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Operational Efficiency Improvement Factors of the Beet Sugar Factories in Russia.

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ABSTRACT

The paper is devoted to a substantiation of economic efficiency improvement factors in a beet sugar sub-complex. Introducing of market relations in beet sugar production much more highlights the problem of its highly effective work. According to the researches, the system in which all participating parts (sugar beet growing farms and sugar factories) would be interested in finished product to the same extent concerns their mutual economic relations. It should be economically proved and consider interests of the co-operating enterprises. Upon that, there is a necessity to develop for amalgamations of sugar beet production enterprises such the economic mechanism which would provide equal commercial opportunities for all participants of these amalgamations with different patterns of ownership. As to agricultural goods producers (sugar beet growing farms) first of all there should be considered their fitting with resources and a complex of environmental conditions.

Keywords: beet sugar production, sugar beet growing farms, sugar factories, mutual economic relations of participants of the beet sugar production chain, building of equally advantageous commercial opportunities, objective and subjective factors, production factors control.

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INTRODUCTION

The substantiation of major economic efficiency improvement factors of sugar beet production is one of the central directions of a modern agricultural science. Certain complexities in studying of this problem originate at a substantiation of classification of the agricultural enterprises commercial activity factors which is insistently necessary when building equally advantageous conditions of commercial activity for them.

There is considerable enough number of the points of view on building of equally advantageous operational conditions of the enterprises (F. S. Martinkevich, A. A. Kalnynysh, V. F. Bondarev and V.V. Efremenko, and others [1]). When solving this problem some economists place a priority on provision of commercial units with necessary amount of production resources; others consider it from positions of smoothing of differences in profitableness level; the third in rates of accumulation, payment level; and the fourth consider that it is necessary to perceive the equalization not as bringing of operation parameters of the enterprises to uniform level, but building of approximately equal material and financial starting opportunities for extended reproduction conducted by the set rates.

PROCEDURE

Building of equally advantageous conditions for economic activities of the partners in "the beet sugar production chain" is in many respects connected to production factors control. The considerable attention in the published researches on the considered problem is given to classification of these factors [1]. As is known, production factors fall into two groups: objective and subjective. In turn the first group of factors is subdivided to natural and economic.

The natural factors are the most resistant in comparison with economic from the group of objective factors. They actually are not exposed to changes during a long run, and such factors as a topography, temperature and light status, are not regulated at all. But if to delve deeper into these factors many of the so-called objective factors have a subjective basis in our opinion.

When solving the problem of mutual relations between the enterprises-participants necessity of building of equally advantageous commercial opportunities because of essential differences in the soil quality, topography, material and manpower resource endowment, specialization and concentration of beet production level, remoteness of sugar beet growing farms from a sugar factory, transportation routes coverage, qualification of general trades workers, level of application of scientific achievements in production, etc. should also be considered.

MAIN PART

For last 50 years sugar beet production in the world is characterized by considerable progress in an increase of yield of this crop, and increase in labor efficiency of the workers occupied in the sugar beet growing. The most various factors of business activities have influenced on formation of this positive trend. But as to Beate Zimmermann, Jurgen Zeddies, they consider that the main thing among them, perhaps, was achievements in the field of sugar beet breeding. And till 1980th years of efforts of breeding have been directed in the core to an increase of yield and enhancement of sugar beet and seeds quality. Since then the scientific and technical progress in the sugar beet growing is focused on protection of plants, mechanization and the organization of production for the purpose of considerable economy of expenses, especially in labor costs saving.

German scientists have calculated that as a whole the input of a sugar beet breeding in growth of the added cost in the course of the last 30 years annually made about 80 DM per hectare of crops. However technical optimization of a sugar beet production flow process is in the core finished to the present time. And now the further progress of productivity is generally expected from implementation of bioengineering in the beet sugar production [2].

In the XXI century the scientific and technical progress in another sugar beet farming country, England, is directed to use of genetically dressed seeds. Their application has increased up to 65 % of cultivated areas, and application of granular seeds is up to 90 % that has allowed sharply to lower application of hand

labour on sugar-beet fields. These positive changes are bound to planned use of fungicides and insecticides and the chemical control of growth and development of weeds [3].

In Northern part of Japan the sugar beet is considered as one of the most promising crops for bioethanol production. In comparison with an ordinary sugar beet production method, the system used in Japan provides reduction of power consumption by production of sugar beet seeds, decrease in fuel consumption when carrying out field work, and also a number of other measures directed on decrease of total power inputs by production of 1 l of beet sugar alcohol. Energy efficiency also has been increased due to use of high-yielding genotype seeds [4].

Relations between the agriculture and an external environment are complicated as dependence of the agriculture on natural resources and processes in the nature is great. It can have both positive, and negative environmental impact. Negative aftereffects, as a rule, result from use of industrial production means in agriculture (fertilizers, pesticides and fossil fuels) that can lead to environmental pollution, loss of wildlife habitats and biodiversity reduction. But on the other hand it is possible to create on farmlands various habitats for plants and to reduce environmental pollution caused by them. The problem of scientists is to enhance positive and to minimize negative aftereffects within the limits of economic feasibility. It is the so-called balance of stability, optimization of agricultural production system to satisfy varying economic, ecological and social environments.

The understanding of influence from a sugar beet (*Beta vulgaris*) on a circumambient is especially important as in the nature there are alternative crops which can be used for sugar production also because there exists a growing interest to potential use of those crops in the capacity of a source for production biofuel from them. Such researchers as J. Tzilivakis, K. Jaggard, K.A. Lewis, M. May, D.J. Warner have represented results of researches on evaluation of environmental impact and economic feasibility of a sugar beet production in the Great Britain. In their experiment the scientists have used 13 scenarios of a sugar beet production in this country. Scenarios differed from each other by a soil type, contents of the nutrients, applied fertilizers (anorganic and organic), means of crop protection (chemical and biological) and types of wetting applied. The evaluation included an assessment of nutrients, pesticides and energy and their influence on a circumambient. It has given the opportunity to authors to give an estimate to each scenario by a number of economic and ecological indexes.

Scenarios favorable economically also have more favorable ecological indexes, and production of a considerable part of crops in these scenarios cause the minimum damage to a circumambient [5].

During three years macedonian scientists Livija Maksimović, Jovan Babović, Marko Carić, Stanko Milić, Constantin Nicolescu have studied influence of irrigation on sugar beet production parameters. It has appeared that its productivity on irrigated plots has increased by 8,2 t/hectare, and a sugar recovery by 0,9 t/hectare because of enhancement of roots growth in vegetation. It is interesting that influence of irrigating on a sugar beet productivity varied in the different periods of research. First of all it depended on a weather environment, rainfall and air temperature. Thanks to irrigation productivity of a sugar beet can increase up to 50 %. The sugar beet does not require excessively wet soil, excess of a moisture case decrease in productivity. The greatest productivity of a sugar beet has been gained in the version with soil moisture of 60-65 % [6].

Development of molecular biology methods in the end of XX century has promoted formation of a new direction in a plant breeding including a sugar beet molecular breeding. McGrath, a geneticist from the Michigan University (USA) [7] wrote about it. Molecular breeding has allowed variability of organisms on a molecular level to study that has considerably expanded opportunities of breeding and has ensured obtaining molecular markers of genes [8]. However McGrath considers this as "assisted breeding" which methods supplement methods of classical breeding [9, 10, 11, 12].

As E.Yu. Gavrilova considers, the important factor of a production efficiency improvement of a sugar beet production is also agro-insurance which allows largely to manage risks in the Russian sugar beet growing [13], use of the USA experience on sugar beet storage in pits [14].

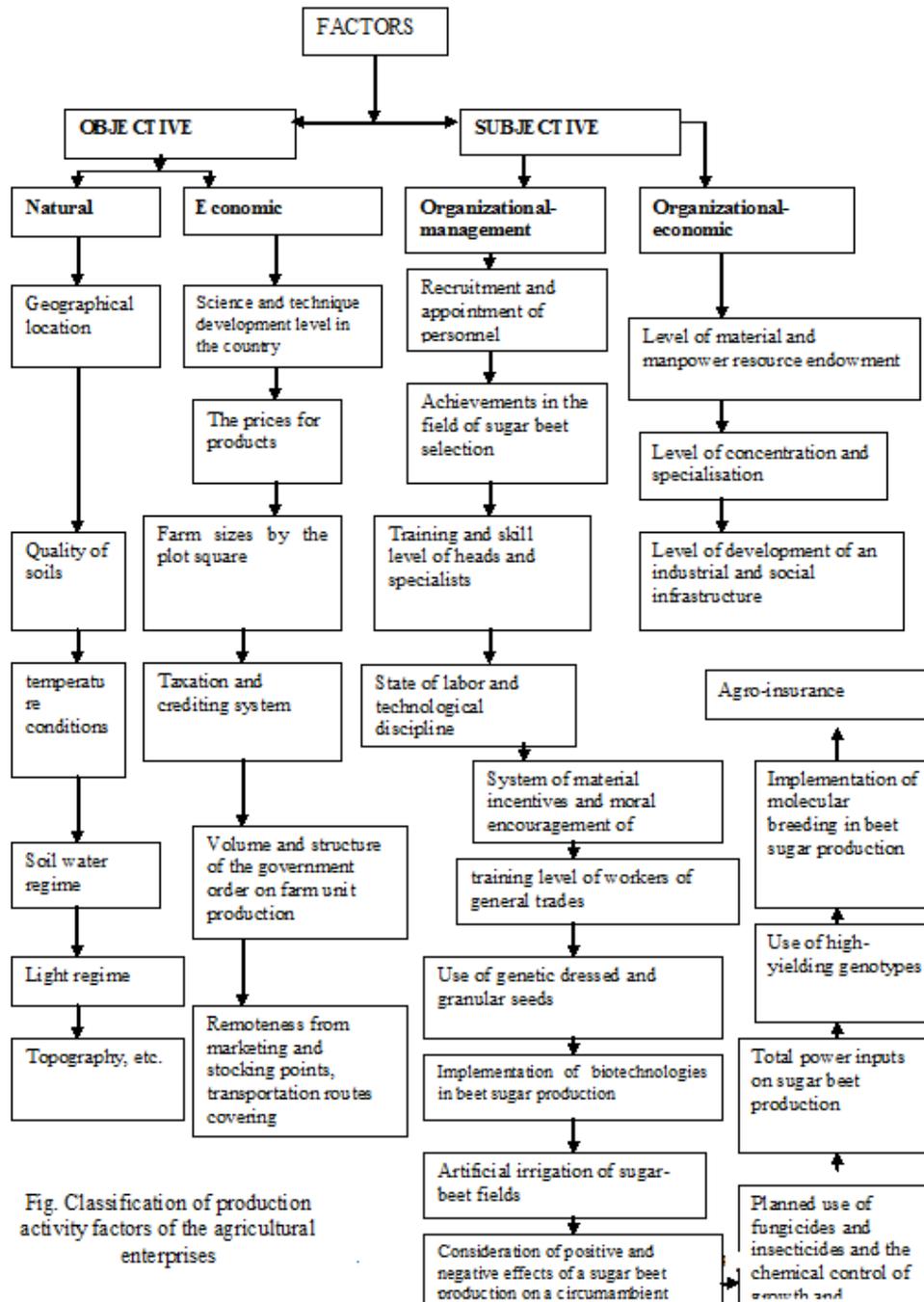


Fig. Classification of production activity factors of the agricultural enterprises

Everything that is produced on Earth is a result of human work. So, these are subjective factors. Only the amount of rainfall, a topography and so forth can be considered as the objective. Though in the course of time a soil quality in some farm units changes more and more to the best, and in others to the worst.

As practice shows, agricultural enterprises which are located in more worst conditions have also lower economic parameters of production. The enterprises with wise heads and smart specialists could build houses for their workers, and others could not manage to do so. This results in differences in labor supply of the enterprises. And the same with capital - area ratio...

This leads to decrease in rates of extended reproduction, decrease in means on consumption and accumulation funds causing insufficient rates of the social construction, unequal pay for equal work and as one of its aftereffects, reduction of planted acreage for a sugar beet.

If not to consider further differing starting conditions of entry to the market for each farming unit of a raw region of beet sugar agro-industrial amalgamation, in the near term it will already lead to excessive differentiation of a farming units development level, to economic and social losses, and breach of social justice principle.

Interest of a sugar factory in escalating of beet raw materials processing volumes also lays it under obligation to find ways to build effective business environment as farming units with low production profitability have high cost price of made products, and in many events incomes from sales of sugar beet do not cover expenses for its production or only compensate them.

Such farming units are unable to carry out sugar beet production on self-supporting principles that is necessary in the conditions of market economy. Borrowed resources in view of necessity of their payback and payment of high percentage for them, cannot solve a problem on elimination of low profitability and unprofitableness of farming units. Nevertheless at a modern level of development of agro-business industry sugar enterprises are unable to refuse from feedstock supply by these agricultural enterprises. It is caused first of all by that amounts of products made in more profitable enterprises of raw regions are not enough to satisfy requirements for raw materials. In this connection there is an objective necessity to create equal conditions of the activity promoting most effective use of resource potential of a subcomplex for all farming units of raw regions of sugar enterprises [4].

Based on the above research we will make classification of industrial activity factors for the agricultural enterprises which is shown in the figure (see above).

SUMMARY

Thus in the course of scientific discussion four basic groups of industrial activity factors for the agricultural enterprises have been defined: objective – *natural and economic*; subjective - *organizational-management and organizational-economic*.

CONCLUSIONS

For economic efficiency improvement of sugar beet production and increasing of natural yield of beet hectare the agricultural enterprises should consider the diversified factors of industrial activity. Four basic groups of factors are distinguished among them: objective – *natural and economic*; subjective - *organizational-management and organizational-economic*. The geographical location, quality of soils, temperature, water and light regimes, a topography refer to *natural factors*, etc. Scientists refer to *business factors* a level of science and engineering development in the country, the prices for products, the sizes of farming units by the plot square, taxation and crediting system, volume and structure of the government order for products of farming units, remoteness from marketing and stocking points, transportation routes covering.

The group of organizational-management factors is represented by such factors as recruitment and appointment of personnel, achievements in the field of sugar beet breeding, education and skill level of heads and specialists, a state of labour and technological discipline, system of material incentives and moral encouragement of employees, level of training of general trades workers, use of genetically dressed and granular seeds, introducing of biotechnology in beet sugar production, etc. *The group of organizational-economic factors* is represented by the level of farming units endowment by material and manpower resources, a level of concentration and specialization, a level of development of an industrial and social infrastructure. Attaining economic benefit of sugar beet production is possible if to observe these factors in a complex, in an inextricable connection with each other.

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