



AGRICULTURAL TECHNOLOGIES COMPETITION SPECIFICATIONS 2024

1. PURPOSE OF THE COMPETITION

The competition aims to enable individuals and teams to create solutions to problems in agriculture using technology. Accordingly, projects will be evaluated and put into practice.

2. SUBJECT OF THE COMPETITION

The scope of this competition includes biological, chemical, genetic, microbiology, informatics, mechanical, electrical-electronic, software-based projects that propose technological solutions related to agriculture and animal husbandry.

1. Competition Subcategories

Projects that will be presented in the following sample topics or in any topic that provides a solution to a problem using technology in agriculture will be evaluated.

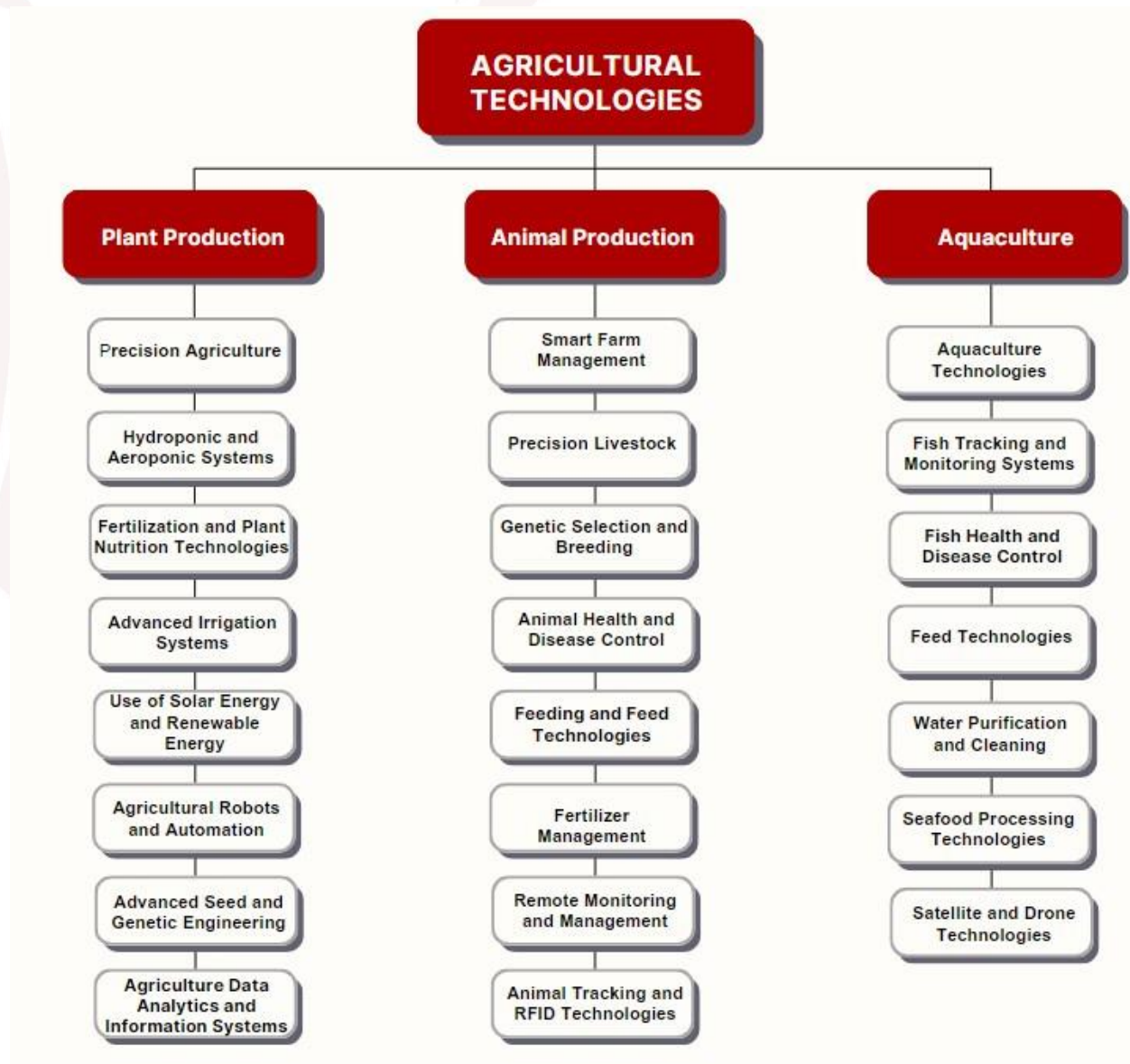


Figure 1 - Competition Subcategories

A. AGRICULTURAL PRODUCTION

Crop production technologies include various methods developed to increase productivity in agriculture, use resources more effectively and ensure sustainable production. Here are some important crop production technologies:

1. Precision Agriculture:

- It enables more effective management of agricultural areas using sensor technologies, GPS and mapping systems.
- It helps to make precise decisions on issues such as soil and plant condition monitoring, irrigation and fertilization management.

2. Hydroponic and Aeroponic Systems:

- It allows plants to be grown in liquid nutrient solutions without using soil.
- In these systems, the roots of the plants receive nutrients directly in the water.

3. Fertilization and Plant Nutrition Technologies:

- High-tech fertilization systems use sensors and automation to deliver nutrients in the quantities that plants need.
- Plant nutrition is optimized with advanced methods such as microelement fertilization and special fertilizer formulations.

4. Advanced Irrigation Systems:

- Water use is optimized with systems such as drip irrigation, sprinkler irrigation and sensor-based irrigation.
- Irrigation needs are determined with technologies such as soil moisture sensors and plant leaf sensors.

5. Solar Energy and Renewable Energy Utilization:

- The use of solar energy for agricultural operations can lower energy costs and reduce environmental impacts.
- Other renewable energy sources such as wind energy and biogas can also be used in agricultural processes.

6. Agricultural Robots and Automation:

- Technologies such as automated tractors, drones and robots automate farming operations, making more efficient use of manpower and time.
- Special purpose machines such as harvesting robots, weed detection and control robots have been developed.

7. Advanced Seed and Genetic Engineering:

- Development of high yielding, disease resistant and climate change compatible plant varieties.
- Genetic engineering to produce plants that are particularly resistant to certain diseases and more nutritious.

8. Agriculture Data Analytics and Information Systems:

- Extracting information from various data sources to improve agricultural productivity using big data analysis, artificial intelligence and machine learning.
- Information systems that make recommendations to farmers with information obtained from data sources such as weather, soil analysis, disease forecasts.

These technologies represent important steps towards improving modern agriculture in terms of sustainability, efficiency and environmental impact. With advances in technology, the agricultural sector tends to evolve towards more efficient and sustainable practices.

B. ANIMAL PRODUCTION

Technologies used in animal production cover a variety of areas in terms of farm management, animal health, feed production and overall productivity. Here are examples of animal production technologies:

1. Smart Farm Management:

- Using sensors and monitoring systems, the animals' behavior, health and productivity are tracked.
- Intelligent systems such as automated milking systems and feeding robots allow farmers to manage their businesses more effectively.

2. Precision Livestock:

- Feeding programs can be adjusted more precisely thanks to sensors that monitor feed intake, weight gain and reproductive performance.
- Monitoring systems are used to detect sick animals.

3. Genetic Selection and Breeding:

- Genetic engineering and molecular genetic techniques are used to improve the genetic characteristics of animals.
- Genomic selection enables faster and more efficient selection of individuals with the desired traits.

4. Animal Health and Disease Control:

- Electronic monitoring devices and sensors monitor the health status of the animals.
- Using satellite imagery and meteorological data, disease outbreaks can be detected in advance.

5. Feeding and Feed Technologies:

- Automated systems are used in feed production and distribution.
- Systems that automatically adjust feed composition and blend optimize animal feeding programs.

6. Fertilizer Management:

- Biogas systems produce energy from animal manure.
- Fertilizer management systems optimize fertilizer use and reduce environmental impacts.

2. Remote Monitoring and Management:

- Farmers can remotely monitor and manage their farms via smartphones or computers.
- Remote monitoring systems help to quickly detect abnormal situations.

3. Animal Tracking and RFID Technologies:

- RFID (Radio Frequency Identification) tags enable individual tracking and recording of animals.
- Monitoring animal movements facilitates herd management.

These technologies used in animal production enable farmers to run a more efficient, sustainable and profitable business.

C. WATER PRODUCTS

Aquaculture technologies encompass various processes such as the cultivation (aquaculture), capture, processing and marketing of aquatic organisms. Here are examples of aquaculture technologies:

1. Aquaculture Technologies:

- System Controlled Pools and Tanks: With high-tech water control systems, water temperature, oxygen levels and other parameters are continuously monitored and controlled.
- Floating Cage Systems: It allows fish to be raised in cages used in seas or large ponds.
- Ponds and Bioreactors: Used in marine and freshwater facilities for the production of fish, shrimp or other aquatic products in controlled environments.

2. Fish Monitoring and Monitoring Systems:

- RFID Tagging and Tracking: RFID tagging systems that enable individual tracking of fish.
- Remote Sensing and Monitoring: Satellite and drone technologies for remote monitoring of fish schools and aquatic ecosystems.

3. Fish Health and Disease Control:

- Molecular Diagnostic Techniques: Molecular diagnostic techniques such as PCR (polymerase chain reaction) for early diagnosis of diseases in fish.
- Vaccine and Drug Development: Technologies to develop vaccines and effective treatment methods against aquaculture diseases.

4. Feed Technologies:

- Special Feed Formulations: Specially formulated feeds according to the needs of the fish.
- Feed Distribution Automation: Intelligent feed distribution systems provide fish with the right amount of feed according to their needs.

5. Water Treatment and Purification:

- Biofilter Systems: Biofilters used to clean the water in fish farms break down the waste in the water biologically.
 - Ozone and UV Sterilization: The use of ozone and UV light to eliminate pathogens and harmful organisms in water.
-

6. Seafood Processing Technologies:

- Automatic Processing Lines: Automatic filleting and packaging lines in fish processing plants.
- Cooling and Storage Technologies: Advanced refrigeration and storage systems for the storage and transportation of fresh seafood.

7. Satellite and Drone Technologies:

- Marine and Water Quality Monitoring: Satellites and drones monitor sea surface temperature, plankton density, water quality and water bodies.
- Fisheries Catch Monitoring: Satellite and drone technologies to identify movements of fish schools and fishing grounds.

These technologies play an important role in the aquaculture industry in terms of sustainability, efficiency and product quality. They are also continuously being developed and applied to reduce environmental impacts and conserve aquaculture resources.

3. CONTEST PARTICIPATION CONDITIONS

- High school (including Open Education) and university students (including Bachelor's, Associate's, Master's, Doctorate and Open Education) studying in Turkey and abroad can participate in the competition.
- Teams must have an advisor. The document stating that the person who will serve as an advisor will fulfill the advisory duties must be uploaded to the system together with the Project Detail Report with wet signature.
- The advisor undertakes to support the team until the final stage and to be with the team during the final stage. For the projects that make it to the final stage, it is mandatory for high school teams to be in the field with their advisors.
- High school level teams will apply through their advisors.
- Individuals can participate in the competition as well as teams.
- Individual applicants with the project must apply by creating a one-person team through the team creation module in the KYS system.
- Our high school level contestants who will apply individually must get an advisor.
- Project ideas must not be copied. Projects found to be similar or imitated will be excluded from the competition. If the competitor has previously participated in another competition with the same project, the name, place, date, organizer, and result of the competition must be reported in the project file.
- If the competitor has participated in TEKNOFEST technology competitions organized in previous years with the same project, they can apply again with the condition of developing and/or transforming their project.
- The competitor cannot participate with an identical and/or duplicate report of the previous project report. In case of quoting from the reports published on www.teknofest.org within the scope of the previous year's report, the source must be specified. You can find the format of citing the source under the general rules heading in the specification.
- A separate application form must be filled in for each project.

- For the number of team members, teams should be formed with a **maximum of 10 people**. (This number does not include the advisor.)
 - Each member can participate in only one team.
 - The advisor should not be added as a team member. Each team can have at most one advisor.
 - There must be a team captain in the team. Our contestants who apply individually should choose the team role as the team captain.
 - During the competition process, all information to be provided by the TEKNOFEST competitions committee will be made to the person designated by the team as the communication officer. For this reason, each team must designate a communication officer.
 - The follow-up of the processes (Application, Report Upload Deadline, Appeal Process, Form to be filled in, etc.) is the duty of the communication officer and TEKNOFEST competitions committee is not responsible for delays and/or disruptions caused by the communication officer.
 - Applications are made online via www.t3kys.com application system until **29/02/2024**.
 - Between the application dates, the team captain/advisor registers through the system, registers the advisor and/or team captain/team members, if any, in the system correctly and completely, and sends an invitation to the e-mails of the advisor and members, if any. The member to whom the invitation is sent logs into the application system and accepts the invitation from the "My team information" section and the registration is completed. Otherwise, the registration is not completed.
 - Competitors who have completed the team formation process must apply to the competition suitable for their project.
 - Projects must be innovative, applicable, commercializable, sustainable and original in a subject related to agriculture.
 - Individuals can participate in the competition or apply as a team. In the case of a team, all members of the team must have the same status in whichever category they are applying as high school or university.
 - All processes required within the scope of the competition (Application, Report Receipt, Report Results, Financial Support Application, Appeal Processes, Member addition/removal processes, etc.) are carried out through the KYS system. Teams are required to follow their processes through the KYS system.
 - Member additions/removals are made until the Project Detail Report submission date.
 - During the competition process, making applications, uploading reports, and filling out forms through the KYS are within the authority of the team captain and/or advisor and the competition processes are managed through these people.
 - The transportation and accommodation support to be provided to the finalist teams is limited. The number of people to be supported is 3 people per team (including the advisor) and TEKNOFEST Competitions Committee has the right to make changes.
 - Teams at university level and above are not obliged to have an advisor.
-

- TEKNOFEST Competitions Committee has the authority to limit the number of members in the festival area. In case of a limitation, the committee will be informed by the committee.
- Only one category or one competition can be applied with the same project. The applications of teams or individuals applying to different categories or different competitions organized within the scope of TEKNOFEST with the same project will be deemed invalid.
- Competitors can apply to the same and/or different TEKNOFEST competitions with different projects.
- Teams can be formed from a single school or a mixed team of one or more secondary/higher education students.
- Teams of high school students will compete among themselves and teams of university level students will compete among themselves.
- Throughout the competition process, your level of education at the time of application will be taken into account.
- You should pay attention to this when choosing a category.
- The contestant will be able to participate in the competition by reading and approving all explanations about the competition and the conditions of participation before applying.
- Applicants to the competition are deemed to have accepted all of the conditions in the specification.

4. COMPETITION SCHEDULE, SCORING AND EVALUATION

4.1. Competition Calendar

Detailed information about the competition calendar and evaluations are given below;

HISTORY	EXPLANATION
29.02.2024	Contest Application Deadline
25.03.2024 – 22:00	Project Preliminary Evaluation Report Deadline
29.04.2024	Announcement of the Qualifying Teams According to the Results of the Project Preliminary Evaluation Report
27.05.2024 – 17:00	Project Detail Report Deadline
02.07.2024	Announcement of Project Detail Report Results, Financial Support Winners and Finalist Teams
August - September 2024	TEKNOFEST

Table 1 - Competition Calendar

The evaluation will be made in three different stages: Project Pre-Evaluation Report, Project Presentation and competition scoring. Teams that do not submit their Project Preliminary Evaluation Report and Project Presentation files will not be eligible to participate in the competition.

The report must be uploaded to the CMS system on the day and hour specified in the schedule. The objection process is communicated to the teams via email by the TEKNOFEST competitions committee after the announcement of the results. The TEKNOFEST Competitions Committee has the right to make changes in the calendar and hours. After the application, a "**pre-selection**" process will be carried out with the pre-evaluation reports sent by the teams. In this pre-qualification process, the reports they have sent will be examined in terms of report layout and project subject, and a decision will be made to evaluate the pre-evaluation report, and invalid or incorrect applications will be eliminated. The project to be eliminated in this context has no right of appeal.

Within the scope of the competition, a **maximum of 25 teams** can be finalists in each category and education level.

4.2. Project Preliminary Evaluation Report

Teams are obliged to submit their Project Preliminary Evaluation Reports on the date specified in the competition calendar. Detailed information about the submission of the Preliminary Project Evaluation Reports will be shared with the teams that have completed their applications after the end of the competition application date. A preliminary elimination will be carried out according to the results of the Project Preliminary Evaluation Reports. You can access the Preliminary Evaluation Report template on the website. As a result of the preliminary evaluation, the teams that pass to the second stage will be announced on the date specified in the competition calendar.

The projects submitted to us in full and in accordance with the application principles will be screened by taking the following criteria into consideration.

- Project Summary
- Problem/need for which it provides a solution
- Domesticity and Originality Side
- Method and Target Audience
- Innovation and Commercialization Potential
- Project Calendar

Project pre-evaluation report template and details will be published on TEKNOFEST official website.

4.3. Project Detail Report

Teams that have passed to the Project Detail Report (PDR) stage are obliged to submit their Project Detail Reports on the date specified in the Competition Calendar. The Project Detail Report should be a report in which the Project Development processes including Analysis, Design, Development, Testing and Implementation (integration and go-live) activities are explained in more detail and also the Project Budget, Project Plan (project schedule) and Project Scope are detailed. Templates for the Project Detail Report will be announced on the TEKNOFEST website after the application deadline. According to the PDR results, the teams that are eligible to participate in the finals will announce their Reports on the date specified in the Competition Calendar.

According to the results of the Project Preliminary Evaluation Form, the projects that are

eligible to proceed after the screening will be evaluated by taking into account the following criteria.

- Project Summary
- Problem/need for which it provides a solution
- Domesticity and Originality Side
- Method and Target Audience
- Applicability
- Estimated Cost and Project Time Planning
- Market Analysis, Innovation and Commercialization Potential

Project presentation template and details will be published on TEKNOFEST official website.

4.4. Scoring of the Competition

The scoring of the competition consists of two parts. The first part consists of report scoring and the second part consists of prototyping and visual presentation scoring. Report scoring types and percentages are indicated in the table below. Report scores will account for 20% of the total score.

SCORING TYPE	SCORING PERCENTAGE
Project Preliminary Evaluation Report	% 5
Project Detail Report	% 15
Prototype and Final Presentation Scoring	% 80

Table 2 - Competition Scoring Percentages

4.4.1. Prototype and Final Presentation Scoring

The projects of the finalist teams will be evaluated by jury teams specialized in their respective categories. A prototype (first sample) is a concrete representation of the product or process that will emerge after the project. This is the most primitive version of the final product. The prototype may include some screenshots and screen designs with functionality for a software project, or an example made of different materials such as cardboard, lego, etc. with functionality for hardware projects. Detailed information about the requirements for the competition environment, showing the prototypes to the jury and visual presentations will be shared with the finalist teams after the finalist teams are determined. Final presentations must be made by the team members, consultants are not allowed to make presentations. In the final stage, teams are required to prepare a poster for visual presentations and information about the size and content of the poster will be provided by the TEKNOFEST Competitions Committee in the coming days. According to the final evaluations, the final ranking of the finalist teams will be announced on www.teknofest.org after the TEKNOFEST Competition final.

5. AWARDS

As a result of the separate evaluation in three stages of the competition, cash prizes will be awarded to the teams that pass the report stages and reach the final in their category and rank in the final evaluation. The awards stated in the table below show the total amount to be given to the teams that are entitled to receive awards, no individual awards will be made. First, second and third prizes will be divided equally according to the total number of Team Members (all members registered in the system) and will be deposited into the bank account specified by each individual. Payment will be made to the advisor of the winning team within the scope of the competition. Payment will be made to the advisor of the winning team within the scope of the competition. **2.500,00 ₺** will be paid to the advisors of our ranked teams. If the advisor does not come to the competition area, the advisor award will not be given. In addition, best presentation awards will be given for 3 levels from the finalist teams.

CATEGORY	RATING	PRIZE AMOUNT	CONSULTANT AWARD AMOUNT
HIGH SCHOOL CATEGORY	First	50.000,00 ₺	2.500,00 ₺
	Second	40.000,00 ₺	2.500,00 ₺
	Third	30.000,00 ₺	2.500,00 ₺
UNIVERSITY CATEGORY	First	60.000,00 ₺	2.500,00 ₺
	Second	50.000,00 ₺	2.500,00 ₺
	Third	40.000,00 ₺	2.500,00 ₺

Table 3 - Competition Prize Table

5.1. Best Presentation Award

This award is given to the teams that aim to finalize their tasks undertaken in the field of the competition and their business plans in the best way, regardless of whether they achieve a degree in this purpose or not, and to the teams that best reflect their project in terms of criteria such as time, correct answers to questions, body language, attitude towards the audience, fluency of the presentation, presentation outline. As a team, evaluation will be made based on these criteria. The specified award is for prestige purposes and has no financial equivalent.

5.2. Commercialization Potential Award

Commercialization Potential Award, "Commercialization Potential Award" will be given to the team with the highest commercialization potential among the finalist teams in line with the following criteria. - Ease of realization of the project, - Absence of uncertainties and

risks for producing the final product, - Ability to produce with existing technology and equipment, - If the output of the project is a service product, it should be saleable and presentable, - The specified award is for prestige purposes and does not have a financial equivalent.

6. GENERAL RULES

Click here to access the general rules document for the competition.

7. ETHICS

Click here to access the code of ethics document for the competition.

DECLARATION OF RESPONSIBILITY

T3 Foundation and TEKNOFEST are in no way responsible for any product delivered by the competitors or for any injury or damage caused by the competitor. T3 Foundation and organization officials are not responsible for any damages caused by the competitors to 3rd parties. T3 Foundation and TEKNOFEST are not responsible for ensuring that the teams prepare and implement their systems within the framework of the laws of the Republic of Turkey. Technology Team Foundation of Turkey reserves the right to make any changes in this specification.

