

## Scientific works

### In the department going on research in following topics

№	Title	Short information about goals and aims of research
1	Analysis of improvement tractor design for intensive orchards	Support mechanization of technological processes in intensive orchards
2	Improvement cooling system of tractor engine	Development recommendations for improving efficiency cooling system of tractor engine
3	Monitoring concentration and study characteristics of particles (PM <sub>10</sub> , PM <sub>2.5</sub> ) in atmospheric air	Monitoring concentration, study and analysis sources of particles (PM <sub>10</sub> , PM <sub>2.5</sub> ) in atmospheric air.
4	Development of recommendations on improvement of parameters of power devices based on use renewable energy types	The use of alternative energy sources in power devices and development of optimal options for devices in conditions of Uzbekistan
5	Development scientific and technical solutions for mechanization seed sowing of forage crops in desert pastures	Improvement technologies and development technical devices for restoring low-yield desert pastures by planting forage crops.

#### Results:

1. Analysis of tractors design used in intensive orchards
  - decreasing labor in serving intensive orchards
  - mechanization of fruit harvesting
2. Research has been carried out to improve efficiency cooling system of tractor engine in conditions of Uzbekistan
  - developed recommendations for improving cooling system efficiency of tractor engine;
  - based on research results were made 3 presentations at conferences.
3. Were carried out one of initial studies to determine concentration and study composition of particles (PM<sub>10</sub>, PM<sub>2.5</sub>) in atmospheric air of Tashkent city (the study was carried out in collaboration with Washington State University of USA and Research Institute of Hydrometeorology of Uzgydromet)
  - have been purchased air samplers and other materials used to determine concentration of particles in atmospheric air;
  - in summer and autumn months in experimental sites determined concentration of particles (PM<sub>10</sub>, PM<sub>2.5</sub>) that has a negative impact to environment and human health;
  - was studied composition of particles, analyzed sources of particles, determined share of mobile energy sources in formation of particles;
  - based on research results were made 3 presentations at conferences and published 3 papers.
4. Development of recommendations on improvement of parameters of power devices based on use renewable energy types

- Use of alternative energy sources to increase the capacity of energy resources
  - Development of optimal options for conditions of Uzbekistan
5. Research has been carried out on development scientific and technical solutions for sowing seeds mechanization of fodder crops in desert pastures
- developed improved design of seeder for sowing fodder crops in desert pastures, made laboratory version of machine and transferred to BMKB-Agromash for testing;
  - testing desert crops sowing machine was carried out at pilot farm of Research Institute of Karakul and Desert Ecology in Samarkand region and in pilot plot of BMKB-Agromash in Farish district of Djizak region;
  - have been developed recommendations for sowing and harvesting seeds of desert pasture crops;
  - results of research are introduced into educational process at Agricultural Mechanization Faculty of TIAME;

based on research results were made 3 presentations at conferences and published 3 papers