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AN INNOVATIVE APPROACH TO THE DESIGN OF TECHNICAL AND TECHNOLOGICAL PROCESSES OF AGRICULTURAL PRODUCTS PRODUCTION AND INCREASING THE TECHNICAL LEVEL

B.J. Khursanov
Associate Professor, Fergana Polytechnic Institute, Fergana, Uzbekistan
E-mail: b.xursanov@ferpi.uz

Abstract
The article describes the design of technical and technological processes of production of agricultural products, indicators summarizing the technical level and efficiency of new techniques and technologies and their use.

Keywords: technical process, technological process, new technique, technology, consistency, input object, output object, scientific research works.

Introduction

At the current stage of the development of the world economy, the competition in the market of agricultural machinery products is increasing, because the machinery industry is the basis of the economy - the main capital creator. Agricultural machinery and equipment, vehicles, tools and aggregates become the main capital of the economy in the course of their operation and increase the production potential of the country [1-4].

The Purpose of the Research

The indicator of the level of technology is the proportionality coefficient in the equation that connects the change of labor productivity in the technological process with the change of technological equipment. The level of technology is a characteristic of each technological process, which is characteristic of the method of production of a certain product. This property is determined by the idea of the technological process and the technical implementation of this idea. The idea of the technological process is expressed in the nature and sequence of the working and auxiliary actions of the technological process [5-9].

If in the process of improving the technological process, its main idea does not change, that is, there is a rational development of technology, the level of technology remains unchanged. This is the qualitative aspect of the technology level indicator. Quantitatively, this indicator is a generalized assessment of the effective usefulness of this type of technology from the point of view of society. The technological level of production can be evaluated by the quality of the product. The level of technology is determined by the product of living and past labor productivity and represents the overall efficiency of the technological process in terms of independent transfer of living and past labor [10-17].

Research Methods

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When evaluating the level of technology, the advantages of new technologies are not obvious at the initial stage of its implementation, even if they are more than the old technology, that is, the dynamics of process changes more clearly reflect the development perspective. The evaluation makes it possible to compare qualitatively different technological processes will give [18-26]. For example, according to the level of technology, it is possible to compare the level of improvement of the production technology of tractors and vehicles.

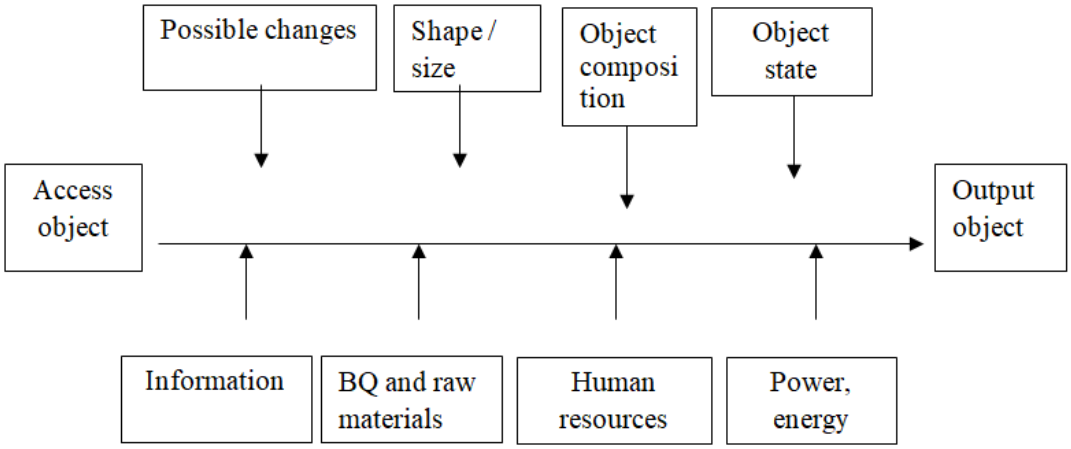

Fig. 1. Schematic form of the technological process

For this, indicators summarizing the technical level and efficiency of new techniques and technologies are used.

At the stage of research and development: responsiveness, patent purity, level of standardization and unification, research and development costs, economic efficiency, scientific intensity, design continuity, product complexity, variability, ergonomic indicators, aesthetic indicators, safety, environmental indicators.

At the production stage: productivity, speed, parameters and dimensions, management, optimal structure, optimal operation, reliability and safety; economic indicators: labor intensity, material consumption, capital intensity, basic costs, labor productivity, specific capital investments, degree of mechanization, automation [27-31].

At the stage of use: reliability, safety, stability, performance indicators, power, productivity, life cycle duration, efficiency, design, operating costs, availability of components and spare parts, serviceability, warranty.
That is, indicators of the innovative technical level of production describe the economic efficiency of measures for its technical and organizational development.

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Table 1. Indicators of technological level of production

Indicators of technological level of production	
Scientific and technical level	Production level
New product	Technological discipline
Technological efficiency	Production flow
Technological progress	Technical and energy armament
The level of development of production technological equipment	Production automation, support and re-equipment
Technical and technological level of production	

The state of production technology is the most important factor that predetermines the quality of manufactured products. Therefore, each product is the most complete and clear indicator of the development of production technology [32-39]. At the same time, technological development depends on a number of elements of production that have an active influence: formation of the equipment park; staffing; use of new materials, fuel and raw materials.

Results

The technological level is the technological cycle of production, where the person who controls the means of production performs the professional operations necessary to create the product, the technology is generally developed in the enterprise for individual products and groups of products, individual units, assemblies and spare parts can be release technology. External indicators of the level of technology include:

1. Work mechanization coefficient (Km.r), labor mechanization (Km.t) and labor intensity mechanization (Km.tr):

$$K_{m.r.} = \frac{O_m}{O}$$
$$K_{m.t.} = \frac{T_m}{T} \quad (1)$$
$$K_{m.r.} = \frac{K_{mt}}{K_{m.r.}}$$

Here:

O_m - volume of mechanized product (work);

O - total volume of work;

T_m - working time spent on mechanized work;

T - is the total time worked for a certain volume of production or work.

Automation coefficient; Share of advanced technological processes;

Accuracy factor; Proportion of production equipment; Share of products produced by progressive technological methods and ratio of work performed using progressive technologies; Specific weight of machine time in technological labor intensity; Technological discipline indicators; Unification and standardization coefficient [40-47].

The level of technology also depends on:the level of mechanization and automation of technological management, the level of technological influence of various methods (physical,

chemical, mechanical, etc.), the subject of work, the level of technological intensity of the process, the level of use of material, energy and time parameters of the technological process; from the level of technological management - the ability to change technological processes when external factors change, to achieve the highest productivity and maximum production efficiency for the highest profit, to the level of technological organization of the process (process continuity, number, optimal composition), to the level of adaptation of the technological process - the possibility of operation of the technology in accordance with this mode in combination with the existing production and environment [48-52].

We will consider the technical level and efficiency indicators of the new technology. Innovative technologies ensure the technological progress of production and largely determine the technical level and efficiency of technology [52-54].

The level of technological influence: mechanization, automation, electronicization; physical, chemical, mechanical, electronic, ion, other types of effects, level of use of computers and ABTs.

Level of technological intensity: metal cutting speed, Raw materials, materials, energy consumption; duration of the technological cycle; level of utilization of production space and equipment, etc.

The level of technological organization: a combination of technological methods; continuity of processes; the number of technological stages of processing; the number and directions of movement of material flows;

The degree of adaptation of the technological process: reliability, smoothness and safety; preservation of tools and technologies, compliance with the requirements of technical aesthetics and ergonomics. Modern technological processes are seen as economic objects. The level of development of modern technology determines the competitiveness of the enterprise in many ways and therefore has an economic impact. This effect has a different effect on each layer of the enterprise during the production process.

Summary:

According to the conducted experimental studies:

- Innovative approach is the final result of the introduction of innovation (scientific achievement) in order to meet the needs of the market (production) by changing the object of management and obtaining an economic, social, ecological, scientific-technical or other type of impact.
- The level of technological development is an important indicator of every manufacturing enterprise.
- Changes in technological processes should lead to an increase in the level of technological armament and technological development.
- The level of technological development is an indicator of the introduction of new techniques and technology and production efficiency.

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