scientifically-methodical tasks of this conception realization in practice are marked.

Soil, culture, conditions, changeability, works, adaptations, complex of machines, efficiency.

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METHOD CONSIDERING objective reasons Beet stochasticity TERMS OF WORK

AV Sydorchuk, PhD, Corresponding Member of NAAS
National Scientific Center "Institute of mechanization and electrification of agriculture"
P. Lub, Ph.D.
Lviv National Agrarian University
VS Spichak,Ph.D.
Vladimir-Volyn Agricultural College
VL Pukas, a graduate student
Podolsky State Agricultural and Technical University

Reveals the methodology taking into account the impact of the natural stochastic allowed time to fund technological operation

system of sugar beet harvesting in the relevant statistical simulations.

Foundation time stochasticity, sugar beets, hardware, simulation, performance parameters.

Formulation of the problem. Efficiency of technological systems (TS) sugar beet (ZTSB) largely depends on the consistency of quantities of technical parameters of equipment, which operates in a limited time on fund mechanized cleaning processes grown crop. This limitation is due to the biological characteristics of growth and development of sugar beet and stochastic influence agrometeorological conditions on vegetation culture and the appropriate course of mechanized processes. Accordingly, establishing statistical regularities functional parameters TS ZTSB the appropriate parameters requires the development of new methods and models that enable you to take into account the cumulative effect of its components on system performance of said TS.

Analysis of recent research made it possible to establish that the timing of field crops mechanized processes reflect as determined on the basis of [2, 7] and stochastic [5, 8] indicators. It is known [8], the timing of

the operation process of harvesting crops depend on the time of ripening and stochastic action agrometeorological conditions. Therefore, the application of methods and models that do not consider the cumulative effect of these components will not provide any objective laws of functional parameters and thus assess the effectiveness of appropriate technical equipment TC ZTSB.

The purpose of research - Disclose methods of using biological and technological systems, components agrometeorological sugar beet in its simulation model for the study of functional parameters relevant technical equipment.

Results. Ensuring the effectiveness of technical equipment TC ZTSB impossible without substantive component, and in particular the biological characteristics of ripening sugar beets, as well as the impact of agrometeorological conditions on the ground state of the field and ability to perform the corresponding operations. It is well known that the growth and development of sugar beet roots largely due agrometeorological conditions, and their yield depends on the variety, timeliness of work on mechanized cultivation, presence of pests and diseases, factors of life and so on. The variability of agrometeorological conditions during the ripening crop calendar is also a cause of variability fund of time (through the emergence rainy periods) for which you must fulfill all the workload of harvest and prevent technological losses [6]. Background of these losses is that weight gain (Δt) sugar beet roots and their sugar content continues in the autumn and it could happen before the frost (below -5oS) [3]. Then, very early stages of beginning (тpr) beet operations in which there is growth of roots, cause relatively smaller harvest and a greater risk of loss of biological (Fig. 1). On the other hand, too late periods тpr increase the likelihood of technological losses through long-term work and destruction of roots frosts.

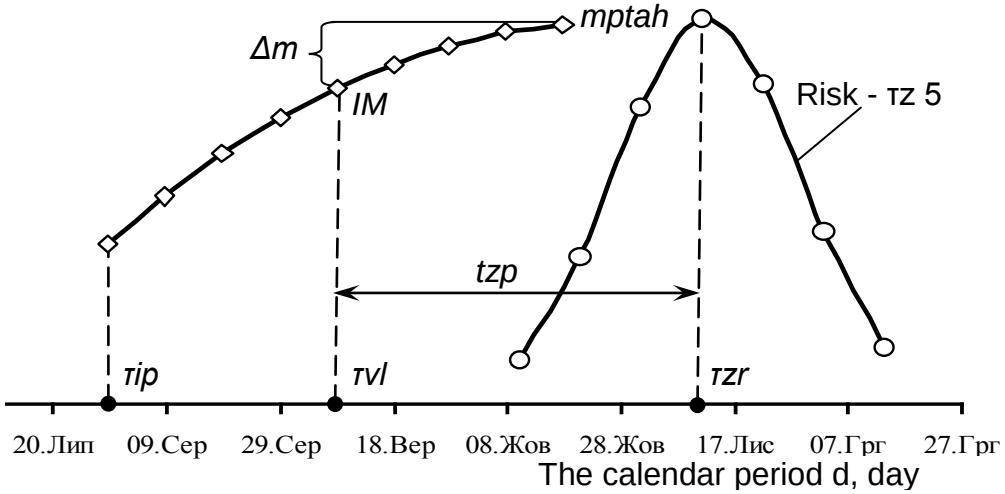


Fig. 1. Graphical interpretation method due course taking into account the stochastic terms ZTSB functioning TS: тs - the time of

sowing of sugar beet per day; тip - the start time of intense growth of the mass of roots, days; тvl - the start of mass wilting leaves culture day; тzr - the completion beet work day; тz-5 - the time of below freezing -5oS; tzp - naturally caused by the time the fund works in TS ZTSB, days; IM - current weight of roots, g; Δt - weight gain of sugar beet roots, GA

The aim of coordination beet volumes of work (production area Culture) with technical equipment parameters TS ZTSB is maximize the collection of the crop grown sugar beet and minimize process losses due to untimely. As a result of these works are functional parameters (volume of harvest, the amount of biological and technological losses) on which assess the effectiveness of technical equipment and TC ZTSB justify its parameters.

To form a knowledge base to incorporate features combined effect of the above components in TC ZTSB simulation model should formalize their properties [1]. Quantitative evaluation of biological characteristics and agrometeorological components TC ZTSB carried out on the basis of meteorological observations (observation table TLC-1) [4].

Based on the analysis of observations Vladimir-Volyn weather station on phenological phases of growth and development of sugar beet (for the 1959-1997 biennium.), Moisture content of the upper layers (0-2, 2-10 cm) Ground (for the 1952-1997 biennium.) And minimum temperatures on its surface (for the 1961-1995 biennium.) Built statistical regularities: 1) increase the mass of sugar beet roots (for calendar period within July 29 - Oct. 19) (Fig. 2); 2) time (тz-5) early frost (below -5oS) (Fig. 3); 3) the length of fine (tpp) and rainy (tnp) intervals (for calendar period from 1 September to 20 December) (Fig. 4).

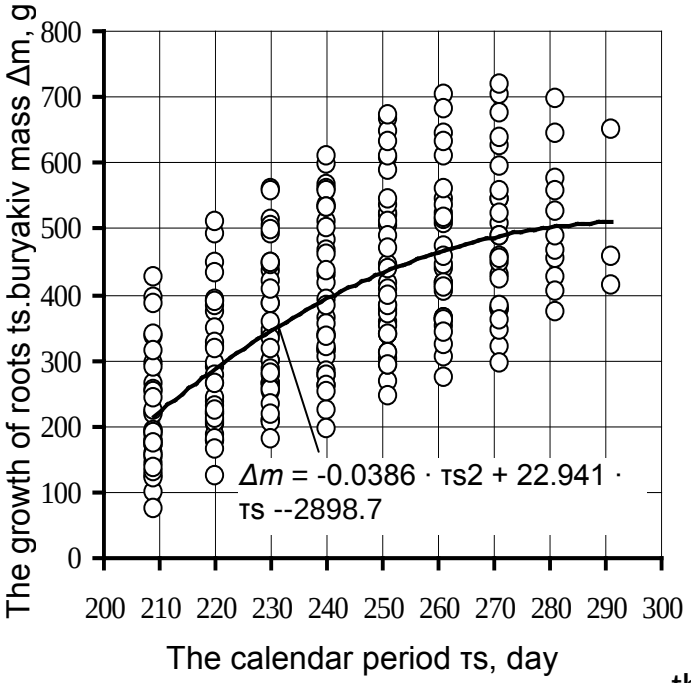


Fig. 2. The pattern of weight gain roots of sugar beets during summer and autumn

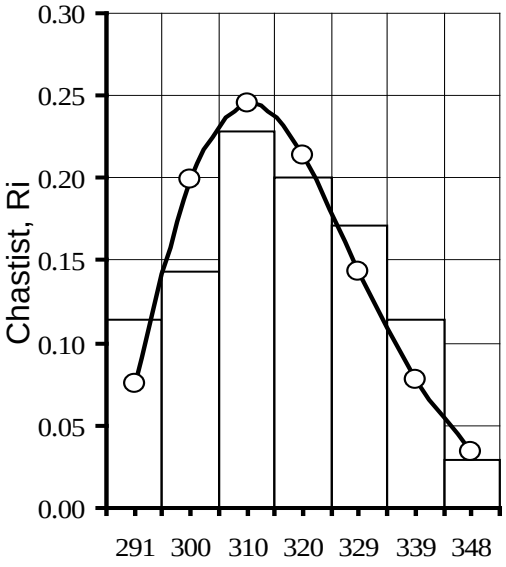
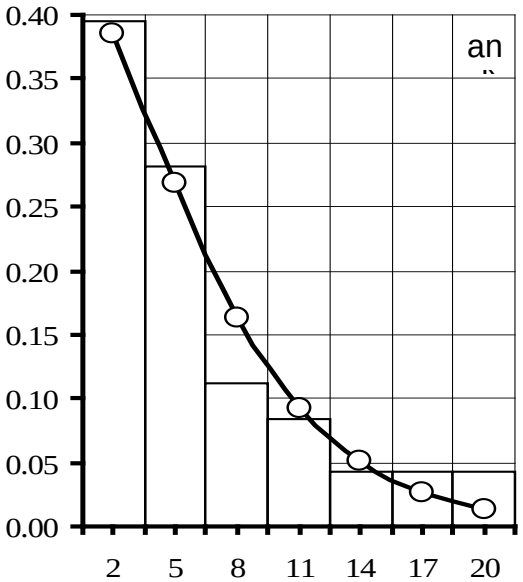


Fig. 3. Histogram and theoretical distribution curve since the beginning of frost (below

For numerical representation of calendar dates starting point adopted - 01 January. Subtracting this from the point of reference calendar dates of occurrence of the relevant event received their numerical value. According to the figures formed rows of empirical data and conducted their study on the methods of correlation and regression analysis and mathematical statistics.



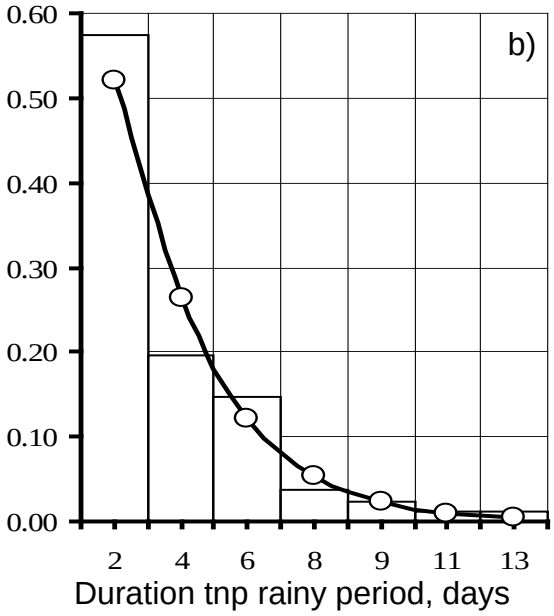


Fig. 4. Histogram and theoretical distribution curve of fine length (a) and rainy (b) periods.

Working on empirical data series тz-5, tpp tnp and on methods of mathematical statistics enabled under Pearson X2 test to confirm the consistency of empirical distributions of theoretical law Weibull distribution (Fig. 3 and Fig. 4):

$$f(y) = \frac{b}{a} \cdot \left(\frac{y - y_{зм}}{a} \right)^{b-1} \cdot \exp\left[-\left(\frac{(y - y_{зм})}{a} \right)^{b} \right],$$

where: and - the measure; b - form; uzm - empirical bias relative number zero.

Statistical characteristics and parameters of these distributions are shown in the table.

Statistical characteristics agrometeorological component TC ZTSB (Vol. Volyn region Volyn region).

The random variable	distribution law	Statistical characteristics			
		M (t), days	a	*b*	*uzm*
Duration fine intervals, days	Weibull	6.412	5.665	1.148	1
The duration of rainy periods, days		3.469	2.531	1.08	1
The start of frost in the ground (below -5oS) day		315.945	33.796	2.033	286

M (t) - expectation.

So set the basic laws that describe the objective (biological and agrometeorological) components TC ZTSB. They take account of relevant statistical simulation model TS enables display system caused by the formation of natural laws allowed the fund to implement the relevant time mechanized processes and thus to obtain reliable results of computer experiments on the functional performance of the relevant technical equipment TC ZTSB.

The use of such methods and models and use them to set parameters, plays a fundamental role in the justification of technical equipment parameters and thus the development of evidence-based recommendations for improving TC ZTSB general.

Conclusion. Stochasticity of biological and agrometeorological components TC ZTSB annually determines the variability of the timing of the mechanized process of harvesting sugar beets. This effect makes these components need adaptive performance beet work in TS, which directly affects the performance of its efficiency. Considering these features in a statistical simulation model TC TSZB is one of the important research objective grounds functional parameters relevant technical equipment. Implementation of computer experiments with this statistical

simulation model for the different production areas of sugar beet lets you search for objective function and thus justify the parameters of technical equipment TC ZTSB.

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Solved stochastic method of accounting the natural razreshennoho of time to fund technological system functioning Other cleaning saharnoy beet in sootvetstvuyuschey statystycheskoy ymytatsyonnoy model.

TIME Foundation, stochasticity, Saharan beet, tehnycheskaya snap, ymytatsyonnoe Modeling, Efficiency, parameters.

The methods of stochastic influence account of the naturally settled fund of functioning time in technological system of sugar beets harvesting in a corresponding statistical simulation model are exposed.

Fund of time, stochastic, sugar beets, technical equipment, imitation modeling, efficiency, parameters.

UDC 631.4 + 526 (075)

EVALUATION OF spatial heterogeneity HRUNTOVOHOPOKRYVU PLAIN-steppe

LV Aniskevych, PhD