REGULATIONS
on the Practical Competition in Innovative Agricultural Technologies

1. GENERAL PROVISIONS

1.1. These Regulations define the purpose, objectives, participation conditions, technical requirements, evaluation criteria, and organizational procedures of the "Agro Spray Tech Challenge" innovative competition conducted within the framework of the "Engineers of the Future" festival.

1.2. The main focus of the competition is the development and testing of innovative devices and technologies that allow for the precise, economical, safe, and crop-friendly application of suspension (conditional solution) onto agricultural crops.

1.3. The competition is considered an open-type innovative platform, in which participants may take part in the form of:

- a drone-based device,
- a mini-tractor or mobile platform,
- a robotic system,
- a new mechanical/electronic technological solution.

1.4. During the competition, the rules of these Regulations are mandatory for all participants.

1.5. The competition results are determined based on the evaluation criteria established by the Jury and the final decision is adopted accordingly.

2. PURPOSE AND OBJECTIVES OF THE COMPETITION

2.1. The purpose of the competition is to develop innovative solutions in the field of agricultural technologies by young engineers and startup teams, to test their practical utility, and to identify the best projects.

2.2. The main objectives of the competition are as follows:

- to develop technologies that improve accuracy in the suspension application process;
- to reduce waste and excessive consumption during the crop protection process;
- to encourage the use of automation, sensor systems, control algorithms, and artificial intelligence elements;
- to develop the practical engineering potential of young people;
- to popularize new ideas in agronomic services and digital agriculture.

3. ORGANIZATION AND MANAGEMENT OF THE COMPETITION

3.1. The organizers of the competition are appointed by the festival's organizational committee.

3.2. The organizers perform the following tasks:

- prepare the competition site and ensure safety;
- register participants;
- organize technical inspection and testing procedures;
- form the Jury for evaluation;

formalize and announce the final results.

3.3. The evaluation process in the competition is carried out by the Jury.

3.4. The Jury may include specialists in engineering, agrotechnology, drone systems, technical safety, and innovation.

3.5. The decision of the Jury regarding the evaluation is final and not subject to review.

4. PARTICIPANTS AND REGISTRATION PROCEDURE

4.1. The following categories of participants may take part in the competition:

- students of higher education institutions;
- young inventor engineers;
- scientific circles and startup teams;
- young people engaged in technical creativity.

4.2. Participants may participate individually or as part of a team.

4.3. It is recommended that each team consist of 1 to 3 members.

4.4. To participate in the competition, a participant must provide the following information during the registration process:

- team name and composition;
- name of the device/technology (if available);
- technical description (brief);
- operating principle;
- safety obligations.

5. COMPETITION SITE (POLYGON) AND TECHNICAL CONDITIONS

5.1. Competition site dimensions: 10 meters × 5 meters.

5.2. The site is specially prepared by the organizers and includes:

- models or practical rows resembling crop rows;
- start zone;
- movement routes;
- safety lines and observation area.

5.3. The outer boundaries of the site are separated with barriers or banners for safety purposes.

5.4. Each team is given a designated time to prepare (position) before the start of the trial.

6. TECHNICAL REQUIREMENTS AND LIMITATIONS

6.1. Maximum dimensions of the device participating in the competition:

- length: 2.5 meters (maximum)
- width: 1.5 meters (maximum)

6.2. The device must be capable of continuous operation for 5 minutes. The manufactured device may be a remotely controlled autonomous machine.

6.3. During operation between or over crop rows, the device must:

- not knock over the crop model,
- not crush it,
- not disturb the row,
- not cause any damage.

6.4. Type of liquid to be sprayed:

- real chemical agents are not used in the competition;
- water or a special safe test solution is used as the suspension.

6.5. Suspension application rate: at least 1 liter and no more than 2 liters must be applied within 5 minutes.

6.6. The spraying mechanism used in the device is freely chosen by the participant:

- nozzle/sprayer,
- pump,
- gravitational system,
- sprayer, rotary spraying, and other technologies.

6.7. Safety requirements:

- open flames, explosive elements, and dangerous mechanical devices are prohibited;
- highly dangerous knives and cutting systems are not allowed;
- any device deemed hazardous by the organizers is not permitted to participate in the competition.

7. COMPETITION CONDITIONS (TEST TASK)

7.1. Each team performs the task of spraying suspension along the designated track or route on the competition site.

7.2. Test duration: 5 minutes.

7.3. Main conditions of the test:

- the device must operate continuously for 5 minutes,
- it must not damage the crops,
- the suspension must be applied within the specified interval.

7.4. The test begins after the “START” command is given.

7.5. The test is considered completed after 5 minutes or when the device stops operating.

8. EVALUATION SYSTEM (100-POINT SCALE)

8.1. Evaluation criteria are conducted on a 100-point basis:

A) Continuous Operation and Stability – 30 points

- full operation for 5 minutes
- stable control without malfunctions
- uninterrupted movement of the device

B) No Damage to Crops – 30 points

- not touching or disturbing the row
- not knocking down or crushing
- spraying flow does not damage the crops

C) Spraying Quality and Efficiency – 25 points

- uniform application
- minimal waste and overspill
- suspension usage within the norm (1–2 liters)

D) Level of Innovation – 15 points

- technological novelty
- advantage for sensors, automation, or AI
- practical value and ease of use

9. PENALTIES AND DISQUALIFICATION

9.1. Penalty points may be applied for the following:

- short-term stoppage;
- deviation from the designated route;
- excessive spillage or waste of suspension;
- leaving the control zone.

9.2. The following are grounds for disqualification:

- causing serious damage to crops;
- violation of safety rules;
- failure to comply with the Jury’s instructions;
- use of prohibited substances for spraying.

10. DETERMINATION OF WINNERS AND AWARDING

10.1. The team with the highest score is declared the winner.

10.2. In the event of a tie, the following order of priority is applied:

- no damage to crops (Section B)
- spraying quality (Section C)
- level of innovation (Section D)

10.3. Winners and prize-winners are awarded diplomas and commemorative gifts by the festival's organizational committee.

11. FINAL PROVISIONS

11.1. The organizers shall take necessary measures to ensure order and safety during the competition.

11.2. Participants are fully responsible for the proper functioning, safety, and operation of their devices.

11.3. Any cases not provided for in these Regulations shall be resolved by the organizers and the Jury.

11.4. If necessary, the organizers have the right to make additions and amendments to the provisions of these Regulations.

**These Regulations may be amended no later than 30 days before the start of the competition. The updated Regulations shall be provided to all registered participants.*