Scientific work

The department carries out the following scientific research works

In the academic year (2019-2020), research work was carried out on the basis of research plans approved by the Institute's Academic Council in order to improve the integration of science, education and production in the following areas:

- Development of water-saving technology and technical means for high-quality pre-sowing treatment, forming of irrigated furrows between cotton row and open space;
- Justification of the optimal composition of the units, depending on the shape and size of the fields as well as operational indicators for the implementation of agricultural production processes;
- Creation of sprayers and work items that meet the agro technical requirements for the treatment of agricultural plants, spray quality, cost saving and improving the impact of the dissolved chemical;
- Ensuring the performance of cotton-growing machine-tractor units by increasing the kinematic parameters and maneuverability.

The main scientific activity of the department is directed to the issues of determining and introducing the optimal composition of technical equipment based on indicators of efficient use and energy-saving technologies. The department conducts research work on "Perfecting the water-saving technology and equipment for processing cotton row spacing", "Improving sprayers used in pest and disease control in orchards and vineyards", "Substantiation of the optimal composition of aggregates depending on the shape and size of fields as well as performance indicators for the implementation of production technological processes of agriculture "," Improving the kinematic parameters of the wheels farm tractors on the basis of cotton tractor. In these studies, new information and materials on technical equipment produced abroad and in our country were analyzed and systematized on the effective use and increase in the efficiency of work on site.

№	Theme of scientific research	Brief information about the aims and objectives of the study
1.	"The accomplishment of water-saving technology and technical means of processing cotton row spacing "	It consists in the development of scientific and technical solutions for the creation of an aggregate that provides resource saving based on the determination of the pattern of destruction of soil particles and the formation of irrigated furrows from the interaction of the working bodies during the pre-sowing treatment between cotton rows.

Results:

- Constructive documents of the planter (technical specifications and technical conditions), on the design of the coulters of various variants, their installation on the frame, the development of their layout and testing, were transferred to "VMKV-Agromash" AJK (reference № 02-469 from 11.11.2016);
- A certificate was received from the Ministry of Waters and Agriculture of the Republic on the establishment of a resource-saving seed drill for sowing seeds of winter wheat in the inter-row cotton (2016, December 10, No. 02 / 23-1271);
- The results of scientific research are introduced into the educational process of the Tashkent Institute of Engineers of Irrigation and Agricultural Mechanization for the training of highly qualified specialists (02.09.2016);

- Experimental models of the drill have been widely tested and implemented in 2008-2016 in Tashkent province (scientific and production economy of the Institute of Scientific and Technical Information), Andijan province (f. X “A.Tillaboev”) and Namangan viloyat (f. As a result, labor productivity increased by 26%,
- As a result of theoretical and experimental research, a sowing machine was developed with an acute angle of entry into the soil for narrow-row sowing of winter wheat in the inter-row cotton.
- Special coulters with special nozzles have been developed that contribute to the stable functioning in depth for planting wheat seeds and field experiments have been carried out.
- Field experiments showed steady functioning with narrow-row sowing of wheat seeds at a depth of 5-6 cm.
- A new design of a combined action drill has been developed, which at the same time, according to the requirements of agrotechnology, prepares the soil for sowing and sows with a polosovy coulter, leaving behind it a formed irrigation furrow.
- New technical solution protected by patent UZ FAP 00722.
- The use of a new technical solution in a production environment gave positive economic indicators with minimal consumption of sowing and material resources.
- Developed a new design of the machine for pre-sowing treatment of cotton row spacing, providing layer-by-layer loosening of the soil and forming a smooth and smooth gravy furrow
- Experimental studies have shown the advantages of the proposed design, that due to the high-quality pre-sowing treatment of cotton aisle, the yield increase was obtained compared to the usual wide-ranging method of growing winter wheat
- The introduction of an energy-saving unit in production conditions made it possible to reduce fuel and lubricants up to 30%, save seed materials up to 35%.
- According to the results of scientific research, the doctoral dissertation on the doctoral dissertation (DSc) was defended and approved by the Higher Attestation Commission of the Republic of Uzbekistan.

№	Theme of scientific research	Brief information about the aims and objectives of the study
2.	Improving sprayers used in deciduous gardens and vineyards to control pests and diseases	Fruit vineyards, technology of chemical processing of widely sown vineyards, development of universal spraying machines, increase of work efficiency due to bidirectional processing, fuel and other expenses

Technical samples of the universal sprayer PJG-10, chemical processing of orchards, vineyards and sowing crops, industrial design, laboratory tests were conducted and field tests were conducted in agro pharmaceuticals named after M. Fozilov in the Zangiata area.**Results:**

- Based on the developed confirmation documents, in 2016 an industrial sample of PJG-10 was developed and scientific research was conducted to determine the parameters of its main working parts (image).
- Thanks to the use of high-efficiency PJG-10 spanners fruit and vegetable gardens and vineyards have increased the efficiency of the spraying process, thus saving up to 50% of the working fluid, saving 20-25% of chemicals and protecting gardens from diseases and pests. This process increased the yield of vineyards by 20-30% and improved the quality of their products.
- High-performance welding machine PJG-10 for orchards and
- Vineyards fully meet the requirements of agrotechnical requirements for the entire process of processing chemicals in the lower parts of the sheet.

- According to the results of research 1 article in the journal “Agroilm”, 3 articles were prepared and sent for publication in foreign journals meeting the requirements of the Higher Attestation Commission.