

## Scientific works

### The department conducts research on the following topics

№	Subject of scientific research	Brief information about the goals and objectives
1	Analysis of an improved tractor design for intensive orchards	Alleviation of manual labor and mechanization of fruit harvesting in intensive orchard tree care
2	Improvement of the cooling system of tractor engines	Development of a recommendation for increasing the efficiency of the tractor engine cooling system
3	Monitoring the amount of small volatile particles (RM10, RM2.5) in atmospheric air and studying their composition	Monitoring the amount of small volatile particles (RM10, RM2.5) in atmospheric air and studying their sources of origin
4	Development of recommendations for improving the parameters of energy devices based on renewable energy types	Currently, in order to increase the possibility of energy reserves, the use of alternative energy sources and the development of optimal options for the conditions of Uzbekistan
5	Development of scientific and technical solutions for the mechanization of desert pastures	Development and improvement of technical tools and technologies used in planting seeds of desert nutritious plants in order to restore crisis pastures and improve low yield pastures

### Results obtained:

1. Analysis of an improved tractor design for intensive orchards

- Alleviation of manual labor in the care of trees in an intensive garden
- Mechanization of fruit harvesting

In the conditions of Uzbekistan, studies were conducted to improve the efficiency of the tractor engine cooling system

2. A recommendation was developed to improve the efficiency of the tractor engine cooling system.

- 3 reports were given at scientific conferences on the results of research conducted on the topic.

3. One of the first studies on monitoring the amount of fine volatile particles (RM10, RM2.5) in the atmospheric air and studying its composition was conducted in Tashkent city.

- Research was carried out in cooperation with Washington State University of the USA and the Institute of Hydrometeorology Scientific Research, which is a part of Uzgidromet, and its professors and teachers and scientific staff.
  - Atmospheric air sampling equipment and other materials used to determine the amount of fine volatile particles were taken
  - The amount of RM10, RM2.5, which has a negative impact on the environment and human health, was determined in experimental areas in summer and autumn.
  - The composition of particles was studied and the sources of their occurrence were analyzed, the share of mobile energy vehicles in the formation of particles was determined
  - 3 lectures were given at scientific conferences and 4 articles were published based on the results of research conducted on the topic.
4. Development of recommendations for improving the parameters of energy devices based on renewable energy types
- Use of alternative energy sources in order to increase the possibility of energy reserves
  - Development of optimal options for the conditions of Uzbekistan
5. Studies were conducted on the development of scientific and technical solutions for the mechanization of carpets
- The improved construction of the seeder for planting the seeds of pasture plants was developed, the experimental - industrial copy was prepared and the testing was entrusted to "VMKV-Agromash" JSC;
  - Tests of the unit for planting seeds of desert plants were conducted at the research and production farm of the Scientific Research Institute of Karakollik and Desert Ecology in Samarkand region and at the experimental site of JSC "VMKV-Agromash" in Forish district of Jizzakh region.
  - Recommendations for planting and harvesting seeds of desert pasture plants were developed
  - The results of the research work were introduced into the educational process at the Faculty of Agricultural Mechanization of the Tashkent Institute of Irrigation and Agricultural Mechanization Engineers;
  - 3 lectures were given at scientific conferences and 5 articles were published based on the results of research conducted on the topic.