

**The title of the Project: AP22783508"Development of a central pneumatic sowing system with an automatic control unit for wide-cut sowing complexes for grain crops"**

**Relevance:**

Improving machines aimed at ensuring efficient cultivation of agricultural crops by creating and developing a combined working body that ensures alignment of the seed along the cross-section of the vertical part of the distributor with minimal aerodynamic resistance, as well as the use of a guide in the distribution head to prevent injury to the seed.

**Purpose:**

Development of a central pneumatic sowing system with an automatic control unit for wide-cut sowing complexes for grain crops, to improve the quality of sowing, unit productivity, and reduce costs for material and labor resources

**Expected and achieved results:**

Upon completion of the research, the result of the project in terms of technological readiness will be at the fifth level of readiness.

Based on the results of the project for the entire period, the expected results of scientific research are presented by paragraph 1 of section 7 of the competition documentation for industries in the field of agricultural engineering for applied research:

- at least 1 (one) article or review in a peer-reviewed scientific publication, indexed in the Science Citation Index Expanded and included in the 1 (first) quartile by impact factor in the Web of Science database;

- at least 1 (one) patent for an invention (including a positive decision on it);

- 1 (one) article based on the results of participation in the conference.

As part of the project, 1 master's thesis and 2 theses of students will be trained and defended.

A central pneumatic sowing system with an automatic control unit for wide-cut sowing complexes for grain crops will be developed.

A set of scientific and technical documentation for the sowing apparatus and technical documentation for the distributing head of the central pneumatic sowing system being developed will be prepared.

**Members of the research group:**

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**Members of research group:**

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**Information for potential users:**

A soil-cultivating - sowing machine for grain crops will be developed in the precision farming system for medium-sized farms, simultaneously performing several technological operations: tillage, sowing and differentiated application of mineral fertilizers, leveling and rolling the soil; tillage, differentiated application of mineral fertilizers with a continuous tape, leveling and rolling of the soil; tillage, leveling and rolling of the soil by one machine. A set of

scientific and technical documentation for the machine being developed will be prepared for its mass production and commercialization. Fuel costs will be reduced by up to 10% and the consumption of mineral fertilizers by 20% due to differentiated application according to the agrochemical map of field fertility, ensure the use of soil protection technologies in crop production and it is expected to obtain an estimated annual economic effect of over 3,000,000 tenge per machine.

**Additional information:**

The results of scientific and technical activities will be registered for further commercialization of the project.