rutting, race with different types of turns), the number of meal breaks. All these aspects are due to a number of objective reasons and the organization of processes adopted in the farm. Naturally, all these factors are reflected in the time spent on each type of work.

Timekeeping revealed unproductive loss of working time by choosing irrational ways to organize harvesting processes. Thus, for example, one farm in the steppe zone with fields with a length of 2400 m and a width of 2500m, used the rutting trip method for separate harvesting on the mowing time of spring wheat. Since there were six units working on the field, moving each of them from one race to another took from 6 to 9 minutes, which is an average of 2.5-3 minutes per 1 ha. At the same time, the norm of production for mowing time in the farm was set at 30 hectares for an 8-hour shift. It was 35 ha when calculating the output rate from the observations. Thus, the established labor standard raises doubts as to its validity. When picking up and threshing swaths, the pick-up movement was the same, the hopper was unloaded as it filled. In this case, the combine stops, the operator gives a signal and waits for the vehicle to be unloaded. Waiting for the vehicle lasts from 2 to 6 minutes, as the vehicles are scattered along the edges of the field and drive up to the combine after giving a signal to fill the bunker. If there is a shortage of cars, the time to wait for them increases. A significant amount of unproductive losses of working time, apart from the impact on the value of the labor standard, increase in fuel consumption, prolongs the duration of harvesting works and leads to harvest losses. In addition, the improperly set production rate affects the remuneration of the employee and, consequently, the expenses of the enterprise for wages.

Another enterprise with similar conditions used a racing (shuttle) move, in which moving from race to race was 20-30 seconds, and the time spent of moving on 1 hectare was 0.98 minutes. That is, the difference in time spent on this employment per hectare is 2 minutes. The pick-up bunker was unloaded at the edge of the field at the end of the race, where trucks were waiting. Such organization of labor process minimizes the loss of time for moving and waiting. The production rate in this farm corresponds to the one calculated as a result of timekeeping observation.

The results of experimental studies suggest that if in the organization of harvesting work the first farm used a shuttle method of movement of aggregates with the unloading of grain from the hopper at the end of the race, with all other things being equal, the proposed reduction in travel time and waiting for machines will increase the replacement rate of production by 5 hectares. Such an approach will lead to the reduction of harvesting time by at least 2 days, which means reduction of grain losses by an average of 56 c, or 44 thousand rubles. In addition, optimization of the harvesting process will contribute to the reduction of fuel and lubricants consumption by vehicles serving grain harvesting complexes, improve the quality of the harvesting process, increase productivity of crop production workers and, as a result, increase the profitability of agricultural products.

7. Conclusion

The results of the research allow us to conclude that the current practice of establishing labor standards in agricultural enterprises of the Omsk region revealed some deviations of the norms established in them from those obtained by calculation and experimental methods. In most cases, this is a reflection of the existing labor organization or ways of establishing labor standards that do not consider all the necessary regulatory factors. Such an approach to labor organization leads to the loss of working time and productivity of the employee. In this regard, it becomes obvious that the importance of labor rationing processes in modern economic conditions is increasing, as scientifically grounded labor standards can reduce unproductive losses of working time and material and monetary costs.

It is necessary to organize the normalization of labor in enterprises from the formation of an internal enterprise information base, including regulatory, methodological and reference material, the creation of an internal organizational structure for managing the processes of rationing, selection and/or training of specialists in the field of labor rationing. Based on modern trends in the digitalization of economic processes, and to increase productivity of rate-fixers, it is possible to use specialized software products. The revision of labor standards is necessary in case of changes in working conditions and its organization, if there were errors in the application of regulatory materials or the establishment of labor standards, as well as the introduction of modern trends in the field of automation and digitalization of business processes. When introducing new equipment or releasing new types of products, it is necessary to introduce temporary labor standards, since it takes time to master the labor process and work out the labor process to ensure stable and quality work of new equipment and the employee.

The systematization of work on labor rationing in agricultural enterprises will allow rationalizing the processes of organizing labor in production sectors, form the necessary labor normative base, which will be revised in accordance with changing economic conditions thus giving a progressive character to the rationing processes.

The use of scientifically grounded labor standards will contribute to the optimization of the remuneration system at enterprises, increase the interest of employees in the final results of labor, which, in turn, will increase labor productivity and, as a result, the profitability of the enterprise as a whole. The stable work of the enterprise and growth of its profitability will ensure the consolidation of labor resources in rural areas.

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