designing, manufacturing and usage of threaded connections will extend their working time.

Threaded connection, machinery, kinematics.

UDC 001.32

Research and development of systems engineering KAFEDRYSILSKOHOSPODARSKYH MACHINES AND Academician PM Vasilenko

DG Voytyuk, Ph.D., Corresponding Member of NAAS
LV Aniskevych, PhD
Teslyuk VV, Doctor of Agricultural Sciences

The basic results of science, technology and innovation in the last years of the department.

Science, technology, research, innovation department.

One of the trends of modern agricultural production advanced countries is the introduction of precision farming (TRS) - the practical application of variable standards (doses) introducing technological materials (seeds, pesticides, fertilizers, etc.) according to the unique characteristics of each elementary area of the field. Precision farming allows you to leverage the potential of farmland while significantly reducing anthropogenic impact on the environment.

In line with this progressive trends of modern crop on the chair Problem Laboratory "Precision Agriculture" (PLTZ), whose supervisor is Professor Voytyuk DG and headed scientific school of precision farming technology.

Problem Laboratory conducts, both theoretical and experimental research in the fields of Chernihiv, Cherkasy regions, as well as in the fields of teaching and research farm NUBiP "Velykosnitynske" Fastovsky district of Kiev region. In the formation of the ideological and theoretical level problem laboratories participating members prof. Aniskevych LV, associate Wolanska MS, Smolinskyy SV, OV pit, Brovarets AA, p. Dinner teacher OM, a graduate student Rosamaha YO more.

One of the main areas of research are PLTZ study scientific basis of a field of unmanned machines in the plant information with the development of the theory of building navigation and control complex

machines and cultivation methods integrated navigation information (prof. Voytyuk, D. Sci. Aniskevych L. Assoc. Brovarets AA).

For the first time in the world offered (prof. Voytyuk, D. Sci. Aniskevych LV) a new method of obtaining information about mistsevyznachenu of high yield for the construction of cartograms yield using the integrated model based Duhamel pulse transient characteristics harvesters in function of time (Ukraine patent for invention number 69902, 2012). The technique involves a combination of specially developed algorithms restore the intensity of the incoming flow of grain mass sensor according to grain harvester. At the initial and final sections of mapping yields (input and output of each rut combine) and in areas with a sharp change in the intensity of the flow of grain into the hopper a combination of so-called "strip" algorithm and algorithm extrapolating the speed of the weights that are improving. In other areas of the harvester using the proposed differential algorithm.

At the level of global innovation offered (prof. Voytyuk, D. Sci. Aniskevych LV, Assoc. Smolinskyy SV) methodology predictive mode adjustment mode of operation of the harvesting machine working to solve the problem of uneven loading of working combines technological material mistsevyznachenoyi due to changes in yield and harvesting conditions move in the direction of the machine (Ukraine patent number 79,450, number 79,451, 2013).

Developed (prof. Aniskevych L. Sci. Voytyuk DG) method of cultivation integrated navigation information filtering procedure kalmanovskoyi "split" type is required to determine the composition and technical and technological requirements for navigation equipment to achieve high accuracy and reliability execution of field operations for mechanized warehousing technology (patent of Ukraine for utility model number 68193).

Conducted advanced research in mistsevyznachenoyi sowing (prof. Aniskevych LV, PhD student Rosamaha YO). It is already known that the sowing row crops such incorporation is necessary to provide seeds, which are met with optimal values of heat, moisture, nutrients, aeration, sufficient space for the growth and development of plants. Around the seed should form a core and compacted wet soil, and on top form dribnohrudochkuvatu and hardened to 1.3 g / cm3 structure. Moreover, 90% of the seeds should occur at a given (of tolerance) depth irrespective of surface irregularities field. Especially these requirements binding during mistsevyznachenoyi sowing. To achieve the outlined requirements proposed two-phase method earnings crop seeds in the ground according to which the earnings process is 2 seed phase. In the first phase schilynoutvoryuvach conical part of the soil and forms a gap with favorable jamming to it seeds geometrical parameters which fed the

seed. In the second phase takes the work of pushing the drive with certain geometrical parameters, which moves the seed down to form a compacted layer around the seed (Ukraine patent number 100986, 2014).

An important area of improvement of precision farming technologies is search of new ways of making technological materials. Today making process materials is exclusively using machine-tractor units in contact with the agricultural field, for example, variation method, efficiency is relatively low. Therefore, the proposed (prof. Aniskevych LV, Assoc. Brovarets AA) a new approach to the introduction of process materials such as ballistic mode entering (Ukraine patent number 100986, 2015). This way of introducing technological materials in precision farming to avoid the negative impact of support-running of MTA on the ground, dramatically reduces the cost of fuel and lubricants, contributes to a significant increase accuracy and efficiency of implementation technologies variables regulations introducing technological materials and saves last on average 20-25%.

The current state of agriculture needs to provide information base properties of fertile agricultural land and the state of plant communities to optimize processes aimed at obtaining sustainable and high yields of crops. Information base on the status of agricultural fields are a source of sustainable management The process of technological materials and care as plant communities, harvesting plant products and so on. The collective scientific school of Prof. TK.

Particular attention is paid to the development of current and future scientific direction of research - technical and technological support organic production. To ensure a complete cycle of cultivation of environmentally friendly crop production, along with the creation of machines for making pesticides, the department launched a laboratory "Technical and technological support production and use mikobiopreparativ" (supervisor prof. Teslyuk VV).

Scientists department (supervisor - prof. Voytyuk DG, Executive Assoc. Onishchenko VB) developed field crops sprayer with an adjustable dispersion drops and pneumatic system drops the working fluid deposition and spraying of crops with automatic adjustment of rates of application, which passed the state testing in UkrNDIPVT them. L. Pogorelogo. Spraying allow for the introduction of variable standards of the working fluid by automatically selecting spray nozzles for a given quality implementation process in various technological conditions.

In collaboration with academic experts NSC "IMESH" NAAS of Ukraine, scientists of the department (OM dinner) developed and

produced new universal stationary dressers continuous action inertial friction-type CGP CGP-4-10. Dressers carry dosing, distribution and processing of its seeds nerozpylenym liquid drug with a single working body. These machines implement the process of applying liquid preparations for seed crops due to inertial forces and the use of lateral surface caryopsides as working. As a result, the comparative evaluation of the main technical, technological and operational indicators of various types of dressers can be concluded distinct advantage dressers developed inertial friction-type.

Employees of the department (doc. YO Gumenyuk) studies the dynamics of movement tillage machines, including the adaptation of workers to the soil conditions.

Under the guidance of Professor Voytyuk DG started the study of electromagnetic radiation kraynovysokochastotnoho EHF range on biological objects and study of the physical mechanisms that underlie resonance absorption of information and the impact of microwaves on plants.

Paid great attention to research the history of agricultural machinery, agricultural machinery, engineering philosophy as science and scientific heritage of Ukrainian scientists and technology. Thus, under the direction of Professor DG Voytyuk analyzed the history of the construction of the plow, investigated the activities of prominent scientists in the fields of agricultural mechanics, agricultural mechanization and engineering.

Pryvedeny Main results of scientific-technical activity and ynnovatsyonnoy LAST desyatyletye for the functioning of the department.

Science, Technique, Research, Innovation, Chair.

The basic results of scientific, technical and innovative activity for the last decade of functioning of department are resulted.

Science, machinery, researches, innovations, department.

UDC 631.356.2

Excavation of root crops improvements Vibrating digger ACTION

SP Sokol, Ph.D.
Dnipropetrovsk State agrarian-ekonomichnyyuniversytet