

SUMMARY

Thesis entitled

"RESEARCH ON THE SYSTEM FOR TRACTORS AND AGRICULTURAL MACHINERY IN AGRICULTURAL HOLDINGS FOR CURRENT ECONOMIC EFFICIENCY OF TECHNICAL EQUIPMENT"

developed by the PhD eng. Iftimov DUMITRU

Scientific leader profesor Ph.D. Mircea Bădescu

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KEY WORDS

Acquis communautaire - the European legislation that our country should adopt;

Aggregate farm - a system composed of energy source and agricultural machine, for performing one or more farm work;

Agricultural producers - natural and legal persons engaged in agricultural activities;

Agro-technical requirements - is expressed through the work of the aggregate indices (uniform working depth, degree of grinding of soil, crop losses);

Agricultural holdings - physical or legal entities engaged in agricultural activities;

Degree of mechanization - the ratio of work done using manual labor and machinery, plant and equipment;

Economic size - is given by quantifying the optimal inputs for each farm and the minimum production cost which can achieve maximum profit;

Economic activity - a process of limited economic resources management;

Economic structures - a set of interdependencies between different branches of national economy and within the same economic structures in different branches of the economy;

Non-agricultural activities - other activities taking place in rural areas;

Optimum operating parameters - parameters that ensure minimum consumption of resources and give maximum efficiency unit;

Rural economy - all economic activities taking place in rural areas;

Rural families - comprising members of farm families;

Rural Development - complex economic process which seeks to eliminate economic disparities between urban and rural;

Strengthening agricultural holdings - the process of stabilizing the economic situation of farmers;

Specific energy consumption - the energy required to perform a production unit;

Technical features - is given by the insurance needs of agricultural tractors and farm machinery;

Technical data - size or elements determine a specific point of view the operation of a technical system;

The economic efficiency of an activity-it is a trait expressed by a causal relationship between the total effects, equivalent in nature and time and resources that nature and the equivalent total time involved in this activity, positive relationship itself, in comparison with other types of activity standardized sizes and expressing the requirements of national economy of saving resources.

SUMMARY OF MAIN PARTS OF THE PAPER

INTRODUCTION presented in a variety of processes and phenomena farms, need to adapt and improve the functioning of these mechanisms Romanian structures as a result of Romania's EU integration.

The first chapter, entitled **“CURRENT STRUCTURE, ORGANIZATION AND TECHNICAL EQUIPMENT OF AGRICULTURAL HOLDINGS IN ROMANIA, SOUTH-WEST REGION ESPECIALLY OLTENIA”**, is divided into seven sections.

This is the full potential available to Romania, in terms of land (the evolution and structure the ownership and operation), the endowment with agricultural machinery and other inputs allocation. Production patterns resulting from land reform and as a result of the slow adaptation of farms (mostly subsistence) to market requirements are inadequate, does not ensure the rational use of agricultural land and create a functional market. Low agricultural productivity go hand in hand with the existence of many low-skilled workforce and poorly paid, with a low degree of mechanization and employment. It continues with a study on the productive potential agricultural areas map of Romania with the three areas, namely: agricultural area of plains, hilly agricultural area and agricultural area mountain. An analysis in terms of legal form of farms with references to the counties of Dolj, Olt and Mehedinti. They are referred to the soil structure in these counties to the farm and energy in closing a number of conclusions are formulated aiming issues mentioned above.

The second chapter, entitled **“THE SIZE OF AGRICULTURAL HOLDINGS IN OTHER COUNTRIES AND THEIR TECHNICAL EQUIPMENT”**, addresses the very beginning the concept of optimal size and therefore examines the farm size in terms of developments in EU member countries and U.S. It shows the correlation between the territorial and economic size of farms and the situation in these countries. The analysis also extends the correlation between surface area, gross production per hectare and production in different types of farms in the EU and the technical equipment in comparison with the technical equipment of Romanian farms.

The third chapter, entitled **“TRACTORS AND AGRICULTURAL MACHINES USED IN AGRICULTURAL HOLDINGS IN OUR COUNTRY”**, presentation of the technical characteristics of the main types of tractors and agricultural machinery of domestic production, identifying their shortcomings and positive aspects, determining workload and also presenting current domestic producers of tractors and agricultural machinery.

In chapter four, entitled **“PRODUCER OF TRACTORS, AGRICULTURAL HOLDINGS THROUGHOUT THE WORLD”**, presenting the technical characteristics of the main types of tractors and agricultural machinery world class power and in particular those offered in France (2008). Identify the positive aspects and shortcomings in their acquisition, while determining the degree of loading and power development in 2000-2008 offering Detail about the main foreign producers of tractors and agricultural machinery.

In chapter five, entitled **“OPPORTUNITY OF PHD THESIS RESEARCH APPROACH”** Farmers have relationships with upstream operators, ensuring resource materials, processors and retailers to suppliers of agricultural products and consulting services, lending, performance mechanized farming, veterinary care, etc.. Low economic power of farmers make their relations with other participants of the chain to be devoid of fairness. Major operating units previously or have been liquidated, such as agricultural cooperatives or have been transformed into autonomous commercial companies. Family have emerged as agricultural associations, individual enterprises, agricultural companies and agricultural companies stock. These units do not function in the food chain of the desired performance because their dimensions are reduced and thus their economic and power. To these are added and the reduced availability of equipment, the high percentage of manual labor, traditional, less scientific, land cultivation and animal husbandry. Management is empirical, the expenditure and income is done mentally, sometimes impossible to assess the effectiveness of agricultural activity undertaken by a

household. At the end of 20 years of transition, agriculture - which is often referred to as the untapped potential - fails to constitute the engine of economic growth, a result of macroeconomic and sectoral policies wavering with syncope. It follows that the size of farm production reflects both the size and degree of its increase. As a result, determining the optimal economic size and scale not require fundamental studies, which should take into account all factors of production increase, engaged in farm work. Given the objective process of concentration and specialization of agricultural production in the current stage of development and economic benefits of this process, it requires more and more need to determine how accurate the sizing rational farm production in order to determine the degree of mechanization, providing increased economic efficiency. The economic activity of a farm could be held only within certain limits of size, material and technical basis on which the production to be used with high efficiency. Optimization of tractors and machinery, in line with current farm size is one of the factors determining the efficiency of agricultural activity.

In chapter six, entitled **“RESEARCH ON OPTIMIZATION THEORY OF TRACTORS AND MACHINERY SYSTEMS FOR AGRICULTURAL HOLDINGS IN ROMANIA”** have to study agricultural aggregates are the means of basic phones to work in the field. Depending on the works they perform, we distinguish aggregates: show, discussion, hoeing, harvesting, aggregates and complexes with multiple jobs running in a single pass. Depending on how the aggregation distinguish aggregate hauled cars, semi, lifted and propelled. Today show is made of strong aggregates, aggregates of 3-5 concurrent performing complex work, combining high capacity. Rational use of these units with minimum consumption of 100 kW power and weighing 10-15 tons can be achieved only by optimizing the parameters of their construction and operation. Optimization criteria to be adopted are: low power consumption, maximum working capacity of the unit, the minimum harvest losses, costs money and labor necessary as lower. Other criteria may be used: quantitative and qualitative increase production, improve working conditions, so senior indices. In most cases using two or more criteria, one presented by the purpose and function by function other restrictions. The use and optimization of complex criteria. Establishment of mathematical models used to optimize the parameters of agricultural aggregates requires thorough knowledge of the laws that are out their working process. This chapter shall be determined during a series of parameters that characterize the optimal choice of aggregate for a particular agricultural work, in view of maximizing power, work capacity, optimization of operating parameters and minimizing the tensile strength and energy needs.

In chapter seven, entitled **“METHOD AND APPARATUS USED IN EXPERIMENTAL RESEARCH”** describes the first experimental devices used in research and on the other hand exposes the entire methodology used for processing and assessing the results of economic efficiency.

In chapter eight, entitled **“EXPERIMENTAL RESEARCH DEVELOPMENT AND RESULTS OBTAINED”** reveals conditions for conducting experiments for the five types of farm work, setting tions that results for these experiments in the laboratory-and field operations, processing and statistical analysis of these results and and the conclusions.

In chapter nine, entitled **“ON ECONOMIC ASSESSMENT OF TRACTORS AND MACHINERY SYSTEMS CHOICE FOR AGRICULTURAL HOLDINGS IN ROMANIA”** includes the calculation of indirect and direct operating expenses for the five types of farm work reviewed (the work of plowing, plowing the discussion paper on total cultivation work, the work of sowing cereals and plant work planting hoes) for different powers of tractors. Determined based on the costs for crop production in irrigated production system is fixed to a

minimum endowment of agricultural tractors and farm machinery and also to make assessments on the economic efficiency of using different power tractors in combination with various agricultural machinery.

The paper concludes with a set of general conclusions, **PERSONAL CONTRIBUTIONS AND FUTURE DIRECTIONS OF RESEARCH** in which the author wishes to sensitize farmers on issues related to optimal choice of systems for tractors and agricultural machinery with more efficient farming. Contributions to the field under study are present throughout the doctoral thesis. They aim not only to clarify some theoretical issues addressed in the paper on some important economic concepts, notions and to elucidate the phenomena investigated, but concrete proposals to improve choice and technical equipment of agricultural holdings, from the concrete conditions in which this process in Romania.

Among the doctoral students' own contributions, the most important are the following:

- Analysis of relevant current farm structure in Romania, highlighting: the legal framework in force, farm structure and organization development, park tractors and agricultural machinery, soil types in the south-west;
- Comparative analysis of the current EU farm structure and the U.S., highlighting: the legal framework in force, farm structure and organization development, park tractors and agricultural machinery in these states;
- Substantiation of a strategy for achieving efficiency in agricultural and farm size in comparison with those of EU countries Romania and U.S. the level and degree of consolidation of land technical equipment;
- Presentation of technical characteristics of the main types of tractors and agricultural machinery of domestic production, identifying positive aspects and shortcomings, as well as the main types of tractors in the world;
- Determining fuel consumption, for five categories of farm work and four classes of power, as the main factor in determining the tractors and farm machinery systems optimal.
- Analysis of the main ways to optimize the choice of tractors and agricultural machinery and promoting effective method as a method of optimizing graphs;
- Determining, using the method graphs costs and systems of tractors and agricultural machinery farm optimum size of 5 ha up to 1000 ha in conditions without irrigation and culture of cereal crops;

Reflect final conclusions, succinctly, the realities of the Romanian agriculture in general and the provision of technical and economic optimization of the size of its current holdings in particular. Based on these findings are a series of concrete measures proposed election system in agricultural tractors and farm machinery in Romania, in order to improve their technical equipment modernization to become competitive on the European market.