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In Article brought teoretycheskoe rationale terms zatyahyvanyya grain Rabochy gap Between rollers and Deco in the process of ego REFINING valtsedekovoy zernodrobylkoy.

Grinders grain roller, pan, Rabochy gap zatyahyvanyya terms.

In paper is presented the theoretical foundation of condition of grain tightening in working gap between roller and deck during grain processing by roll-and-deck crusher.

***Grain grinders, roll, deck,* working gap, condition of grain tightening.**

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TRENDS OF CREATION TRAINING MEKHANIZATSII concentrated feed for feeding UNDER livestock farms UKRAINE

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We consider the technical, economic and social conditions create mechanization of livestock for use

on livestock farms. LED characteristics and trends of technological and technical solutions used in the creation of these machines. The given chronology issue factories of Ukraine the main types of machines.

Livestock farms, concentrated feed. feed preparation, crushers, shredders, feed settings, mixers, dispensers.

Formulation of the problem. To study the history of scientific and technical knowledge in the direction of creating mechanization processing of feed materials for livestock farms must conduct a comprehensive study of the problem, which includes the identification of social and economic factors in Ukraine that affect the conditions accumulation of relevant data of scientific and applied technical, review achievements of Ukrainian scientists and engineers in this field of activity, the chronology of construction machines in terms of their use.

Analysis of recent research. Despite the large number of livestock machinery in preparation for feeding concentrated feeds in the sector of agriculture and their diversity, research and publications on the evolution of these machines started was not. However, in previous years in Ukraine created and used significant technical park machinery and gained extensive experience in economic and social functioning farms, peasant (auxiliary) farming collective in which the partially mechanized production line of animal products.

The purpose of research. In view of the technical base facilities for research, it is appropriate to examine the genesis and evolution of machines designed for these farms, as the study and analysis of the dynamics of the livestock sector in ensuring agricultural production in the context of the historical period, can set the general trends of the past and justify rational directions in these periods of the agricultural sector entities.

Results. The development of computer technology is primarily based on the availability of resources and economic opportunities of society to improve the means of production. For complex technical solution restructuring industries should take the necessary financial, scientific and technical base. New modes of technology typically begin running in previous historical periods. From the inception of the new technology to its widespread use is a significant period of time. SV Shuhardin said: "At a time when there is a replacement of the old technology to new and when the old and new hardware have approximately the same technical parameters and provide similar results, the main criterion for selection are economic considerations" [5, C. 117-118].

On the development of mechanization of production processes in farms in Ukraine, in the analysis of the state in different historical periods must take into account not only the feasibility of replacing old methods of production to advanced forms, but dependent on political and social factors in the context of each study period.

These dependencies are clearly tracked by comparing the personal and collective agricultural enterprises in Ukraine, especially during the second half of the twentieth century. whole historical period. In terms of

efficiency of various forms, can refer to fundamental research Tugan-Baranowski, who conducted in-depth studies in the time of Stolypin's reforms. This scientist considered two sides of the issue: economic and social. M. Tugan-Baranowski concluded that large-scale production in agriculture, besides natural obstacles, the economic difficulties faced by a number of social problems. Large farms unprofitable always hold a significant number of employees that it needs only a season of work. Therefore, large-scale production interested to exist alongside small farms, which would have supplied his seasonal workforce employed. Small-scale farming is not so much for profit and rent as self-reliance for their livelihoods. Farmers do not stop to farm even if did not receive, in addition to food as a commodity farming unprofitable and is simply natural. [1]

Private farms have been and are clear evidence of the desire of farmers to self-management. In the process of transformation of the market sector they have become a key element, which softened the possible catastrophic consequences of global economic crisis, post-collective-state farm system. Since nineties personal of peasants in Ukraine play a very significant role in the provision of food. Their gross output of two-thirds, and the animal reaches 72-73% [1].

In a separate type of production structure of the agricultural production sector private land owners began to emerge in Ukraine in the period of collectivization of agriculture. Since the main livestock production centered in collective and state farms, to ensure their needs farmers had grown in small household farms cattle and poultry, which sharply limited the number of government regulations. Individual farms considered unpromising direction. But the difficulties in the provision of food, despite significant efforts aimed at the development of large-scale agricultural production, have led to a change in attitude regarding this type of economy. Resolution of the Government for 1953-1964 weakened the limitation of production in private sector development and contributed to a certain subsidiary farms. Livestock production has become the dominant trend of private farms and reached 70% of their gross production, and in the whole Ukraine livestock production in private farms tied with volume obtained in collective farms, and some products exceeded it.

These successes contributed to the gradual saturation of the market for animal products. But stability livestock production and further development of this area was hampered by high labor costs, primarily because of the lack of mechanization of industrial production while reducing the number of working age in the country. Next 20 years have shown that without adequate attention to individual farms peasant population problem of animal products is not solved. As a result

appeared ruling party and government from 1981 on measures to agricultural production in private farms citizens. During this period, was developed and approved system to create machinery equipment for private sector production. [4] Hence the fate of it was paid to the preparation of feed means for feeding. She became a concrete plan of research institutes, design organizations and factories under the Ministry for cars and fodder for livestock, as well as the Ministry of Agriculture. It's like: All-Union Research Design and Technology Institute for machines for mechanization and automation of livestock farms (m. Kyiv); Central Research Design and Technology Institute of mechanization and electrification of livestock (c. Zaporizhzhya); Ukrainian Research Institute of mechanization and electrification of agriculture (Str. Glevaha) State Specialized Design Bureau machines for pigs and software "Umanfermmash" (m. Uman); Novograd Volyn factory farm machinery; JSC "Bratslav" and others. Also involved were employees of factories subordinate to other ministries, including the cities of Kharkiv, Lviv, Kyiv, Dnipropetrovsk, Odessa, Kherson, Mykolayiv. In the subsequent years, since 1983, the creation and production of machines for the mechanization of crops and livestock in Ukraine especially for farms of all sizes began to grow rapidly.

Creation and development of livestock industry, a large number of machines intended for work in farms, made possible by the presence of large in terms of domestic and foreign databases that previously formed and was used to develop high performance machines. By adopting the above regulations to ensure the personal holdings of industrial manufacturing equipment has been tested a significant number of technical solutions for the processing of feed that could be tested for suitability for use in mass kormopryhotuvannya for individual livestock sector. This gain was based on the results of long preparatory work of many generations of scientists, engineers and machine builders in the world context. A significant contribution to achieving this potential well created by the Ukraine. Actually creating livestock cars during the twentieth century. Mainly passed through three series combined infancy, research, design and manufacturing. In the technical solutions that were laid in the construction of fodder processing machines, traced the transformation element meaningful design, taking into account the best achievements of previous technology in its transition to the next stage and new scientific and technical decisions arising from narobok on the study of physical phenomena and general development engineering. Machines feeding were and remain a major share of total mechanization of livestock complex. In general, for all categories of farms to prepare for feeding feed accounts for around 55% of costs in the livestock sector and on private farms, the percentage of available mechanization for

processing feed livestock to the total number of machines in the sector of households is 70-75%. This condition primarily associated with the fact that most feed products, reduced quality to optimal condition by performing some of their complex manufacturing operations, can not be obtained without the use of mechanized processes due to the need for high-speed mode of action of workers to feed material and significant energy costs.

Proposed Release nomenclature livestock machinery for work in private households, in contrast to systems machines for mechanization in large-scale collective farming, where dominant was the direction of introducing comprehensive mechanization of all parts of production included in the first stage of creating machines to perform only the basic, most labor-intensive processes and operations, which could apply malometaloyemni machine, leaving a significant number of non-mechanized operations.

Shift of livestock production on small farms raised the demand characteristics of the reorientation of dimension-type vehicles by reducing the daily requirement in feed and increase the value of the metal and electricity on the background of devaluation of human labor. Therefore, subject to the small amount of work previously created high-performance machines are economically unprofitable. There is a need to create new fodder processing machines for technical and economic parameters correspond to the new conditions of livestock management in private farms.

Machines for working in the farms of their design quite significantly different from machines designed for collective farms. This is due to different amounts of work, different economic conditions, labor both in the daily routine, and during the year, as well as psychological factors and, above all, attitude to work, which affects feedback as to the requirements for mechanization . The nature and form of production activities of people, especially in the individual sector entities throughout the period of social development significantly affecting social factors.

Constraints creation of machines in the initial period of the planned system for individual vehicles sector was small daily requirement for feed, the need for low-cost cars because of their small specific electric load and availability, mainly designed for single-phase network capacity to 1.1 kW. In the following years, especially since 1990, there has been consolidation of individual farms, helped by an increase in fixed peasant land. This opened the possibility of improving the payback of funds invested in the purchase of mechanization, increased machine productivity and a more complex set of technology and technical solutions of mechanization, such as combined kormopryhotuvalnyh units.

Manufacturing industry more productive and energy-cars contributed to the simplification of individual farms provide three-phase current.

With the same technical compliance structures, ie for machines of the same type and level of integration, specific weight of the car with a decrease in throughput grows in character power function with the index level 2-3, weight reduction unproductive or used cars with low load factor can be accomplished mainly by simplifying design by eliminating loading and unloading mechanisms aligning these operations with others, or using manual labor; by simplification of process control devices on the machine, or transferring control over the implementation of automatic control Used to control visual; and the development of nodes that have consistently performed sumischuvaly operations, such as cleaning the supply of feed material from impurities dosage of loading, crushing of mixing, etc.

Technological energy costs for processing feed materials identical physical and mechanical properties, very close. But since, for example, grinding feed, along with major operations occur more energy-consuming processes (air flow friction when moving, acquiring wedges inertial forces), then the creation of fodder processing machines for small farms should utilize this concomitant energy, increasing to. KD process and reduce energy consumption. For example, this may be the concomitant use of air flow separation of the shredded material after the crushing of the camera; acquired using inertial forces large particles for further grinding them; cleaning loose organization of feed of solid impurities, in particular metal.

Since enerhonasychenist fodder processing machines do not directly affect economic performance, when determining their installed capacity should be based not only on performance machine that meets the daily needs in food, and especially with the costs of the operator because of reduced productivity machines inversely increasing contributions to pay. So, for example, dry feed materials (grain, zlezhani lump mineral and protein supplements, hay) can be prepared in advance, accumulating in simple shelters, rooms, compartments adapted bunkers, pits); and processing machines can be installed with a capacity slightly inflated than the estimated performance production line.

Qualitative indicators fodder processing machines created for individual farms must conform to generally zootechnical requirements in all respects, as these requirements related to the physiology of animal feed. As for the technological adaptability, these machines have to be more versatile to feed material properties. And change, such as hardness or moisture (within conditioning) should not disrupt the technological reliability and power density, cost-effective compensation for certain material properties should be conducted by the operator by

changing the feed material in the processing chamber. For private farms acquires relevance lay in the design of solutions that would allow them not only to use one type of feed material, but also to other types of feed, similar in its properties. This can be solved as the choice of structural elements and their regime, processed feed, and the use of variable work, or even machine components, ie joint construction of machines and special easily removable blocks. Universalization, combining in a single shredders ability to perform various operations, reduces investment, increases the utilization of technology as a single unit combines a number of machines, but it has limitations on design complexity and time-consuming to setup. The criterion in this case is economic expediency.

When selecting the direction of creating machines - specialized or universal, should also be borne in mind that any design or universal combined machine embodies all operations in equal quantity. However, analysis of the use of universal machines shows that different operations have a great time together and often download a combined unit used to perform basic operations by 50-75%, and other operations have provided less load, sometimes rarely used.

Along with specialized machines intended to perform a single process for certain groups of feed materials created universal machine for processing different feed together, and combined machines which were able to perform several technological operations. At that perform various operations conducted simultaneously or sequentially with holding corresponding readjustment machines or replacing the specialized units. With specialized fodder processing machines in the first place should be called shredders. For a short period (1985-1986) developed a grain crusher Hammer "Taurus"; mikrodrobarka valtsedekova electric MCD-F-1 and wind driven MKDV; Hammer crusher-RS 0.1 and RS-T-1; Grain processing device software 0.1-T [3]. In the following years established production of new machines for grinding grain, dimension-type series of small hammer crushers bezreshitnyh DMB-P output of 200 kg / h; 300 kg / h and 500 kg / h; zernopodribnyuvach ZI-1; CD-1 and CD-2; grain crusher RS-0.1 [2].

For stem grinding fodder (grass, hay and straw) on the chaff first and most common machine was Strawchopper SR-2 with manual transmission, equipped with a knife drum machine. A modification can be considered perfect straw SR-60, which reduced weight, reduced size and achieved a better stabilization of the cutting apparatus. In the mid-80s put on a production of straw SM 100 with electric power 0.4-0.6 kW, and shredders compact PCM-T-1 for cutting grass and roughage. Compared

with the CM-100 it is equipped with a powerful electric motor (0.75 kW) [3].

A significant percentage of the diets of pigs in private farms is green mass and waste of garden and kitchen garden, crushed to a state of paste. With the shredder pastopryhotuvachiv advisable to call the ITS-4 and T-shredder pastopryhotuvach IP-T-100, equipped with a knife unit and electric power in accordance with 0.75 and 035 kW. For grinding food waste in 1987 was created elektrodrobarka food waste ED-T-1, in which the shank electric motor installed vertically planted with knife rotor machine.

For the preparation of root crops for feeding designed and produced a series of shredders with both manual and with electrified drive. Root-operated, which had a dominant use by 1988-1990, designed for performance from 50 to 200 kg / h, their weight ranges from 5.8 to 22 kg. As for the quality of the resulting product is close to the size of the unregulated use has been a part of the controlled devices as chips. Of the more common constructions should be noted ovocheterku disk CTD-06 IM-household Root 29 Root KR-1 and RC-1, Root Disk CD-100, Root drum KB-200 and Root Vertical disk MRC-200. From from 1980 factories producing construction korenerizok electrified with a capacity of 100 to 500 kg / h. Engine power ranges from 0.18 to 1.1 kW. In order of increasing productivity include the following structures: Root of used IR-100 chopper root crops and vegetables IK-F-150 cutter home "" Eliot "and Root CED-T. All are equipped with a knife Root working bodies. From 1990 establishing plants release more productive korenerizok. This shredder such as PC-Root T-1 and IR-F-1 performance respectively 1.2 and 2-3 t / h [3]. For heat treatment of feed in private households used zaparnyky feed, representatives of which are kormozaparnyk BB-1, boiler kormovarochnyy ITC-60 zaparnyk Root HCC-F-40, zaparnyk feed HCC-T 0.02, elektrokormozaparnyky ЭКZ-1 and ЭКZ -2 and zaparnyk electrified universal ЭZU-T-20.

Along with specialized machines feeding certain species were created as universal grinders. It is like a grain crusher and Root SLC-1 Grinders of a grain and root crops YZK-1 Used grinding drive IZ-T-1-1; kormopryhotuvalna machine KMP-T-2 for grinding grain and root crops; Universal machine for grinding grain, forage, early corn and other feed materials MIK-1.

In the initial period of formation of machines for mechanization in individual livestock sector (1984-1992) was developed and put on production of several combined machines, which, along with operations training fodder for feeding can perform other mechanical work of domestic nature. On the combined vehicles in this period developed and put on production, vehicle rural life SME-1; shredders APC-T-300 and E-

car household 270. In grinding grain korenebulboplodiv, straw and other fodder hrubosteblovyh combined machines performed shelling corn grains of the first, sawing wood, timber jointing planes, sharpening tools. These machines have low productivity and significant labor costs as the process of work, and the perekomplektatsiyu specialized units. Therefore, in the following years, characterized by an increase in production in private farms, these combined machines are not widespread. In addition, the use of combined vehicles shall expand in another area - preparing the mixed feed. This is caused, on the one hand, the experience of using animal feed on farms, which saves about 15-20% of the most expensive raw material feed - grain, the other - the availability of raw grain produced by increasing the area of land use in the private sector. With machines such designation include installation for the production of animal feed P-performance 6UPK 0.35 and 0.7 t / h, machine AKP and AKP MP-F capacity from 0.2 to 1.0 t / h, minikombikormovyy unit design " IMESH 'capacity 0.1-0.3 t / h, feed mini-ICU setting 1 and feed unit "Princes of Avila" capacity of 0.2 t / h.

Conclusion. Manufacture of machinery for the preparation of feed materials for feeding animals on livestock farms Ukraine, which was launched in the eighties of the twentieth century. based on the decisions of the measures of agricultural production in plots, farms and collective farms was carried out jointly by academic institutions, design organizations and engineering plants. It was placed on the production of a range of shredders grain executed as specialized machines and universal and combined performance. Has significant base of scientific and technical information on these issues, which enables historical and scientific study of mechanization of feeding livestock farms in terms of facilities.

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Rassmotrenы technical and Economic and sotsyalnыe predposыlky creation of funds for mechanization animal husbandry Using zhyvotnovodcheskyh on farm economy. Pryvedenы Features and direction of development of technical solutions and tehnolohycheskyh USED with the establishment of ukazannыh machines. Presented issue Chronology of major factories Ukraine Typical machines.

Zhyvotnovodcheskaya farm sector, kontsentryrovannыe feed. Preparation fodder, grinder mill, Grinders fodder, kombykormovыe installation, mixer, dozatorы.

There are considered technical-economic and social premises of creating of facilities of stock-breeding mechanizations for use in personal subsidiary facilities. There are broughted particularities and directions of development of technological and technical decisions, which are used when making the specified machines. There is presented chronology of issue of main types of machines for individual sector stock-breeding by Ukraine plants.

Personal agricultural farm, preparation of fodder plants, crusher machines, fodder shedder, mixed fodder hardware, steaming-plant.

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PERSPECTIVE DIRECTIONS OF PREPARATION CONDITIONS KOMBIKORMIVV LIVESTOCK FARM ECONOMY

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Analyzes technological schemes of preparation of the mixed feed fermskymy feed units, designed for the use of grain produced and purchased

mikrodobavok macro and additives. The above discrepancy applied the mixed scheme of required homogeneity. The technological scheme based on conducting three-stage mixing.

Concentrated feed, balanced feed, flow diagrams, basic operations, preparatory and final operations phase mixing animal.

Formulation of the problem. In recent years there has been a significant increase in the cost of feed production to feed mills and feed