



UTAEM

Newsletter

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Preparatory Workshop on Strategy and Action Plan for Combating Agricultural Drought in Türkiye

“Preparatory Workshop on Strategy and Action Plan for Combating Agricultural Drought in Türkiye” was organized by Directorate General for Agrarian Reform in UTAEM complex between 28-30 June 2022. Participants from the different directorates of the Ministry such as DG for Agrarian Reform, DG for Agricultural Research and Policies and its affiliated institutes, DG for Plant Protection, Turkish State Meteorological Service, State Hydraulic Works, DG for Agricultural Enterprises as well as Ege University and Provincial Directorates of the Ministry contributed to the organization.



During the workshop, the views and opinions of the various sector representatives, ongoing activities for combating agricultural drought and proposals for the new period have been evaluated for the preparation of 2023-2027 Strategy and Action Plan for Combating Agricultural Drought. Realization status of



the existing plans was considered and development of new steps and improvement of our strategy to combat agricultural drought were intended through exchanging views from different perspectives.

6th INTERNATIONAL TRAINING ON AGRICULTURAL POLICIES AND RURAL DEVELOPMENT

6th International Training on Agricultural Policy and Rural Development was held in UTAEM between 08-12 August 2022 with 8 participants from Egypt, Kosovo, Rwanda, Sudan and Tunisia. During the training, experts from General Directorate for Agricultural Research and Policy (TAGEM), General Directorate for Agricultural Reform, General Directorate for Information Technologies, Ege University and Ahi Devran University instructed comprehensive lectures on agricultural policy, rural development, agricultural marketing, women employment in agriculture, young farmer approaches and rural tourism. Within the scope of the training, the participants visited Manisa Vineyard Research Institute and Halis Halva Company, which was granted a subsidy through rural development programs.



8th INTERNATIONAL TRAINING ON FOOD SAFETY AND FOOD ADDITIVES

8th International Training on Food Safety and Food Additives was held in UTAEM between 01 - 05 August 2022 with participants from Morocco, Egypt and Tunisia. During the course, experts from Bursa Food and Feed Control Central Research Institute, Directorate General for Food Control, TAGEM, Uludağ University and Çankırı Karatekin University instructed comprehensive lectures on food safety and food additives. The participants visited Aydın Fig Research Institute and Tire Dairy Cooperative, where they could examine the products developed with added value within the course program.



EU HORIZON 2020 EJP SOIL PROGRAM NATIONAL WORKSHOP ON SUSTAINABLE SOIL MANAGEMENT

The Workshop was organized by the Ministry of Agriculture and Forestry, Directorate General for Agricultural Research and Policies within the scope of the EU HORIZON 2020 EJP Soil Program between 20 - 21 June 2022 in UTAEM complex. Ministry officials, academia and private sector representatives, NGOs and Chamber of Agriculture participated in the workshop. During the workshop, the participants were informed about the projects carried out by TAGEM within the scope of the EJP Soil Program. Additionally, three different working groups were formed and final declarations were prepared.



INNOVATIVE AGRICULTURAL TRAINING CAMP (INOTEK 22)

Innovative Agriculture Training Camp organized by Prof. Meltem ONAY of 15 November Cyprus University and Assoc. Prof. Mustafa Tolga ESETLILI Ege University was held in UTAEM between 30 May – 05 June 2022 with 28 participants; undergraduate,



graduate and doctoral students of Ege University, Adnan Menderes University and Kirşehir Ahi Evran University Agricultural Engineering, Food Engineering, Biosystem Engineering and Bio-engineering departments. In the camp, where experts from Ege University, İzmir Katip Çelebi

University, FAO and İzmir Institute of Technology provide training, it was aimed to show students the potential career opportunities in the future with a different perspective by considering the agriculture, forest, food and materials science sectors with a holistic approach.



AZERBAIJAN DELEGATION VISIT

The Azerbaijani delegation consisting of representatives of Azerbaijan Ministry of Agriculture, Land Reclamation and Water Affairs Authority, Ministry of Economy and Council of Ministers visited our institution on 03 June 2022 during their excursion to get information about "agricultural irrigation management and modern irrigation practices" of our country. During the technical visit organized by the Turkish Water Institute and the United Nations FAO Azerbaijan Office, in order to obtain up-to-date information about the activities of IARTC on improving irrigation efficiency and effectiveness, irrigation systems were examined on-site under field conditions and UTAEM's accredited Soil, Water, Plant and Fertilizer Laboratory was introduced.

UZBEKISTAN DELEGATION VISIT

Uzbekistan delegation from Research Institute of Cotton Breeding, Seed Production and Agro Technologies visited UTAEM on 27 May 2022. The researchers were informed about the GDAR research structure, UTAEM research topics, and the concluded and ongoing national and international studies, and a meeting was also held on potential future collaborations. Finally, the infrastructure of our institution was thoroughly explained and on-going projects were introduced with a field trip.



Ongoing activities under the projects that are conducted by Section of Climate Change and Agro-ecology

The Project on Determination of Erosion Risk at Basin Scale and Monitoring the Sediment and Organic Carbon Sources

It is crucial importance to determine the spots where soil is actively moved in the basins in which water reservoirs (dam etc) or physical protection structures will be designed so as to utilize soil and water resources effectively at basin scale. If there is no findings on the source of sediment, trying to prevent sedimentation with high-cost investments at basin scale based on the land observa-



tions may not be a sustainable solution. In this project, Yunt-dağı Koseler Golet Basin which has a sedimentation problem caused by water erosion in Gediz Basin, has been selected as research area.

Following the implementation of the project, the data to be obtained for the next 2 water-year will be evaluated; (i) land use, geological structure and potential sediment sources based on the erosion types and risk areas will be determined geographically, (ii) parcels in which the amount of soil loss is higher than tolerance values will be determined spatially, (iii) recommendations for significant loss in the mass



of sediment to be moved by river will be developed and (iv) whether some indicative features used for determining the sediment sources in the research basin will be also used for the other basins that are facing with the same problems in the region will be evaluated.





Analysis and Modeling of the Effects of Climatic Variability on Coastal Aegean Olive Cultivation Areas

Climatic changes affect all living ecosystems not only through drought or temperature increase, but also through deviations in other climatic parameters and extreme weather events.

This study is on the responses of the olive trees, native to Anatolia, to climatic variability over the

years. It was designed as a continuation of a dendroclimatology study conducted in Kemalpaşa/İzmir between 2014 and 2020, together with the Olive Research Institute and Istanbul University.

The study aims to emphasize the effects of climate on plant development through stem diameter varia-

tion (dendrometry) and stem xylem transport (stem flow).

It seems that olive is a successful tool in every way for this. At the end of the study, via tree age ring readings, approximately 100-year climate-plant response chronologies will be created to determine the long term effects.

The Effect of Micro-catchment Water Harvesting Technique on Irrigation in Olive Studies

Societies that have experienced water scarcity and drought have aimed to use water harvesting methods more effectively in daily life and for agricultural purposes since ages. Countries with arid and semi-arid areas where the average annual precipitation does not exceed 200 mm / year and water conservation is man-

datory; uses and develops water harvesting methods effectively. Rainwater harvesting has a very important place in Agriculture due to the drought that has occurred in recent years and the limited access to water. This study was designed to continue a successful water harvesting project in Köyceğiz/Muğla with temperatures exceeding 40°C

in summer months and 50% stony soil despite 1040 mm of annual precipitation.

Thanks to water harvesting, olive cultivation is possible in the region with one or at two additional irrigations during the dry period. In this newly launched study, the effects of different irrigation practices and water harvesting are investigated.

Water Harvesting Awareness in Olive Cultivation



Climate variability, felt more and more day by day, pushes us to implement adaptation and precautionary mechanisms with extreme events such as heavy rains and droughts in Türkiye. One of these methods is the water harvesting, used both in daily life and in agricultural areas. While this method, used for thousands of years, is quite common in arid countries, it has seen limited use until today in Türkiye. However, in recent years, successful water harvesting studies have been carried out in our country. With the explanation and practical demonstration of these studies to

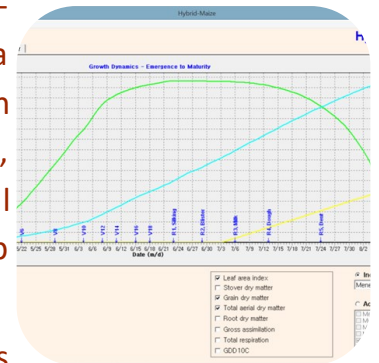
the producers, arising questions are answered, and the bond between the producer and the researcher is reinforced in terms of both water harvesting and agricultural practices.

This study, a joint effort of İzmir Provincial Directorate of Agriculture and Forestry and UTAEM, informs the producers on the cultivation of olive saplings in the plots with rainwater harvesting in the Mendere and Kemalpaşa demonstration areas.



Yield Estimation and Product Monitoring in Corn Plant with Plant Growth Models and GIS, RS, Techniques: Izmir Case Study

As a part of the “National Crop Monitoring and Yield Estimation Project”, this study aims to • Calculate the yield in the entire study area by correlating the data obtained in the crop monitoring parcel with the satellite data, • Use the Hybrid-Maize plant model with climate, soil, cultivation technique and plant data to calculate the potential yield, • Determine the performance of satellite images and crop model and effective input parameters.



In this context, Göktürk-2 satellite images were classified and NDVI vegetation index maps were created. Corn growth and yield were measured in the product observation plots. By modeling the measured yields with NDVI values, yield maps were obtained for both the monitoring plot and other maize fields. Additionally, potential calculations were made with plant models.

Climate Variability and Agricultural Practices (*Idris Uslu, 2022*)

Climate change is a meteorological phenomenon that spans a relatively long period of time. The course of the weather and extreme events in the current season are considered as climate variability. In this respect, while the measures taken against climate change are related to the sustainability of the production environment, the actions against climate variability can be considered as instant measures taken during the season to protect the product.

Climate is one of the main factors in plant cultivation. Measures against heat, radiation and wind damage are difficult and expensive. Meteorological conditions can affect soil preparation, planting, fertilizing, spraying, harvesting and post-harvest works. For example, in clay soils, soil cultivation becomes difficult in the cases of lack or abundance of moisture. High precipitation delays harvesting and reduces product quality. It increases the cost of drying the grain. Yield also varies according to agricultural practices such as fertilization, spraying time and harvest efficiency (Amien, 2006). Depending on the climatic variability, the agricultural operations carried out in dry and rainy periods are summarized in the Table. (Zuma-Netshiukhwi, 2013).

There are many factors that affect the yield in the growing environment of the plant. Plant models have been developed to monitor them for a good crop. Again, satellite data is used to evaluate the status of crops grown in large areas. A map of the changes monitored by geographic information systems is created and presented to the service of decision makers. While the factors limiting plant yield and adaptation options are evaluated with the plant model, a holistic monitoring and evaluation of the crop pattern and production system in a region is provided by evaluating the growth factors in a versatile way in the GIS environment and transforming them into maps.

Agricultural Practices in Drought Season and Wet Season

Drought Season	Wet Season
1. Tillage prior to the drought season	1. Timely tillage
2. Procuring production inputs (seed, fertilizer, etc.) prior to sowing	2. Procuring production inputs (seed, fertilizer, etc.) prior to sowing
3. Weather forecasts and monitoring the conditions throughout the season	3. Weather forecasts and monitoring the conditions throughout the season
4. Increasing the plant spacing by 25-50% in sowing	4. Applying normal or reduced plant spacing
5. Reducing the use of labor and inputs	5. Adequate labor and fertilizer application
6. Sowing before the first rains begin	6. Rotation and mixed planting
7. Preferring drought-resistant plant species	7. Diversifying plant species,
8. Frequent control of weeds	8. Frequent control of weeds
9. Practices such as mulching to conserve soil moisture, leaving plant residue, etc.	9. Using terracing, ridges and ditches
10. Reducing the size of the planted area	10. Expanding the tilled area
11. Taking water conservation measures	11. Storing excess water

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- ZUMA-NETSHIUKHWI G.N., (2013). The use of operational weather and climate information in farmer decision making exemplified for the South Western Free State, South Africa. Ph. D. thesis. University of Free State, Bloemfontein, South Africa. <http://scholar.ufs.ac.za:8080/xmlui/handle/11660/6133>.



Determining the Resilience of Farmers in İzmir Region Against Climate Change

The increase in extreme climatic events in the current century directly affects agricultural activities and food security and further sensitizes their already fragile structures. Evaluation of the resilience of agricultural producers against the dangers of climate change is necessary to determine what kind of measures can be taken against the risks that may occur.

With this study, it is aimed to learn the resistance of the households engaged in agricultural production against climatic fluctuations, to reveal their weaknesses and strengths,

and to provide information used in the solution policies to be developed and studies to be prepared. In this context, the SHARP tool prepared by FAO has started to be implemented by TAGEM institutes in provinces determined throughout the country. This Project, carried out by UTAEM in Izmir region, will focus on the resistance of the farmers in the Izmir region to climate change on the basis of districts and villages, and the climate change resilience of agricultural producers will be built with the obtained data as a result of the project.



ABOUT US...

UTAEM operates within the General Directorate of Agricultural Research and Policy under the Ministry of Agriculture and Forestry. The Center aims to carry out national/international research projects for increasing the agricultural productivity, conservation and sustainable management of natural resources and to hold national/international courses, workshops seminars etc. according to the needs and demands of public sector, private sector, professional organizations and non-governmental organizations. Besides its scheduled programs and projects, UTAEM is open to any kind of activities of training programs and research projects on demand from national/ international organizations. UTAEM adopts sharing the agricultural studies, experience and knowledge in international platform as principle and is one of the leading organizations in this regard.

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