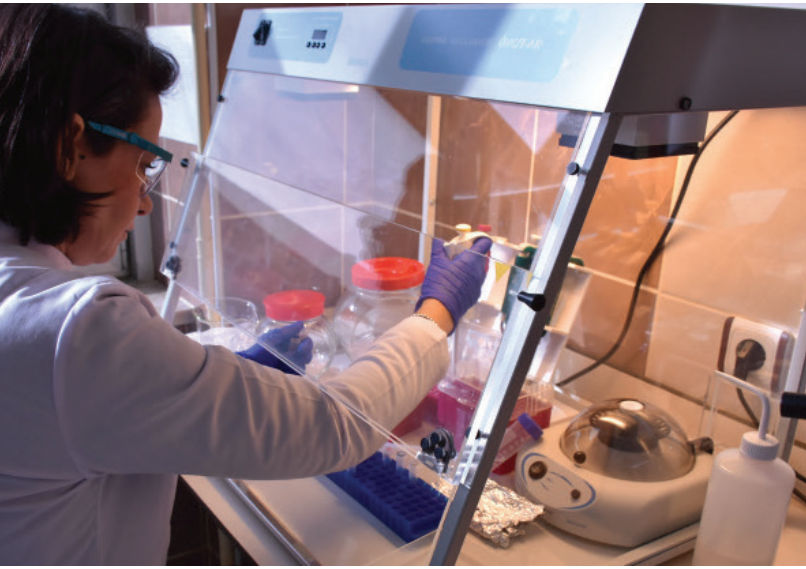


Development-Oriented
**Animal Husbandary
Project**

Increasing Sectoral Competitiveness of
Burdur Province:

Integrated Development in Agriculture and Livestock



MAKÜ | Burdur
Mehmet Akif Ersoy
University

BURDUR

Burdur is located in the interior of the Western Mediterranean Region and in the region called the Lake District. According to the Turkish Statistical Institute (TÜİK) data for 2021, the population was reported as 273,716. The economy of Burdur province is mainly based on agriculture and animal husbandry and has an important share in terms of animal breeding and milk production throughout the country. It is one of the leading provinces in Turkey in terms of livestock breeding, especially dairy cattle breeding, supply of breeding heifers and milk production. As of 2022, there are around 16 million cattle and 56 million sheep/goats in Turkey. Red meat production was approximately 2.19 million tons, cow's milk collected was 9.7 million tons, and honey production was approximately 118 thousand tons. In Burdur province, according to the same year data, there are around 191 thousand cattle and 357 thousand sheep and goats. Approximately 1,063 tons of milk is produced daily and 383 thousand tons of milk is produced annually. Burdur province's share in Turkey's cow milk production is 3.9%. However, considering the number of lactating animals, milk yield per cattle is above the average of Turkey.



Figure 1: Burdur Province

BURDUR MEHMET AKİF ERSOY UNIVERSITY

Burdur Mehmet Akif Ersoy University (MAKU) was established in 2006. Our university was named after Mehmet Akif Ersoy, the poet of the Turkish National Anthem. Mehmet Akif Ersoy graduated from Baytar Okulu (Faculty of Veterinary Medicine) in 1893. He served as Burdur parliamentarian in the First Turkish Assembly established during the War of Independence. Our university continues its education and training activities with 13 faculties, 4 institutes, 5 colleges, 13 vocational schools and the State Conservatory of Turkish Music. The mission, vision and values of the University are summarized below.

OUR MISSION

To educate individuals who have the scientific values required by the age, who are rooted locally but open to universal values, who adopt the guidance of science as a principle, who can think creatively and critically, who are free and libertarian, who care about ethical values, who have developed nature and environmental awareness, who have dynamic, researcher, entrepreneurial characteristics, who are also interested in art and sports fields, and to provide solutions to regional and national problems through scientific research and development activities.

OUR VISION

To be an innovative university that focuses on local development, sheds light and contributes to the development of the region and the country with the knowledge it produces, the projects it realizes and the researcher and entrepreneurial human resources it raises.

OUR VALUES

Sensitivity to local, regional and national problems, development-oriented, scientific productivity, cooperation with stakeholders, applied and vocational education, development orientation, respect for human rights and freedoms, acting in accordance with scientific ethical rules, equal opportunity and democracy.

Burdur Mehmet Akif Ersoy University has been selected as a pilot university in the field of "Animal Husbandry" within the scope of the Regional Development Oriented Mission Differentiation and Specialization of Universities Project, which is carried out under the coordination of the Presidency of the Council of Higher Education and in cooperation with Presidency of the Republic of Turkey Strategy and Budget Directorate.

The Regional Development Oriented Mission Differentiation and Specialization Program is a program that aims for universities to become an actor in regional development through the activities they will carry out in the province/region where they are located.

Burdur Mehmet Akif Ersoy University aims to increase its competitiveness in agriculture and animal husbandry by harmonizing the potentials of Burdur province with the existing and future infrastructure of the university within the scope of the "Mission Differentiation and Specialization for Regional Development" Program. Our university considers economic, social and environmental sustainability in its education, training and research activities and is sensitive to the problems of the local, regional and national problems with the same sensitivity. Therefore, the mission, vision, values and goals of the university have been determined to meet the development, requires and problems of the local and regional development within the framework of a development-oriented scientific productivity approach.







THE UNIVERSITY
LEADING THE COUNTRY'S ANIMAL HUSBANDARY

**THE PROGRAM OF REGIONAL
DEVELOPMENT FOCUSED MISSION
DIFFERENTIATION AND
SPECIALIZATION**

Increasing sectoral competitiveness of
Burdur province-
**Integrated development model
by differentiating in agriculture and
animal husbandry**

PURPOSE

The project in question has an integrated structure to be realized under the name of "Increasing the sectoral competitiveness of Burdur province: integrated development by differentiating in agriculture and animal husbandry". In line with the university infrastructure, the existing local potential in the field of animal husbandry and local and regional needs analysis, it has been adopted by the university administration and employees that the university should specialize in animal husbandry. The integrated development model based on differentiation in agriculture and animal husbandry is based on three main axes with the aims of developing domestic animal breeds in Burdur province under the leadership of the University, introducing qualified breeds with genetic breeding, protecting animal health and increasing meat and milk yield and creating added value based on animal industry.



An Integrated Development Model

Farmer Training and Farm Management,

- A.1. Increasing Productivity in Cattle Breeding
- A.8. Raising Awareness and Increasing Efficiency of Breeders and Enterprises in the Sector
- A.9. Registration Systems and Database Creation

In the first axis, there are 7 projects addressing the training of farmers and management problems of our farms. In this area, we are mostly focusing on the problem of inefficiency in our farms due to insufficient knowledge, malpractices and management methods. In this axis, training, new barn and farm models and animal feeding processes are discussed. Thanks to the software we will implement, digital integration between the farms and our research centers will be ensured, and the raw data in the farms will be quickly processed by expert academics and turned into service in a way that will guide the studies of the sector. Thus, the university will utilize the technological possibilities of the age will be able to provide information and services to producers.

Animal Breeding,


- A.2. Establishment of Early Diagnosis Systems in Animal Diseases
- A.3. Controlling and Eliminating Animal Diseases
- A.4. Genetic Breeding of Cattle and Cattle Embryo Production
- A.5. Breeding Improvement and Dissemination of Small Ruminant Farming.

Our projects in the second axis are based on Animal Breeding. In this axis, 15 projects will be implemented. In these projects targeting the productivity of our agricultural enterprises and the transformation of the sector, we primarily aim at early detection of animal diseases, controlling and eliminating diseases, and especially reducing calf deaths. On the other hand, we aim to control the supply of the sector by producing embryos through the embryo transfer center we will establish, to develop small livestock breeds suitable for the local conditions and especially to expand the breeding of the registered Honamlı breed. Creating alternative breeding areas with fish, horse, buffalo, land snail and poultry species that will provide vitality and diversity to the sector is also among the projects we will realize on this axis.

Animal Husbandry Based Industry.

- A.6. Improving the Quality of Milk and Dairy Products
- A.7. Increasing the variety and quality of meat and meat products
- A.10. Increasing Energy Efficiency and Solid Waste Management in Livestock Sector
- A.8. Awareness and Increasing Efficiency of Breeders and Enterprises in the Sector

Our projects in the third axis are animal husbandry based industry developed in the field. We are implementing 5 projects in this field. Thanks to the relevant centers of our university "milk" and "meat" with new product development activities a Burdur brand will be created in its products. Again this and other projects in the axis of the meat and dairy sector biogas for the utilization of the waste generated technologies, reducing energy costs and increase productivity.

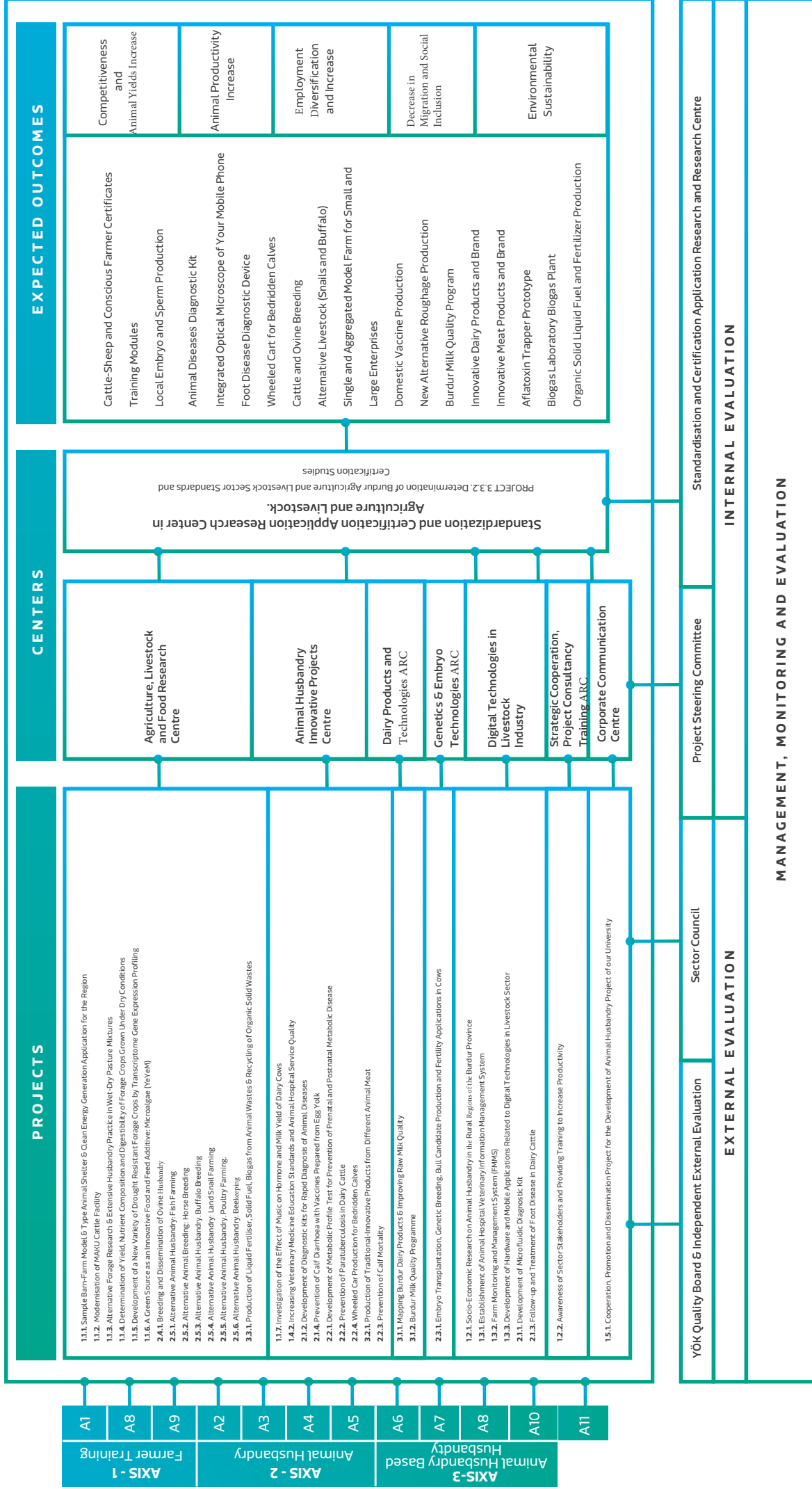
- 
- A large herd of cattle of various breeds, including brown, black, and white, is grazing in a lush green field. The background shows a line of trees under a clear sky.
- A.1. Increasing Productivity in Cattle Breeding
 - A.2. Establishment of Early Diagnosis Systems in Animal Diseases
 - A.3. Controlling and Eliminating Animal Diseases
 - A.4. Genetic Breeding of Cattle and Cattle Embryo Production
 - A.5. Breeding and Dissemination of Ovine Husbandry
 - A.6. Improving the Quality of Milk and Dairy Products
 - A.7. Increasing the variety and quality of meat and meat products
 - A.8. Awareness and Increasing Efficiency of Breeders and Enterprises in the Sector
 - A.9. Registration Systems and Database Creation
 - A.10. Increasing Energy Efficiency and Solid Waste Management in Livestock Sector
 - A.11. Directing Academic Studies Towards Sector Development

3 MAIN AXIS

11 OBJECTIVE

35 PROJECT

AN EFFECTIVE MANAGEMENT MODEL



“

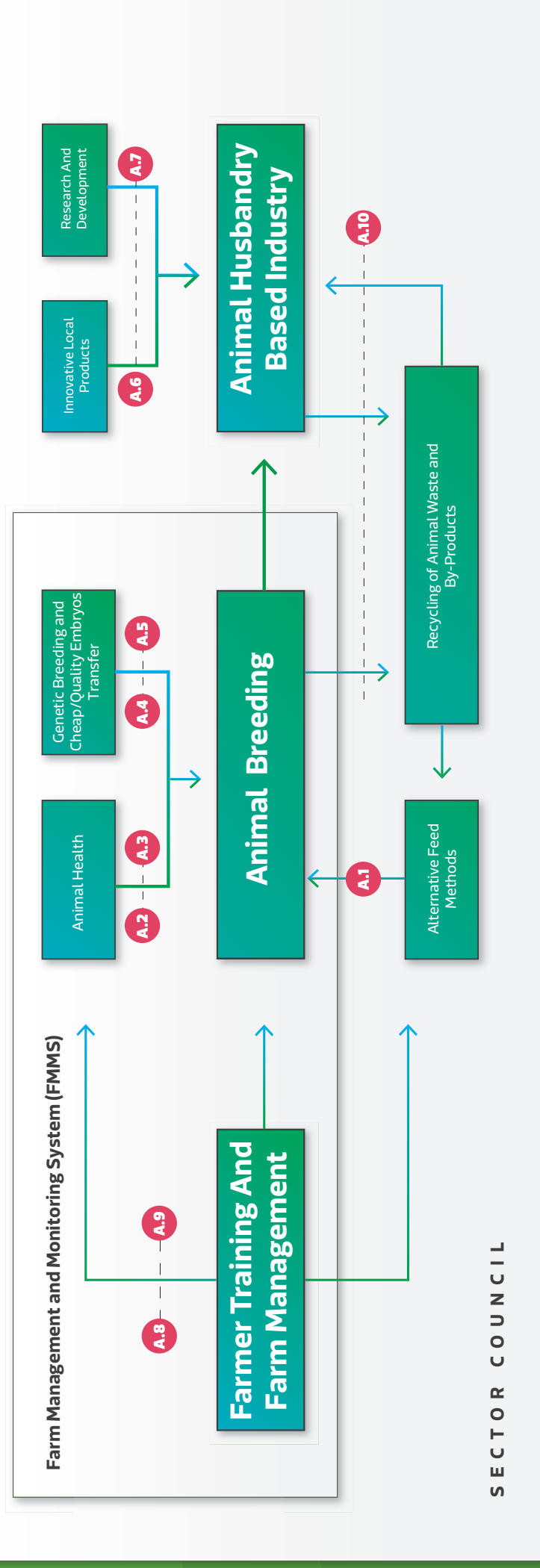
University - sector in
cooperation classical
understanding it's
changing,
memorization we're
breaking it.

”

UNITS

- Faculty of Veterinary Medicine
- Animal Hospital
- Animal Disease Diagnostic Laboratory
- Veterinary Diagnostic Analysis Laboratory
- Faculty of Engineering and Architecture
- Faculty of Economics and Administrative Sciences
- Faculty of Science and Letters
- Institute of Science and Technology Institute of Social Sciences
- Food, Agriculture and Livestock Vocational School
- Dairy Products and Technologies Research Center
- Meat Technologies Research Center
- Strategic Cooperation, Project Consultancy Training Research and Application Center
- Agriculture, Livestock and Food Research and Application Center
- Genetic and Embryo Technologies Research Center
- Animal Husbandry Innovative Projects Research and Application Center
- Standardization and Certification Application Research Center
- Joint Application of Digital Technologies in Livestock Sector Research Center

MAIN AXIS / AIM / ACTIVITY



- Competitiveness and Increased Animal Productivity
- Diversification and Growth of Employment
- Regional Income Growth
- Reducing Migration and Social Inclusion
- Environmental Sustainability

OUTPUTS

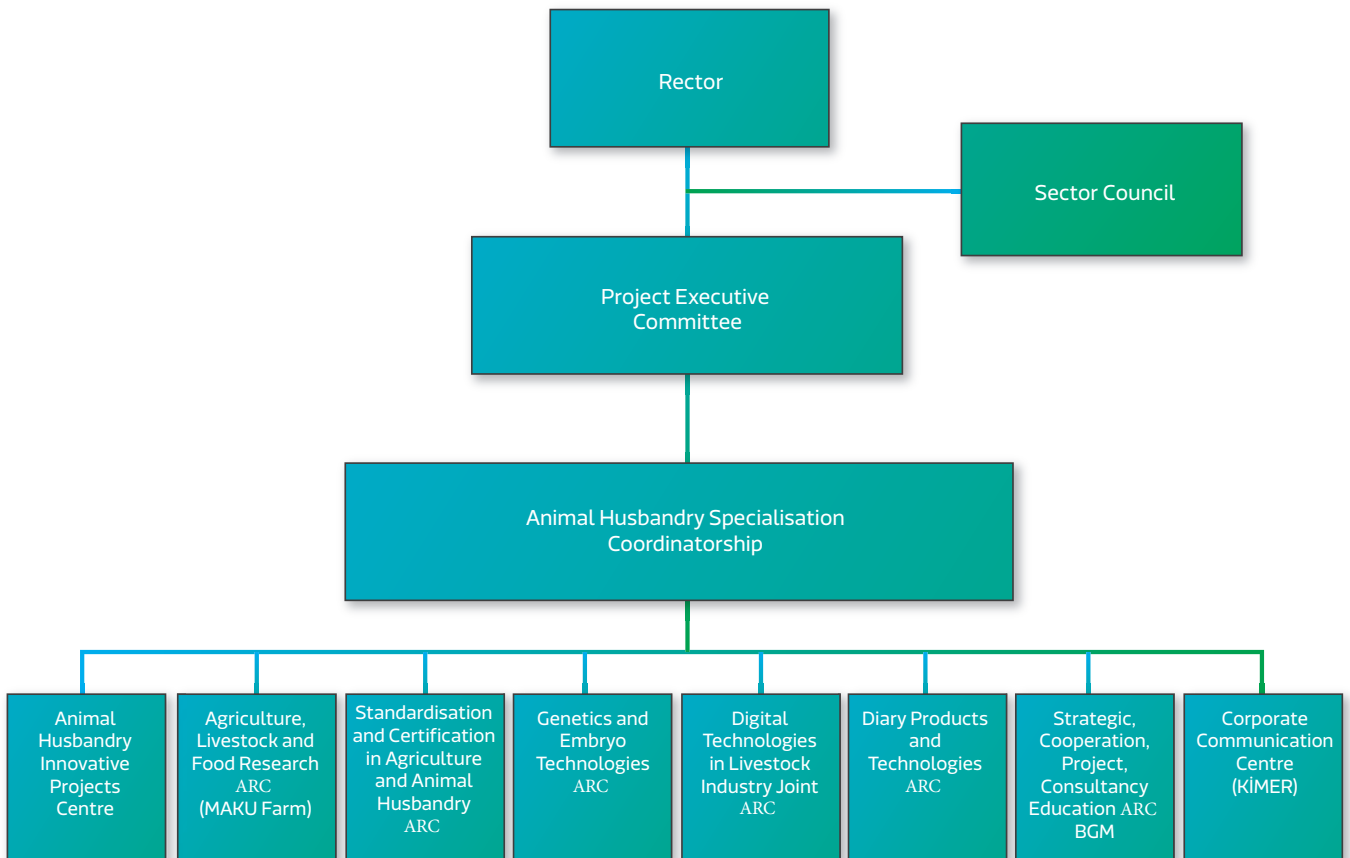


Organisation Structure

Burdur Mehmet Akif Ersoy University carries out the project management within the body of Specialization in Animal Husbandry Coordinatorship. In addition to this; Project Steering Committee, Sector Council, Application and Research Centers are also included in the project management model.



Project Organisation Chart



Project Executive Committee

The main purpose of the Project Steering Committee is to plan the activities carried out/to be carried out within the scope of the project, to ensure coordination and to monitor the work carried out. Additionally, it is responsible for ensuring that the projects are executed in alignment with the aims and objectives of the program, evaluating the opinions and suggestions of the Sector Council, giving opinions on whether the projects to be submitted by the University Faculty Members to the University Scientific Research Projects Coordinatorship (BAP) are related to the Livestock Project area carried out in relation to the "Mission Differentiation and Specialization for Regional Development Purposes" programme. The Project Executive Committee consists of the following members:

- ◆ Rector
- ◆ Vice Rector Responsible for Scientific Research Projects Coordination
- ◆ Dean of the Faculty of Veterinary Medicine
- ◆ Faculty of Veterinary Medicine Representative
- ◆ Animal Husbandry Specialization Coordinator
- ◆ Director of Livestock Innovative Projects Application and Research Centre
- ◆ Director of Agriculture, Livestock and Food Researches Application and Research Centre
- ◆ Director of Dairy Products and Technologies Application and Research Centre
- ◆ Director of Standardization and Certification in Agriculture-Livestock Application and Research Centre
- ◆ Director of Genetics and Embryo Technologies Application and Research Centre
- ◆ Director of Digital Technologies in Livestock Sector Joint Application and Research Centre
- ◆ Director of Scientific and Technology Application and Research Centre
- ◆ Director of Strategic Cooperation, Project Consultancy and Training Application and Research Centre
- ◆ Faculty of Engineering-Architecture, Food Engineering Department Representative

Sector Council

Burdur Mehmet Akif Ersoy University, with the participatory management system it has adopted, provides stakeholders in identifying the problems and needs of the city and the region through the centres established within the university, and the most effective and efficient solutions are produced in communication with external stakeholders. In this regard, local stakeholders also approach all kinds of projects to be developed by our university positively and declare their support in this regard. The "Livestock Sector Council" has been established to cover the entire province, which aims to increase communication and cooperation between the parties in order to solve livestock problems in the region, which is very important in terms of discussing livestock problems, practices and application results, providing feedback and sustainability. The Sector Council convenes under the chairmanship of the Governor of Burdur and consists of 47 members.



Sector Council Members

- ◆ Governor of Burdur (Chairman of the Sector Council)
- ◆ Burdur Deputies,
- ◆ Mayor of Burdur,
- ◆ Rector of Burdur Mehmet Akif Ersoy University,
- ◆ Secretary of Burdur Special Provincial Administration,
- ◆ Burdur Provincial Director of Environment, Urbanisation and Climate Change,
- ◆ Burdur Provincial Director of Science, Industry and Technology,
- ◆ Secretary General of Western Mediterranean Development Agency,
- ◆ Western Mediterranean Development Agency Burdur Provincial Coordinator,
- ◆ 6th Regional Director of Nature Conservation and National Parks,
- ◆ Burdur Provincial Director of Agriculture and Forestry,
- ◆ Burdur Directorate of Forest Operations
- ◆ Provincial Coordinator of Burdur Agriculture and Rural Development Support Institution
- ◆ Ziraat Bankası A.Ş. Burdur Branch Manager,
- ◆ President of Burdur Chamber of Commerce and Industry
- ◆ President of Burdur Commodity Exchange
- ◆ President of Burdur Chamber of Agriculture
- ◆ President of Burdur Chamber of Doctor of Veterinary Medicine
- ◆ President of Burdur Province Cattle Breeders' Association
- ◆ President of Burdur Province Village Development Cooperatives Union
- ◆ President of Burdur Breeding Sheep and Goat Breeders' Association
- ◆ Burdur Agricultural Credit Cooperative Manager
- ◆ Project Executive Board Members
- ◆ President of Burdur Red Meat Producers Association
- ◆ Meat Sector Representative
- ◆ President of Burdur Milk Producers Association
- ◆ Milk Sector Representative
- ◆ Representative of Large and Small Cattle Breeders (maximum 3 representatives)
- ◆ Trade and Consultancy Sector Representatives in Burdur Province (maximum 3 representatives)

Application And Research Centres

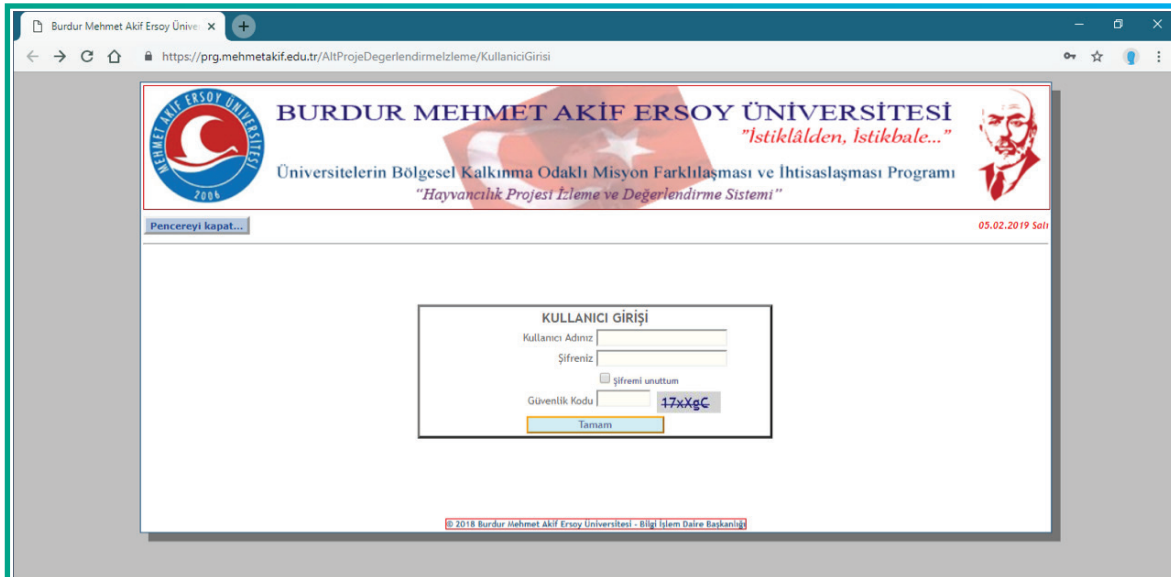
Within the scope of the specialization programme in the field of animal husbandry, a total of 41 projects were submitted under the main objectives mentioned above. During the implementation phase of the programme, new projects were added by taking into account the priorities and requirements of the sector and the total number of projects increased to 46. However, in the following processes, in order to ensure the coordination of the projects, to ensure integrity in the projects and to prevent waste of resources and time, it was deemed appropriate to merge the projects focusing on similar objectives and targeting similar outputs. While doing this, both the budgets of the projects and the researchers working in the projects were brought together to ensure integrity. As a result, 35 projects are currently being carried out.

Eight (8) Application and Research Centres have been established for the management of these projects. The projects are carried out within the relevant research centres and are coordinated by the Centre Directors. Established Application and Research Centres (ARC) are as follows:

- ◆ Livestock Innovative Projects Centre ARC
- ◆ Agriculture, Livestock and Food Research ARC
- ◆ Standardization and Certification in Agriculture-Livestock ARC
- ◆ Genetics and Embryo Technologies ARC
- ◆ Digital Technologies in Livestock Industry Joint ARC
- ◆ Strategic Cooperation, Project, Consultancy Training ARC
- ◆ Dairy Products and Technologies ARC
- ◆ Corporate Communication ARC

Project Monitoring And Evaluation System

All projects being carried out at our university are monitored online and instantly by the "Livestock Projects Monitoring and Evaluation System" developed by our University. Thanks to this system, it is possible to access the team list, activity schedules, completion rates of the activities, budget items and interim reports of the projects being carried out. Thus, the current status of all projects can be monitored and coordinated.



The screenshot shows a web browser window displaying the login page of the Project Monitoring and Evaluation System. The page header includes the logo of Burdur Mehmet Akif Ersoy University, the university's name, and the motto "İstiklâlden, İstikbale...". Below the header, there is a login form titled "KULLANICI GİRİŞİ" with fields for "Kullanıcı Adınız", "Şifreniz", and "Güvenlik Kodu". A "TAMAM" button is located below the form. The page also features a "Pencereyi kapat..." link and a date "05.02.2019 Salı". At the bottom, there is a copyright notice: "© 2018 Burdur Mehmet Akif Ersoy Üniversitesi - Bilgi İşlem Daire Başkanlığı".

Project Monitoring and Evaluation System

MAKÜ | Burdur
Mehmet Akif Ersoy
University

RESEARCH CENTRES AND PROJECTS CARRIED OUT

Increasing sectoral competitiveness of
Burdur province-
**Integrated development model
by differentiating in agriculture and
animal husbandry**



**Over a Quarter
Century of Experience
in Veterinary Education**



**Veterinary Diagnostic
and Analysis
Laboratory**

**Raw Milk
Analysis Laboratory**

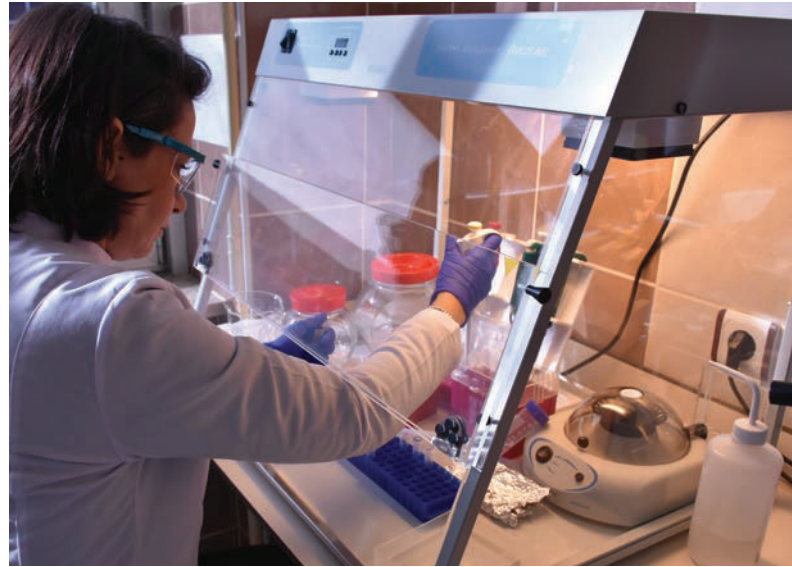


**Highly Equipped
Animal Hospital**

**Milk Technology
Research and
Development Laboratory**



**Vocational School of
Food, Agriculture and
Livestock**



**Animal Disease
Diagnosis and
Technologies Center**



**Center for Agriculture,
Livestock and
Food Research**

AXIS 1 - FARMER TRAINING AND FARM MANAGEMENT

1.1. INCREASING PRODUCTIVITY IN CATTLE BREEDING

- 1 1.1.1. Model Barn-farm Model & Type Animal Shelter & Clean Energy Production Application For The Region
- 2 1.1.2. Modernization Of MAKU Cattle Facility
- 3 1.1.3. Alternative Forage Research & Extensive Animal Husbandry Practice In Irrigated - Dry Pasture Mixtures
- 4 1.1.4. Determination Of Yield, Nutrient Composition And Digestibility Of Forage Crops Grown Under Dry Conditions
- 5 1.1.5. Development Of A New Drought Resistant Fodder Crop Variety Through Transcriptome Gene Expression Profiling
- 6 1.1.6. A Green Resource As An Innovative Food And Feed Additive: Microalgae (Yeyem)
- 7 1.1.7. The Effect Of Music On Hormones And Milk Yield Of Dairy Cows

1.2. RAISING AWARENESS OF BREEDERS AND ENTERPRISES IN THE SECTOR AND INCREASING PRODUCTIVITY

- 8 1.2.1. Agriculture And Animal Husbandry In Rural Areas in Burdur Province: Current Situation And Problems
- 9 1.2.2. Training Project For Raising Awareness Of Sector Stakeholders To Ensure A Productive And Sustainable Livestock Sector

1.3. CREATION OF RECORDING SYSTEMS AND DATABASE

- 10 1.3.1. Creation Of Animal Hospital Veterinary Information Management System
- 11 1.3.2. Farm Monitoring And Management System (ÇİYS)
- 12 1.3.3. Development Of Hardware And Mobile Applications Related To Digital Technologies In The Livestock Sector

1.4. DETERMINATION OF BURDUR AGRICULTURE AND LIVESTOCK SECTOR STANDARDS AND CERTIFICATION STUDIES

- 13 1.4.1. Burdur Agriculture And Livestock Sector Standards And Certification Studies
- 14 1.4.2. Increasing Veterinary Medical Education Standards And Animal Hospital Service Quality

1.5. COOPERATION, PROMOTION AND DISSEMINATION PROJECT FOR THE DEVELOPMENT OF OUR UNIVERSITY'S ANIMAL HUSBANDRY PROJECT

- 15 1.5.1. Cooperation, Promotion And Dissemination Project For The Development Of Our University's Animal Husbandry Project



AXIS 2 - ANIMAL HUSBANDRY

2.1. ESTABLISHING EARLY DETECTION SYSTEMS FOR ANIMAL DISEASES (RESEARCH&DEVELOPMENT (R&D) FOCUSED PROJECTS)

- 16 2.1.1. Development Of A Microfluidic Diagnostic Kit For The Field Detection Of Crptosporidium Oocysts In Calves
- 17 2.1.2. Development Of Neuraminidase Diagnostic Kits For Rapid Diagnosis Of Enterotoxemia In Animals
- 18 2.1.3. Follow-up And Treatment Of Foot Disease In Dairy Cattle
- 19 2.1.4. Prevention Of Calf Diarrhea With Vaccines Prepared From Egg Yolk: Immunoglobulin Y Technology

2.2. CONTROL AND ELIMINATION OF ANIMAL DISEASES

- 20 2.2.1. The Use Of Metabolic Profile Test For The Prevention Of Prenatal And Postnatal Metabolic Diseases And Increasing The Economic Efficiency Of Dairy Farms In Burdur Province
- 21 2.2.2. Distribution Of Paratuberculosis In Dairy Cattle In Burdur Province And Prevention Strategies
- 22 2.2.3. Prevention Of Calf Mortality
- 23 2.2.4. Production Of Wheeled Carts For Bedridden Calves

2.3. GENETIC BREEDING OF CATTLE AND PRODUCTION OF BOVINE EMBRYOS

- 24 2.3.1. Embryo Transplantation, Genetic Breeding, Bull Candidate Production And Fertility Applications In Cattle

2.4. BREEDING AND EXTENSION OF OVINE BREEDING

- 25 2.4.1. Breeding And Extension Of Ovine Husbandry

2.5. ALTERNATIVE ANIMAL BREEDING

- 26 2.5.1. Alternative Animal Husbandry: Fish Farming
- 27 2.5.2. Alternative Animal Breeding: Horse Breeding
- 28 2.5.3. Alternative Animal Breeding: Buffalo Breeding
- 29 2.5.4. Alternative Animal Husbandry: Land Snail Farming
- 30 2.5.5. Alternative Animal Husbandry: Poultry Farming
- 31 2.5.6. Alternative Animal Husbandry: Beekeeping



AXIS 3 - ANIMAL HUSBANDRY BASED INDUSTRY

3.1. IMPROVING THE QUALITY OF MILK AND MILK PRODUCTS

32 3.1.1. Mapping Of Burdur Dairy Products & Increasing The Quality Of Raw Milk

33 3.1.2. Burdur Milk Quality Program

3.2. INCREASING THE VARIETY AND QUALITY OF MEAT AND MEAT PRODUCTS

34 3.2.1. Valorizing Different Animal Meats In Burdur Province And Contributing To The Sector With Traditional And Innovative Products

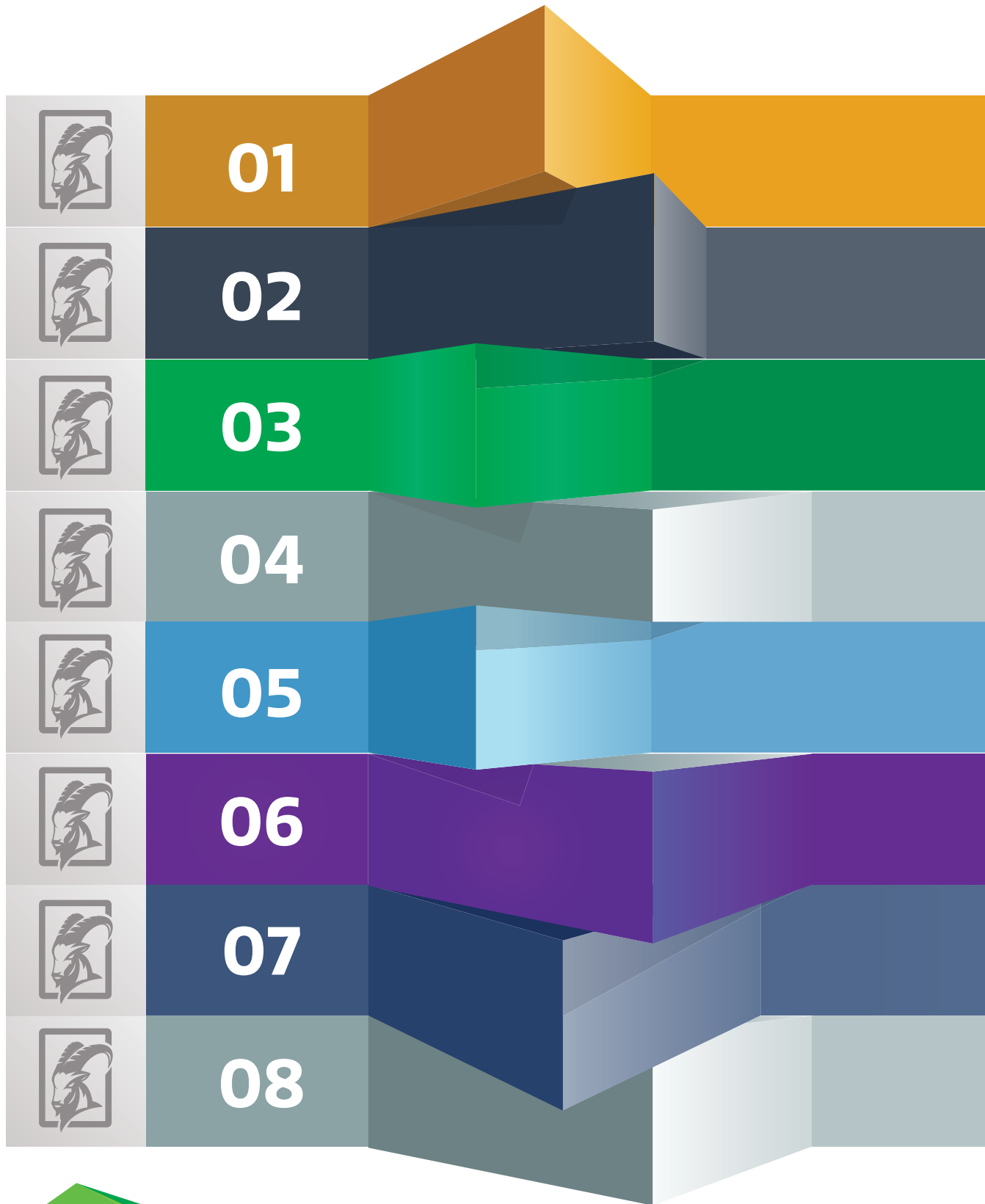
3.3. INCREASING ENERGY EFFICIENCY AND SOLID WASTE MANAGEMENT IN THE LIVESTOCK SECTOR

35 3.3.1. Production Of Liquid Fertilizer, Solid Fuel, Biogas From Animal Waste & Recycling Of Organic Solid Waste





PROJECTS APPLICATION AND RESEARCH CENTER



ANIMAL HUSBANDRY INNOVATIVE PROJECTS APPLICATION AND RESEARCH CENTER

AGRICULTURE, LIVESTOCK AND FOOD RESEARCH APPLICATION AND RESEARCH CENTER

CENTER FOR STANDARDIZATION AND CERTIFICATION IN AGRICULTURE AND ANIMAL HUSBANDRY

GENETICS AND EMBRYO TECHNOLOGIES APPLICATION AND RESEARCH CENTRE

DIGITAL TECHNOLOGIES IN ANIMAL HUSBANDRY SECTOR JOINT APPLICATION AND RESEARCH CENTRE

STRATEGIC COOPERATION, PROJECT CONSULTANCY TRAINING, APPLICATION AND RESEARCH CENTRE

CORPORATE COMMUNICATION CENTER

DAIRY PRODUCTS AND TECHNOLOGIES APPLICATION AND RESEARCH CENTRE



01

The purpose of the center is to carry out the functions for the implementation and implementation of R&D and innovative themed projects for the sector carried out within the scope of the university animal husbandry project and to develop researches.

Regional Development Oriented Mission Differentiation and Specialization Program Sub-projects carried out under the Information Technologies Application and Research Center within the scope of the Livestock Project:

ANIMAL HUSBANDRY INNOVATIVE PROJECTS APPLICATION AND RESEARCH CENTER

Development of Neuraminidase Diagnostic Kits for Rapid Diagnosis of Enterotoxemia in Animals

The aim of this project is to develop diagnostic kits for the diagnosis of Enterotoxemia in animals. Enterotoxemia is a disease that causes significant economic losses in sheep-goat breeding and has clinical findings that may be confused with many diseases. For this reason, in order to quickly detect the presence of the disease, diagnostic kits will be developed for animal health and will contribute to the development of domestic biotechnological products. The detection of Neuraminidase enzyme, which is effective in all types of enterotoxemia, is important for the rapid diagnosis of the disease. Thanks to the diagnostic kit to be developed with this project, early diagnosis of the disease will be possible and animal losses will be prevented.

Prevention of Calf Diarrhea with Vaccines Prepared from Egg Yolk: Immunoglobulin Y Technology

In this project, it is aimed to develop a domestic product that is an alternative to imported vaccines used in the prevention and protection of calf diarrhea, which causes significant economic losses in cattle breeding enterprises. Thanks to the product to be developed within the scope of the project, it is aimed to develop a prototype domestic product that supports passive immunization in calves, thus providing significant gains to the national economy, reducing vaccine costs, ensuring the widespread use in our country and ultimately preventing calf deaths caused by diarrhea. The product to be obtained in the project will be transformed into an industrial product in cooperation with a private sector organization.

The Use of Metabolic Profile Test in Burdur Province Dairy Cattle Farms to Prevent Pre- and Post-natal Metabolic Diseases and to Increase the Economic Efficiency of the Farms

The aim of this project is to reveal the metabolic status of dairy cattle and to prevent economic losses by helping early diagnosis of metabolic diseases. Metabolic profile tests are very important in early detection and follow-up of subclinical metabolic diseases and evaluation of fertility and nutritional status. With the use of Metabolic Profile Test, it is aimed to increase fertility, milk yield and calf survival in dairy cattle farms. In addition, it is aimed to prevent diseases such as subclinical ketosis and fatty liver syndrome, birth paralysis, clinical-subclinical hypocalcemia, which are common in dairy cattle farms, and thus to prevent milk and carcass loss in dairy farms.

Distribution and Prevention Strategies of Paratuberculosis in Dairy Cattle in Burdur Province

With this project; it is aimed to implement the control and eradication program of paratuberculosis in dairy cattle enterprises in Burdur province and to issue a certificate of free from paratuberculosis to the enterprises if the animals are negative for 2 consecutive years with the screenings to be made. Paratuberculosis (PtB) is a chronic disease that is characterized by clinical symptoms such as diarrhea, weakening, decrease in milk yield in cattle, sheep and goats, has high economic cost, has no treatment and vaccine, and does not require notification. Within the scope of the project, blood and fecal samples will be collected from farms every 6 months and cattle will be screened for PtB by ELISA, culture and real-time PCR. In addition, trainings will be given to breeders and veterinarians to raise awareness about paratuberculosis disease.

Wheeled Carriage Production for Bedridden Calves

The aim of the project is to produce a wheeled trolley in order to prevent bedridden calf deaths. In calves, front and back extremity fractures, joint and umbilical infections, paralysis due to incorrect force application in difficult birth are frequently encountered. Calf deaths also occur due to poor care conditions during treatment. While similar medical products are available for other animal species, there is no commercial product for calves. With the product to be developed, it is aimed to prevent contact with dirty barn floor after abdominal operations, reduce the risk of recurrence in hernias, stabilize fractures, prevent wounds due to continuous lying, facilitate intervention to the sick animal and increase animal welfare.

Contributing to the Sector with Traditional and Innovative Products by Evaluating Different Animal Meat in Burdur Province

The main purpose of this project is to establish an R&D unit within the university that will support the meat sector of the region, to improve traditional and local products and to bring them to the sector by producing them in industrial scale. The production and marketing of different meat products with innovative approaches, branding and promotion practices are important for the sector. Thanks to the project, it is aimed to determine the meat and meat products of different animal species raised in Burdur region, to increase their quality and to produce innovative meat products specific to the region from ovine. In addition, it is aimed to ensure the recognition of traditional meat products produced in Burdur region by geographical marking and to increase the competitiveness of local production companies at national level.

Prevention of Calf Mortality

The aim of the project is to reduce calf mortality by eliminating the factors that cause calf mortality, which is very high in our country. Within the scope of the project, firstly, the causes and distribution of calf mortality in the region will be revealed from an economic perspective. Then, in order to prevent calf mortality; activities will be carried out to prevent calf mortality due to diarrhea and pneumonia by vaccinating gravid cows 45-60 days before calving against diarrhea and pneumonia, to support the immune system of calves with plasma support planned to be implemented, and to increase colostrum quality in herds with passive transfer failure. Thanks to the project; it is aimed to reduce calf mortality rates, prevent significant financial losses due to deaths, and provide a solution to the problem of breeding cows and calves in our country.

Investigation of the Effect of Music on Hormone and Milk Yield of Dairy Cows

Within the scope of the project; It is aimed to investigate the effect of different music genres on stress hormones, oxidative stress parameters in rats to be used as a preliminary study of the project, to determine the effect of music genres on brain derived neurotrophic factor (BDNF, brain derived neurotrophic factor) and Tropomyosin receptor kinase B expression in the brain, to examine the effect of different music genres on animal physiology, stress level and animal welfare in dairy cows and to investigate the effect of different music genres played in cattle breeding on milk yield.

Improving Veterinary Medicine Education Standards and Animal Hospital Service Quality

The aim of this project is to improve the quality of education of the students of the Faculty of Veterinary Medicine of our University, the capability of the animal hospital in diagnosis and treatment, and the quality of service. With the completion of the project, in student practice laboratories, clinical skills laboratory and animal hospital, students will be trained in specific practical, clinical and procedural skills, which will increase competence and confidence, reduce technical failures and improve additional skills such as teamwork, decision making, leadership and situational awareness. With these acquired structures, it is aimed to contribute to the education of Veterinarians after graduation.



02

Objectives of the Center:

- ◆ To carry out plant and animal production in cooperation with existing or newly established units at the university.
- ◆ To examine environmental conditions related to plant and animal production in the region.
- ◆ To conduct breeding and research work to develop plant and animal species suitable for the regional conditions.
- ◆ To conduct research and development work that will increase total production in line with development plans' principles and goals.
- ◆ To provide physical facilities and services for research projects from various units of the university.
- ◆ To provide facilities and services for practical work, internships, and fieldwork as specified in associate, undergraduate, and postgraduate education programs, with the approval of the unit responsible for production.
- ◆ To transfer research results from the center to production, and to share them with public and private institutions.
- ◆ To guide regional producers with production models and methods to be developed and implemented.
- ◆ To organize educational seminars, conferences, and breeder courses for the environment and regional producers.
- ◆ To collaborate with domestic and foreign universities, institutes, agencies, centers, and public institutions within the framework of mutual bilateral cooperation in education, research, and production areas.

Sub-Projects Carried Out Under the Livestock Project of the Regional Development-Focused Mission Specialization and Differentiation Programme, Affiliated with the Information Technologies Application and Research Center:

AGRICULTURE, LIVESTOCK AND FOOD RESEARCH APPLICATION AND RESEARCH CENTER

Modernization of MAKU Livestock Facility

With this project, the aim is to modernize the large and small livestock units of the "Application Farm" within our university's Agriculture, Livestock, and Food Research Application and Research Center. As a result, it is envisaged that a modern "Application Farm" in line with the requirements of the era will be established within the University, and by including our producers, sector stakeholders, and partners in the projects to be carried out on our University's farm, a significant contribution will be made to the formation of a sustainable livestock sector. The modernization of the facility will further strengthen our university's existing academic, administrative, and research capabilities in this field.

Sample Barn-Farm Model for the Region, Standard Livestock Shelter, and Clean Energy Production Application

The aim of this project is to develop farm and livestock shelter models that are suitable for regional conditions and to promote energy production applications on farms. In this context, the primary objective is to create a new model farm in the region, ensuring the use of technological methods in cattle farming enterprises. In addition, through the project of a large livestock shelter, a modern, functional, secure, and cost-effective livestock shelter model will be developed, meeting all the necessary criteria for animal welfare, and capable of safely serving under the region's climate conditions and earthquake effects.

Furthermore, through clean energy applications, the goal is to conduct necessary research and pre-branding efforts on a sustainable, scalable, and energy-efficient model for a farm located at the university. This will ensure the positioning of the university as a benchmark in clean energy practices.

Alternative Roughage Research and Extensive Livestock Farming Practice in Mixed Wet-Dry Pasture Systems

The aim of this project is to produce alternative roughages specific to the Burdur province and scientifically establish the usability of feed plants used but lacking sufficient scientific data in animal nutrition. Within this scope, alternative roughage cultivation will be carried out on our university's lands, and nutritional value, energy, and digestibility analyses will be conducted on feed samples taken at different times, demonstrating their usability in animal nutrition. Additionally, rotational grazing will be applied in the wet-dry pasture areas on our university's land, revealing the potential for the improvement of unproductive pastures with irregular rainfall. The production of alternative roughages in arid regions will lead to reduced costs and increased profitability. Demonstrating the sustainability of the pasture will serve as an example for the livestock sector.

Improvement and Promotion of Small Ruminant Farming

This project aims to enhance the breeding and productivity of native goat breeds (Honamlı and Kil goats) and the Merino sheep breed by experimenting with different production systems. Using sperm from high-quality breeding stock with recorded performance data, numerous females will be fertilized, thus exploring ways to achieve higher yields through rapid and effective selection methods. A laparoscopy device for embryo production and transfer will be installed on a mobile vehicle, enabling on-site embryo transfer for goat breeders who desire this service. This will greatly facilitate breeders. Within the project, for the first time in Turkey, technology will be used in small ruminant farming for animal tracking and the development of disease diagnosis systems.

Alternative Animal Farming: Buffalo Breeding

The aim of this project is to revitalize the past but now fading buffalo farming in the region, contribute to the region's large livestock population, and promote the economic use of buffalo milk products. Buffaloes require wetland areas due to having approximately 10% fewer sweat glands compared to cattle. Therefore, Burdur and its surroundings have a suitable geographical structure for buffalo farming. Additionally, buffaloes have a higher digestive capacity compared to cattle in terms of utilizing low-quality roughage. Hence, buffalo breeding holds significant importance in our region for economically utilizing the low-quality roughage produced.

Alternative Animal Farming: Land Snail Farming

The aim of this project is to produce economically valuable snail species, *Helix lucorum* and *Helix aspersa*, in open and closed systems, and to evaluate them as an alternative livelihood for animal farming in Burdur province. Snail farming is considered an alternative sector with low environmental impact, contributing to the preservation of natural stocks, and having low investment and operating costs while potentially creating employment opportunities in rural areas. Within the project scope, adaptation studies for snail farming will be conducted in closed (controlled) and open (semi-controlled) systems. The project's success will be shared with farmers, and support for the supply and sale of young snails will be provided. By introducing the offspring to farmers in Burdur province, the goal is to expand production throughout the province, thereby aiming to develop the sector in our province and our country.

Alternative Animal Breeding: Poultry Farming

The aim of this project is to modernize the poultry farming facility within our university's Agriculture, Livestock, and Food Research Application and Research Center and to engage in poultry farming. Within the project, a quail and poultry unit will be put into operation, and pedigree eggs obtained from quails within the population of 7,000 quails, will be brought to establish a pedigree quail population. In the subsequent stages, genetic parameters related to incubation, reproductive performance, growth, slaughter carcass, and meat quality characteristics will be calculated to create a breeding line, perform selection according to desired traits, and work on obtaining hybrid quail with specific attributes.

Alternative Animal Farming: Beekeeping

The aim of the project is to obtain hygienic animal products while preserving the health of honey bees and their colonies, reducing treatment costs and productivity losses, and increasing honey production and quality by standardizing honey production. Within the project, in the beekeeping enterprises in Burdur province, the presence/prevalence of deformed wing virus (DWV), black queen cell virus (BQCV), acute bee paralysis virus (ABPV) infections, and Varroa parasite will be investigated, and necessary measures will be taken to prevent honey bee losses related to these factors. Additionally, the project will provide training for beekeepers, offer practical education on treatment and protection measures, develop control techniques, and raise awareness within the enterprises.

Production of Liquid Fertilizer, Solid Fuel, Biogas from Animal Waste, and Recycling of Organic Solid Waste

The aim of this project is to recycle animal waste into an economic benefit. Within this framework, the project aims to manage and dispose of the waste from cattle farming activities, including feces, urine, and organic waste, on-site, and enhance the gains of the strong livestock sector in the region. Project activities include designing a mobile-combined separation unit for separating feces into liquid and solid fertilizers, testing the liquid organic fertilizer in greenhouse activities, converting the solid fertilizer into high-quality fuel, establishing mobile prototype biogas production units, setting up a pilot biogas plant at our university, and composting plant and animal organic waste to enrich the soil.

Alternative Animal Farming: Horse Breeding

The aim of the project is to revive the endangered equestrian culture in our region and establish a corporate R&D infrastructure to support national-level equestrian sports activities. Within the project, by completing the deficiencies in the horse facility within our university and creating training areas such as riding arenas and obstacle courses, our university will become a leading center in horse breeding, equestrian sports activities at the national level, regional tourism, and various public services related to this field. By establishing a corporate infrastructure for equestrian culture and horsemanship at our university, the goal is to revitalize equestrian culture and introduce an alternative animal farming sector to Burdur province.

Alternative Animal Farming: Fish Farming

Within the scope of this project, the aim is to promote the cultivation of alternative fish species such as carp, tilapia, or trout in the warm water sources and reservoirs in our region. Being located in the Lakes Region of Burdur Province, rich in both fresh and saltwater resources, emphasizes the importance of aquaculture in the region. The entry of species with unique appeal and taste, such as rainbow trout, into the fish market is significant for the sector. Additionally, businesses engaged in rainbow trout farming in cages must empty their cages during the summer when the weather warms up. It is planned to utilize these vacant cages and the idle labor force by cultivating warm water fish alternately, contributing to the economy.

Determination of Yield, Nutrient Composition, and Digestibility of Forage Crops Grown in Arid Conditions

With the effects of global warming and associated climate change, the exploration of new approaches for improving the quality of existing forage and increasing the cultivation of forage crops in arid areas has become crucial. In this project, forage crops commonly grown in Turkey's arid regions, such as alfalfa (*Medicago sativa*), sainfoin (*Onobrychis sativa*), common vetch (*Vicia sativa*), maize for silage (*Zea mays*), Hungarian vetch (*Vicia pannonica*), bitter vetch (*Vicia ervilia*), field pea (*Pisum sativum*), pea (*Lathyrus sativus*), wheat (*Triticum aestivum*), triticale (*Triticosecale wittmack*), barley (*Hordeum vulgare*), and Italian ryegrass (*Lolium multiflorum*), are grown. The aim of the project is to determine the yield, nutritive value, and digestibility characteristics of forage crops commonly grown in Burdur province, both in the city center and its districts, and additionally, to investigate alternative forage crops suitable for regions with different climatic and rainfall conditions.

Innovative Food and Feed Additive Source: Microalgae (YeYeM)

The ultimate goal of the project is to culture microalgae species that synthesize metabolites/chemicals suitable as food-feed additives in raceway ponds, obtain the necessary microalgal biomass for animal nutrition, and determine the effects of the produced feed additive on poultry feeding. In this context, initially, inoculations will be conducted under aseptic conditions in Erlenmeyer flasks at the laboratory scale to achieve volume expansion. Subsequently, cultures will be established in raceway ponds to obtain sufficient biomass. Throughout the culture, growth parameters will be determined, and the biochemical composition, antimicrobial, and antioxidant activities of the obtained biomass will be assessed. The project aims to determine the effects of the produced feed additive on the growth performance of quails and chickens, assess the carcass efficiency and meat quality of the raised animals, determine the cholesterol and fatty acid composition of liver, meat, and eggs, and evaluate egg quality (Ex&In). Additionally, the project intends to prepare cDNA from samples taken from the intestinal tissues of animals raised with the feed additive and analyze gene expressions using qPCR. Microbiota analyses will also be conducted on the cecal contents of these animals.

Determination of Drought-Resistant Genotypes in Triticale and Development of Candidate Molecular Selection Markers through Whole Transcriptome Gene Expression Profiling (RNA-Seq), Leading to the Development of an Adaptive New Variety for the Burdur Province

The project aims to reveal different gene expression levels in triticale concerning its drought tolerance performance in the search for alternative feed sources in animal nutrition against changing climate conditions. Next-generation whole transcriptome profiling (RNA-Seq) is a method based on obtaining a large amount of sequence data that can represent the expression profile of living organisms successfully under specific conditions and at a specific time. It is aimed to achieve highly successful results by profiling the genes that are differentially expressed in triticale genotypes before and after drought stress application. Determining SNPs on candidate genes that play a role in the regulation of triticale's response to drought and enlightening the feature of being a selection criterion, clarifying the mechanisms that provide resistance to drought, and having transcriptomic data sets that breeders can use in their breeding programs will enable the development of new varieties in the development of abiotic stress-resistant varieties and molecular breeding studies. As a result, the time allocated for new variety development, which usually takes 7-10 years with classical breeding methods, will be reduced to a short period of around 4-5 years using molecular breeding methods.



03

The aim of the center is to conduct its activities in accordance with national and international standards or procedures established by the Consultation Board to determine standards for agriculture and animal husbandry, to issue certificates to organizations operating in these fields and meeting the required scope, and to ensure the monitoring of the process."

As for the title of the project, it can be translated as "Sub-Projects Implemented Under the Information Technology Application and Research Center within the Scope of the Regional Development-Focused Mission Differentiation and Specialization Program Livestock Project.

CENTER FOR STANDARDIZATION AND CERTIFICATION IN AGRICULTURE AND ANIMAL HUSBANDRY

Establishment of Standards and Certification Practices for the Agriculture and Livestock Sector in Burdur Province

This project aims to determine the standards of the livestock sector, inspect farms, products, and production processes for compliance with the established standards, and certify those that meet the standards. Within the project, specialized teams and committees will be formed to determine the standards of the livestock sector. This will include establishing standards for shelter infrastructure, herd health and management, hygiene-biosafety standards, and standards for animal products (meat, milk, breeding, etc.). Subsequently, visits to enterprises of various scales will be conducted to assess compliance with the standards, and certification will be issued to those operating in accordance with the standards. The project's objectives include improving animal welfare, enhancing quality and productivity in the sector, promoting branding, and producing value-added products.



SÜT SIĞIRCILIĞI İŞLETMELERİ
ADAY BELGELENDİRME KURULUŞU YETKİ BELGESİ

MAKÜİTHS
TANIM VE HAYVANCILIKTA STANDARDİZASYON VE BELGELENDİRME MERKEZİ

Tanım ve Hayvancılıkta Standardizasyon ve Belgeleme Uygulama ve Araştırma Merkezi "**Bölgesel Kalınma Odaklı Misyon Farklaşması ve İhtisaslaşması Programı Burdur İli Sektörel Rekabet Gücünün Arttırılması: Tanım ve Hayvancılıkta Farklaşarak Bütünleşik Kalınma**" programının bir faaliyeti olarak, 14 Nisan 2019 tarihli ve 30745 sayılı Resmî Gazete'de yayınlanan Yönetmelik hükümlerince faaliyetlerine başlayan ve 12/04/2020 tarihli ve 2021/314 sayılı Karar ile Proje Yürütme Kurulu tarafından onaylanan "**Süt Siğirciliği İşletmeleri Standartları**"na istinaden "**Süt Siğirciliği İşletmeleri Belgeleme**" programı kapsamında yukarıda adı ve adresi verilen kuruluşun "**Aday Belgeleme Kuruluşu**" olarak yetkilendirilmesini karar verilmiştir.

Kuruluş Dosya Numarası : _____
Belge Numarası : _____
Veriliş Tarihi : _____
Geçerlilik Süresi : _____

Merkez Müdürü

FRM.020/18-03.2021
Rev.03/Rev. Tarihi: 03.03.2020



SÜT SIĞIRCILIĞI İŞLETMELERİ
BELGELENDİRME KURULUŞU YETKİ BELGESİ

MAKÜİTHS
TANIM VE HAYVANCILIKTA STANDARDİZASYON VE BELGELENDİRME MERKEZİ

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Kuruluş Dosya Numarası : _____
Belge Numarası : _____
Veriliş Tarihi : _____
Geçerlilik Süresi : _____

Merkez Müdürü

FRM.020/18-03.2021
Rev.03/Rev. Tarihi: 03.03.2020



MAKÜİTHS
TARIM VE HAYVANCILIKTA STANDARDİZASYON VE BELGELENDİRME GENEL MÜDÜRLÜĞÜ

**KÜÇÜKBAŞ SÜRÜ ADAY BELGELENDİRME KURULUŞU
YETKİ BELGESİ**

Resmi Gazete’de yayınlanan 14 Nisan 2019 tarihli ve 30745 sayılı Yönetmelik hükümlerince faaliyetlerine başlayan Tarım ve Hayvancılıkta Standardizasyon ve Belgelendirme Uygulama ve Araştırma Merkezinde yürütülmekte olan “Küçükbaş Sürü Belgelendirme” programı kapsamında yukarıda adı ve adresi verilen kuruluşun “Aday Belgelendirme Kuruluşu” olarak yetkilendirilmesine karar verilmiştir.

Kuruluş Dosya Numarası :
Belge Numarası :
Revizyon Numarası :
Veriliş Tarihi :
Geçerlilik Süresi :

Merkez Müdürü

FİM.022/18.02.2021
Revizyon Tarihi: 21.09.2021



MAKÜİTHS
TARIM VE HAYVANCILIKTA STANDARDİZASYON VE BELGELENDİRME GENEL MÜDÜRLÜĞÜ

**KÜÇÜKBAŞ SÜRÜ BELGELENDİRME KURULUŞU
YETKİ BELGESİ**

Resmi Gazete’de yayınlanan 14 Nisan 2019 tarihli ve 30745 sayılı Yönetmelik hükümlerince faaliyetlerine başlayan Tarım ve Hayvancılıkta Standardizasyon ve Belgelendirme Uygulama ve Araştırma Merkezinde yürütülmekte olan “Küçükbaş Sürü Belgelendirme” programı kapsamında yukarıda adı ve adresi verilen kuruluşun “Belgelendirme Kuruluşu” olarak yetkilendirilmesine karar verilmiştir.

Kuruluş Dosya Numarası :
Belge Numarası :
Revizyon Numarası :
Veriliş Tarihi :
Geçerlilik Süresi :

Merkez Müdürü

FİM.022/18.02.2021
Revizyon Tarihi: 21.09.2021



04

Objectives of the Centre;

- ◆ To carry out research on genetic breeding, embryo transfer, semen, ovum and embryo in farm animals.
- ◆ To make embryo transfer technology, which is an important tool in genetic progress, available to the breeders in the region.
- ◆ To carry out studies to produce bull candidates that can be used in semen production.
- ◆ Organizing training programmes for veterinarians and students of the Faculty of Veterinary Medicine in order to contribute to the solution of problems related to reproduction in farm animals.
- ◆ Providing information and technical support to breeders in the region on fertility and breeding. To support the relevant projects carried out within the scope of the livestock project.

Sub-projects carried out by the Information Technologies Application and Research Centre within the scope of the Regional Development Oriented Mission Differentiation and Specialization Programme Livestock Project:

GENETICS AND EMBRYO TECHNOLOGIES APPLICATION AND RESEARCH CENTRE

Embryo Transplantation, Genetic Breeding, Bull Candidate Production and Fertility Applications in Cows

In this project, it is aimed to increase the productivity per animal and increase the number of animals by further increasing the genetic capacity of cows in Burdur province. For this purpose; embryo transplantation, genetic breeding studies, fertility and bull candidate production will be carried out. In the project, it is aimed to establish a center that will produce embryos of breeds demanded by animal breeders such as Holstein and Simmental and transfer them to cows owned by breeders. In addition to this, oocyte bank will be established by keeping the gene source of high yielding animals pure and the effectiveness of anti-retro-viral (ARV) drugs and combinations to be added to semen diluents on spermatological parameters and fertility trials will be investigated.



05

The aim of the Centre is to develop digital technologies to increase productivity in the livestock sector and to implement projects covering processes from research and development to commercialization in order to ensure the widespread use of these technologies in the sector.

Areas of activity of the Centre

- ◆ To establish breeding, identification and data analysis systems for ovine animals within the scope of the provisions of the relevant legislation.
- ◆ To establish and disseminate digital monitoring and management systems in cattle farms.
- ◆ Develop digital tools to provide remote consultancy services to the sector.
- ◆ To develop technological solutions to increase welfare in animal shelters and breeders' living spaces.
- ◆ To develop integrated digital monitoring systems in the process of animal production and delivery of animal products to the end consumer.
- ◆ To develop digital technologies to increase the quality and productivity of meat, milk and products and to popularize their use.
- ◆ To establish an institutional organizational structure for the identification, certification and marketing of local products.
- ◆ To carry out studies to contribute to the determination of national targets and policies for increasing the productivity of the livestock sector in all other areas of the country and for the development of the sector.

Sub-projects carried out under the Digital Technologies Joint Application and Research Centre in Livestock Sector within the scope of Regional Development Oriented Mission Differentiation and Specialization Programme Livestock Project:

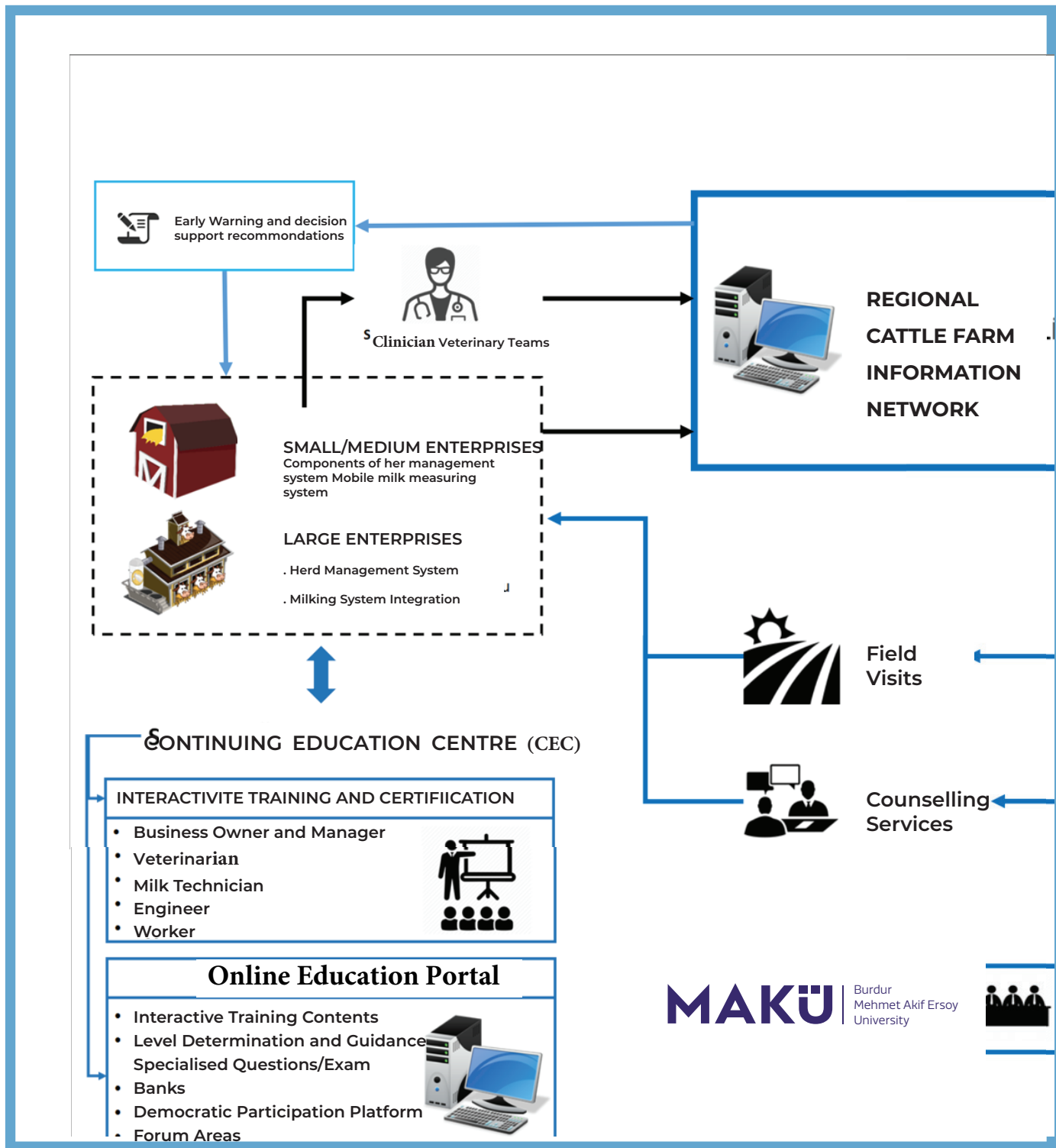
DIGITAL TECHNOLOGIES IN ANIMAL HUSBANDRY SECTOR JOINT APPLICATION AND RESEARCH CENTRE

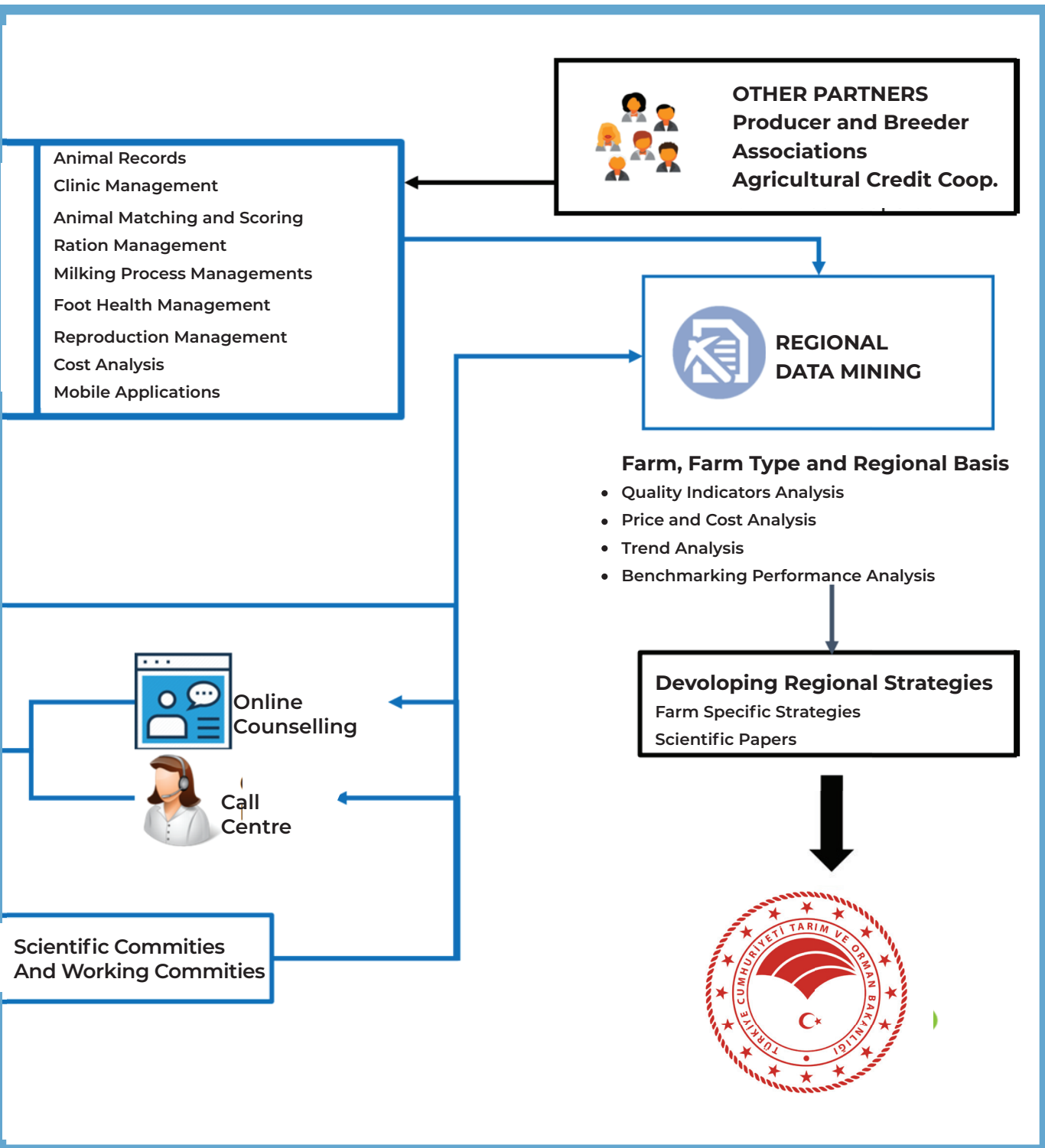
Farm Monitoring and Management System (FMMS)

Thanks to this project, new informatics application strategies will be developed in small, medium and large-scale dairy cattle farms in and around Burdur province and decision support models at technological level will be created to increase productivity. In this context, it is planned to create a university- centered farm registration system on enterprise basis and to create a registration system and database that will enable understanding, questioning, solving, early warning, taking precautions and developing rule systems in all stages of production processes in enterprises. With the analysis of the data to be collected from the region, inferences will be made for the detection of animals with high genetic potential, early warning and precaution development in unusual situations such as disease, productivity determination and productivity increase.

Establishment of Animal Hospital Veterinary Information Management System

In the project, it is aimed to develop Veterinary Information Management System/Database and Online Education Systems in order to enable our University Faculty of Veterinary Medicine and Animal Hospital to provide more effective service to the animal husbandry in the region. Problems related to animal health in the region, solution processes and treatment protocols will be recorded. In this context, it is planned to create a registration system and database that will enable understanding, questioning, solving, producing early warnings, taking precautions and developing rule systems in all stages of production processes in these enterprises in order to create farm registration systems on an enterprise basis as university-centred and to make contributions to animal husbandry in the region and to make the necessary strategies and plans to be developed.





Socio-Economic Structure of Animal Husbandry and Problems of Livestock Sector in Rural Burdur Province

In this project, it is aimed to reveal the economic, social and production problems of small producers especially in rural areas in Burdur province and to develop solutions for these problems. In the project, firstly, producers operating in the livestock sector in rural Burdur will be interviewed and their socio- economic status will be revealed. As a result of the questionnaire data on household socio-economic structure, income, poverty and migration processes will be obtained. At the same time, data on animal statistics, animal diseases and their incidence, shelter structures, utilization of animal wastes, pasture areas, problems and solution suggestions of the livestock sector will also be collected. The data obtained will constitute an important source for other projects and policy recommendations.

Follow-up and Treatment of Hoof Disease in Dairy Cattle

In this project, it is aimed to develop an electronic tracking system that will provide automatic early diagnosis of foot diseases and to treat cows with hoof diseases by using classical treatment and ozone therapy. Hoof diseases cause significant economic losses and are among the top three causes of health- related culling. Economic losses from the disease are much higher than treatment costs. Due to the antibiotics used in the treatment of the disease, the milk obtained during the treatment process is spilt. In order to prevent this expense, it is expected that the application of ozone therapy instead of antibiotics in treatment will give positive results. Thanks to the project, it is planned to control hoof diseases in enterprises and reduce milk loss.

Development of Hardware and Mobile Applications Related to Digital Technologies in Livestock Sector

The aim of the project is to analyze the basic needs of a farm with breeders and expert veterinarians and to create a software-hardware duo that can respond to the requests. The aim of this hardware and integrated software is to provide instant answers to the questions of the breeders, to be able to make immediate interventions by evaluating the reports produced by the expert veterinarians and to provide ease of use by minimizing the software learning and data entry workload of the breeders. With the project, it will be ensured that the foreign dependency in the livestock sector in the technological field will be reduced and the enterprises will have a system that is both domestic and stable at more affordable prices.

Development of a Microfluidic Diagnostic Kit for the Field Detection of Cryptosporidium Oocysts in Calves

In the project, diagnostic kits will be developed for the direct and practical detection of *Cryptosporidium* oocysts by veterinarians in the field. With the first diagnostic kit; oocyst detection will be performed with a portable light microscope that can be integrated into a mobile phone camera. With the second kit, *Cryptosporidium* oocysts will be detected by direct fluorescent antibody testing using a portable microscope modified as a fluorescence microscope. The last kit involves the development of a microfluidic dimensional separation chip for the purification of oocysts to increase diagnostic reliability. The images recorded on the mobile phone with the diagnostic kits will be analyzed using software and oocysts will be counted. The diagnostic kits will be useful for early, rapid and reliable diagnosis of cryptosporidiosis in the field and will contribute to the reduction of economic losses based on calf mortality.



06

Aims of the Centre

- ◆ To ensure that the academic knowledge and human resources of the University are directed to the public sector, private sector and non-governmental organizations.
- ◆ To be a liaison unit on behalf of the University for the public sector, private sector and non-governmental organizations.
- ◆ To ensure the development of co-operation activities with defined sector branches.
- ◆ To ensure the establishment of project advisory and implementation teams from different fields consisting of academic staff within the scope of cooperation activities.
- ◆ To encourage, direct and organize the development of projects on behalf of the city and the region.
- ◆ To provide consultancy services in the preparation of state-funded projects developed by city and regional actors.
- ◆ To provide consultancy services for the development and maturation of the projects proposed to be developed.
- ◆ Providing education, consultancy and information services on project preparation and management.
- ◆ To organize information circulation and announcements within the University in order to ensure that project announcements and research programmes made by national and international institutions are announced to academic staff, faculties and institutes, relevant centers and units.
- ◆ To keep records of the information regarding the projects supported by national and international institutions and carried out by the academic staff or research centers of the University, such as project name, budget, number of projects carried out in the units.
- ◆ To create databases on the fields of study of academic staff and the projects carried out and being carried out at the University.

STRATEGIC COOPERATION, PROJECT CONSULTANCY TRAINING, APPLICATION AND RESEARCH CENTRE

- ◆ To publish annual activity reports on the project activities carried out by the units of the University.
- ◆ To provide academic consultancy services to the public sector, private sector and non-governmental organizations in line with their needs and to organize the provision of these services.
- ◆ To organize training, seminars and conferences that bring together students and sector actors.
- ◆ To provide training and consultancy services to entrepreneurs, businessmen and businesswomen in the city and the region.
- ◆ To ensure that small, medium and large industrial, commercial, service, agricultural, animal husbandry and similar enterprises and public and private institutions, as well as non-governmental organizations benefit from the activities carried out in addition to associate, undergraduate and graduate education programmes at the University through continuing education programmes.
- ◆ To organize training programmes in order to meet the in-service training and vocational training demands of the University, other public and private institutions and organizations.

Sub-projects carried out under the Strategic Cooperation, Project Consultancy Training Application and Research Centre within the scope of the Regional Development Oriented Mission Differentiation and Specialization Programme Livestock Project

Training Programme to Increase Awareness among Sector Stakeholders for Improved and Sustainable Livestock Sector

The aim of this project is to provide breeders and enterprises with training on specific topics, to reduce animal diseases and deaths while also increasing productivity in the sector. In this context, training sessions will cover hoof diseases and hoof care, calf care and illnesses, cattle nutrition and reproductive health, udder health and milking techniques, animal shelters, livestock business economics, and ovine breeding. It is aimed to enhance the effectiveness of the trainings with books and short videos to be prepared. In addition, local dairy producers will be trained on milk processing, yoghurt and cheese production, production methods and equipment. Training and consultancy services will be provided for industrial enterprises based on animal husbandry on finance, cost, marketing, advertising, branding, new product development (innovation).







07

Aims of the Center are to meet the application needs of radio-television, cinema production, radio-television broadcasting, and public relations education and training, which take place at the University in collaboration with an organization that comprises the university radio and television, to support the professional development and practical training of students in related disciplines, to conduct press and public relations activities of the University carried out through traditional and new media, To coordinate corporate culture, identity, corporate image and reputation management activities, to carry out scientific research and development activities by following the developments and technologies in the fields of activity of the Centre, To provide content and programme support for activities such as distance education, interactive education, and to contribute to the development of the University's cooperation with public, private and international organizations in the field of media and its integration with the society.

INSTITUTIONAL COMMUNICATION APPLICATION AND RESEARCH CENTRE

Cooperation, Promotion and Dissemination Project for the Development of the Livestock Project of our University:

In this project, it is aimed to carry out promotional activities to increase the development and widespread impact of the animal husbandry project carried out by our University and to increase national and international cooperation. The project aims to enhance the efficiency of the “Regional Development Oriented Mission Differentiation and Specialization Programme” and to ensure that it reaches its goals and objectives faster, to announce the results of other projects and thus to increase its widespread impact through promotion and cooperation activities. The project will provide the necessary ground for establishing healthier communication with the stakeholders of the livestock project and will ensure that the project mentioned will be announced to a wider audience. The project will pave the way for the emergence of new and creative projects during the implementation of the animal husbandry project.



08

Aim

The aim of the Centre is to carry out the functions for the execution and development of R&D and innovative projects for dairy products and technologies within the scope of the Livestock Project carried out by the University, to carry out the necessary work and transactions related to the projects, and to provide information to the Rectorate about the development and results. Fields of activity of the Centre;

- ◆ To produce solution-oriented projects to develop elements that ensure the preservation of the characteristic features of traditional dairy products during production, storage and marketing. To
- ◆ reduce the testing costs of the products of the companies, to provide the equipment for advanced testing services that are difficult to carry out, to provide services, to create a design environment and to train the personnel to carry out these studies.
- ◆ To develop university-industry cooperation relations, to reveal the R&D and innovative potential in the light of the data obtained and to contribute to the strategies.
- ◆ To develop new products and to ensure that products that can replace imported products offered to the milk industrialists at high prices and have a structure, taste and odour suitable for consumer preferences.
- ◆ To reduce production costs.
- ◆ To contribute to the regional economy by developing projects to realise activities related to obtaining geographical indication registration, which is one of the most important guarantees of sustainability in the production of traditional products specific to the region, and to develop patented products.
- ◆ To develop serological, molecular and rapid diagnostic kits to determine microbial contamination in milk and dairy products in cooperation with the Animal Disease Diagnostic Centre and to establish a diagnostic unit in this field at the Centre

DAIRY PRODUCTS AND TECHNOLOGIES APPLICATION AND RESEARCH CENTRE

- ◆ To encourage sectoral innovation and new product group formation in the region, to increase competitiveness and to help ensure economic development.
- ◆ To ensure that the information and technological infrastructure developed at the Centre can be transferred to the food sector and the public.
- ◆ To build projects that will develop units serving in the field of animal husbandry at the university.
- ◆ To analyze the causes of losses related to animal production in the region.
- ◆ To evaluate the products obtained from the centre, to obtain brand products and to offer them to the market.
- ◆ To carry out research and development studies to increase total production in accordance with the principles and targets of development plans.
- ◆ To bring together the practices and researches envisaged in associate, undergraduate and graduate education programmes in line with the current objectives.
- ◆ To provide guidance to the producers of the region on the production models and methods that need to be developed and implemented.
- ◆ To carry out joint studies and projects on education, research and production in cooperation with universities, institutes, agencies, centers and public institutions in Türkiye and abroad.

Sub-projects carried out under the Dairy Products and Technologies Application and Research Centre within the Regional Development Oriented Mission Differentiation and Specialization Programme Livestock Project:

Mapping Burdur Dairy Products and Improving Raw Milk Quality

With this project, it is aimed to study the diversity of traditional dairy products in Burdur province, to create an inventory book on local dairy products and to introduce these products into the industry. The inventory study will uncover local products and analyze their chemical, biochemical and structural properties, as well as their microflora. This data will be used to produce products that cannot be manufactured industrially. The aim is to introduce both traditional and alternative new products into the economy, while standardizing and producing them locally, and branding them accordingly. In addition, thanks to the aflatoxin scavenger system to be developed within the scope of the project; it is aimed to increase the quality of raw milk in our country by ensuring the retention of aflatoxin derivatives in the milk of animals.

Burdur Milk Quality Programme

Within the scope of this project, the aim is to ensure that the current levels of fat, protein, somatic cell count, and bacterial load present in regionally produced raw milk align with international standards. Although it is extremely important that the commercial milk produced has ideal microbial values, there is no continuous monitoring system in our country. This is a project that will be implemented for the first time in our country in terms of its scope and nature. The project aims to establish a "Continuous Monitoring" network for milk quality and to facilitate the availability of quality raw materials for raw milk processing factories and dairies in terms of product yield and shelf life. In addition, there will be significant gains in terms of public health and food safety, and the sector will be strengthened by the increase in export opportunities.



Our Strengths And Achievements

◆ **We Get Strength from Our Achievements Over a Quarter Century of Experience in Veterinary Education**

Burdur Mehmet Akif Ersoy University's Faculty of Veterinary Medicine, established in 1992 as an affiliated institution of Akdeniz University, is a higher education institution that has riveted its development process with its strong academic staff, rich equipment and success stories it has created in its region.

◆ **Highly Equipped Animal Hospital**

Burdur Mehmet Akif Ersoy University Faculty of Veterinary Medicine Animal Hospital, which is the largest Animal Hospital in our country, serves the animal husbandry of the region and the country with its approximately 11.000 m² closed area and international equipment.

The Emergency Clinic, open 24/7, has been inaugurated at our Veterinary Faculty Hospital. This clinic has been specifically designed to provide emergency treatment for citizens' pets and animals found injured in nature. Our veterinary faculty's animal hospital is the largest in the region that it serves both as a practical training ground for students and a top-notch facility to examine and treat animals brought in.

◆ **Veterinary Diagnosis and Analysis Laboratory**

Burdur Mehmet Akif Ersoy University Faculty of Veterinary Medicine is the first faculty to receive the establishment and operation permit for Virology, Microbiology, Parasitology, Pathology, Pharmacology, Toxicology and Biochemistry laboratories from the Ministry of Food, Agriculture and Livestock for the establishment of Veterinary Diagnostic and Analysis Laboratories.

◆ **Raw Milk Analysis Protocol**

Within the scope of the Raw Milk Analysis Support Programme carried out with the support of the Ministry of Agriculture and Forestry, a 'Raw Milk Analysis Protocol' was signed with Burdur Cattle Breeders' Association. With this protocol, it is aimed both to increase the quality of milk in Burdur and to price milk according to quality.

◆ **Honamlı Goat is in National Registration List**

Honamlı goat, which is bred in the foothills of the Toros Mountains, has been included in the National Registration List with the efforts of the Faculty of Veterinary Medicine at Burdur Mehmet Akif Ersoy University.

◆ **Animal Disease Diagnosis and Technologies Center**

With the Animal Disease Diagnostic Technologies Centre, established with the support of the Western Mediterranean Development Agency (BAKA), it is aimed to develop both ELISA and rapid diagnostic kits for field use and molecular diagnostic kits to be used in laboratory conditions for the early diagnosis of animal diseases and cancers.

◆ **Milk Technologies Research Unit**

The main objective of the Center, which was established within the scope of the BAKA-supported project initiated to deliver the milk produced in Burdur to consumers in a healthy way and to create a brand in the sector, is to find solutions to the problems of raw milk at raw material, processing and microbiological levels.

◆ **Center for Agriculture, Livestock and Food Research**

The center carries out breeding studies, researches and evaluates the products obtained from the center in order to develop plant and animal species suitable for the conditions of the region, to obtain brand products and to put them on the market.

◆ **Burdur Vocational School Transformed into Food, Agriculture and Livestock Vocational School**

Our vocational school, which will train intermediate vocational staff for the livestock, agriculture and food sectors, is the first thematic vocational school.



◆ **The Trainings Aim to Promote Social Development in Burdur.**

In the training organized within the scope of the women's cooperative project within the Strategic, Cooperation, Project, Consultancy Training Application and Research Center, "Burdur Goat Tulum Cheese Production Training from Goat Milk" was given to women producers from Bayır, Çavdır and Alyazmalı Women Entrepreneurs Cooperative members. With the training given at the Dairy Products and Technologies Application and Research Center Milk Processing Facility, it is aimed to both evaluate women's labor and contribute to employment in Burdur.

◆ **Harvest Time at MAKU**

In the studies carried out by the Central Directorate of Agriculture, Livestock and Food Research and Application Center, different forage crops such as barley, sainfoin, triticale, barley and oats planted on an area of approximately 3 thousand acres are harvested. With these forage crops produced by our university, it contributes to the needs of regional farms, especially the research farm within its body.

◆ **Faculty of Veterinary Medicine received the International Accreditation Certificate.**

Faculty of Veterinary Medicine received its accreditation certificate from the European Association of Veterinary Medicine Educational Institutions (EAEVE). It was accepted as a "Fully Accredited Faculty" by the European Association of Veterinary Medicine Educational Institutions (EAEVE). With this development, the Faculty of Veterinary Medicine became the first faculty of MAKU with international accreditation.

◆ **Digital Technologies in Livestock Industry Joint Application and Research Center's (HAYTEK) Project to be Supported in Cooperation with TÜBİTAK-TAGEM.**

The project proposal titled "Automatic Recording of Milking System Data with Internet of Things Systems", prepared with the participation of HAYTEK partners Hacettepe and Kırklareli Universities, was deemed worthy of support within the scope of the 1005 Agricultural Research Joint Call, which is carried out in cooperation with the Scientific and Technological Research Council of Turkey (TÜBİTAK) and the General Directorate of Agricultural Research and Policies (TAGEM). The project aims to develop Internet of Things based hardware and software for automatic recognition of animals in the milking area and automatic transfer of milking information to the database. One of the project's working topics is the design of a local and non-contact milk meter for milking systems. The results obtained with the innovative solutions to be developed within the framework of the project are aimed to provide production efficiency in the livestock industry of our country, to increase animal welfare and to contribute economically.

◆ **With MAKU's Project, Burdur was declared a Pilot Region in Dairy Cattle Breeding.**

The "Standardization and Certification for Increasing the Economic Efficiency of Dairy Cattle Breeding Enterprises" project carried out by Burdur Mehmet Akif Ersoy University was included in the investment program by the Ministry of Agriculture and Forestry. Burdur was selected as the pilot province for the implementation of the project. With the support program to be realized within the scope of the project, it is aimed to increase the productivity of dairy cattle farms in Burdur.

◆ **Turkey's First Livestock Technologies Festival was held at MAKU.**

For the first time in Turkey, the Livestock Technologies R&D and Innovation Festival (HAYTEKFEST), which will shape the livestock sector, was hosted by Burdur Mehmet Akif Ersoy University. With HAYTEKFEST, it is aimed to reveal domestic and national qualified technology-based projects in the livestock sector, which is increasing in strategic importance day by day within the scope of Turkey's National Technology Move, and to realize these projects quickly and effectively.

◆ **Burdur Goat Tulum Cheese was launched.**

Within the scope of the Social Development Support Program (SOGEP) carried out by the General Directorate of Development Agencies of the Ministry of Industry and Technology, "Burdur Goat Tulum Cheese" produced within the scope of the "Burdur Ovine Livestock Milk Collection Network Project" carried out in cooperation with Burdur Provincial Special Provincial Administration, Burdur Mehmet Akif Ersoy University, Provincial Directorate of Agriculture and Forestry and Burdur Breeding Sheep and Goat Breeders Association with the support of Western Mediterranean Development Agency.

◆ **MAKU Patented Mobile Microscope.**

The mobile phone, which provides very fast diagnosis of many diseases in animals, where the results of blood, urine, feces and skin samples can be obtained in 10 minutes.

The patent application made to the Turkish Patent and Trademark Office in 2019 resulted in the publication of patent information in the Official Patent Bulletin in 2022.

◆ **Ministry Supports Mobile Microscope Developed by MAKU**

Within the scope of the Ministry of Agriculture and Forestry's Support for Rural Development Investments Program, "Smart Agriculture" category was included in the scope of support for Rural Economic Infrastructure Investments. Within the scope of this support, those who want to purchase the mobile microscope developed by MAKU will be given a grant of 50% of the cost. Thanks to this support, it is expected that the use of the mobile microscope in the field, especially by veterinarians and farms, will spread rapidly.

◆ **The Bovine and Ovine Herd Certification Programs of our University, which is the First and Only Accreditable Program Owner of our country, were approved by Turkish Accreditation Agency.**

The Dairy Cattle Farms Certification Program and Ovine Herd Certification Program has been approved by the Turkish Accreditation Agency as an accreditable program within the scope of TS EN ISO/IEC 17065 Standard and our Agriculture and Livestock Standardization and Certification Application and Research Center has become the first and only authorized institution in this field and in this program in Turkey. In this process, the conditions specified in the standard of dairy cattle enterprises are evaluated and the enterprises are classified in 3 groups as A, B and C. Organizations that want to carry out certification activities and have infrastructure can apply to our center and obtain "Authorization Certificate". The certification program was also included in the agenda of the Ministry of Agriculture and Forestry, submitted by the Ministry to the Presidency of the Republic of Turkey Strategy and Budget Presidency as an Investment Program and included in the Investment Program for 2023. Enterprises that take part in this process and are certified can benefit from grant support.

◆ **MAKU Became Turkey's First University to Receive Embryo Production Permit.**

The Genetics and Embryo Technologies Application and Research Center grows breeds with high genetics. MAKU will contribute to the economy of both the region and the country with the production license it has received from the Ministry of Agriculture and Forestry. Thanks to the trainings to be provided with the production license, which will significantly reduce our foreign dependence in embryo transfer, embryos with high genetics produced at MAKU can be transferred to cattle in our country by veterinarians.



“

Our education system
center of the sector
needs
to be placed,
to our students
real life
hands-on through
an education model
we're creating.

”



UNIVERSITY SECTOR COOPERATION WE HAVE A UNIQUE MODEL

**Relevant Ministries, Local Authorities,
Professional Organizations, Civil
Society Organizations, Cooperatives,
Operators, Industrialists**

**Knowledge
Power and
Technical
Capacity**

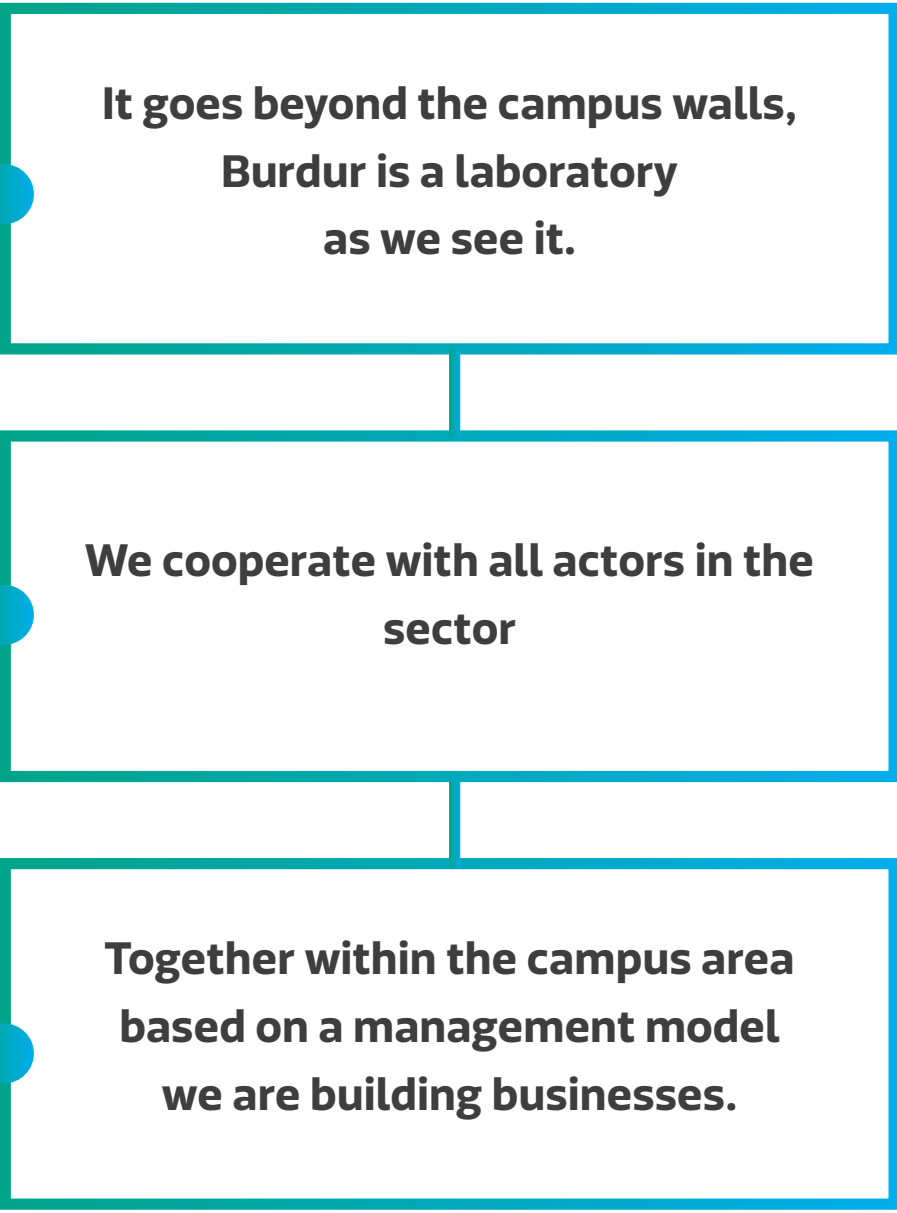

**Grower
Production
Power**

**Sector
Market
Making
Skill**

**Through effective collaboration
is coming together.**







**It goes beyond the campus walls,
Burdur is a laboratory
as we see it.**

**We cooperate with all actors in the
sector**

**Together within the campus area
based on a management model
we are building businesses.**

MAKÜ

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University



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