

ISU

ISTINYE
UNIVERSITY
I S T A N B U L



AGRICULTURAL RESEARCH AND EDUCATION FOR FEEDING THE WORLD

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History of wheat, flour and bread around Anatolia

History of Wheat

Cereals and cereal products were among the most important foods for ancient civilizations.



İvriz Monument (~800 BC), photo Kenan SİNANOĞLU

History of Wheat

Cereals and cereal products were among the most important foods for ancient civilizations.



İvriz Monument (~800 BC), photo Kenan SİNANOĞLU

Hitite God Tarhunza & Hitite King Warpalapa

Dr. Sachihiko Omura, Japanese Anatolian Archeological Institute

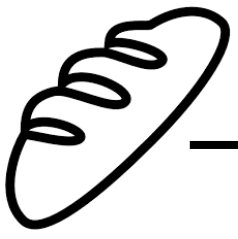


Dr. Omura



>1000 BC Hittites

**Cereal storage silos
Kaman-Kalehöyük**



Hitit Krallık Dönemi

(M.Ö. 1660 – 1190)

Ekmek

«NINDA – an ezzateni watarra ekutenni»

«Ekmeği yiyeceksiniz suyu da içeceksiniz»



(Hititlerin başkenti Hattuşa'da MÖ1900'lerin başında bulunan çivi yazılı tablet)



Hittite Kingdom

(BC 1660 – 1190)

Bread was sacred in ancient civilizations...

This Hittite pottery with a miniature female figure and water jug represents the sanctuary.

It has been proven by carbon testing that the black objects in the form of a semicircle on the altar and a circle at the base are pieces of bread.

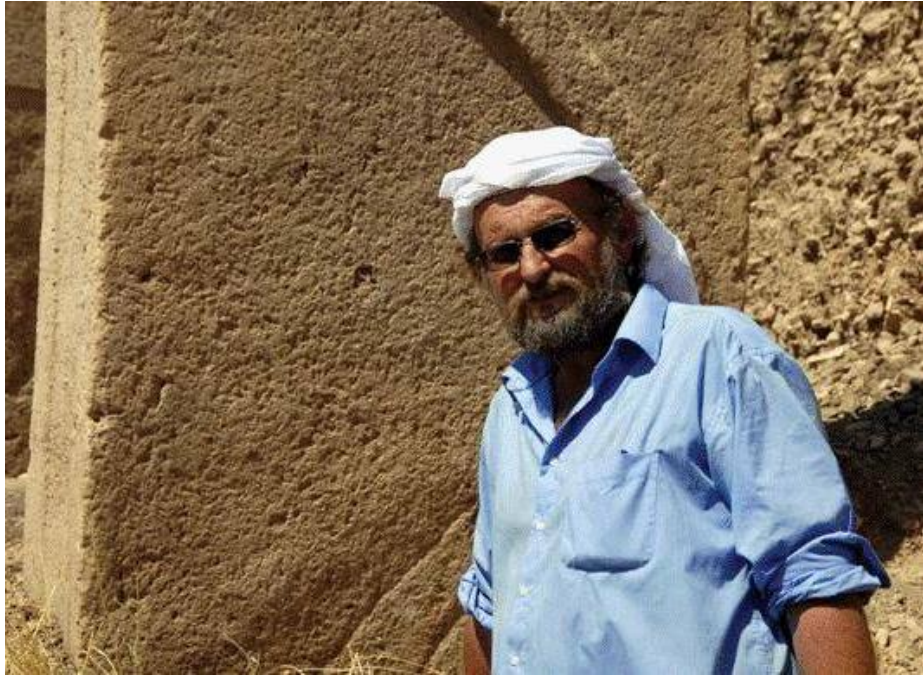


(Ünsal, 2001)

History of Wheat

Göbekli Tepe – 12 000 years ago

Prof. Klaus Schmidt
1953-2014



**German Archaeological
Institute (DAI)**



History of Wheat

Dr. Klaus Schmidt: Göbekli Tepe

German Archaeological Institute: DAI

The archaeological remains in Göbeklitepe date back to 10,000 BC.

Excavations led by Schmidt have shown that archaeological remains in Göbeklitepe marked the change from the time of hunter-gatherers to a time of domestication of plants and animals.



Cereals were the first plants domesticated here.



Milling of Cereal Grains

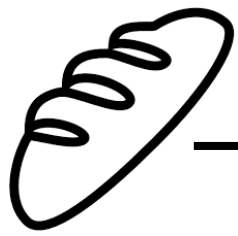
- After the start of agriculture grinding techniques were developed



Stone mill



Saddle stone



Milling

Later, water and wind power were also used to move the millstones.





**From agricultural
education and
research to milling
education**

Agricultural Education in the Ottoman Period

İstanbul -
Yeşilköy
Ayamama'da
ziraat okulu
açıldı

1847

Edirne Hamidiye
Ziraat Mektebi

1881

Selanik Ziraat
Mektebi açıldı

1887

Bursa Hamidiye
Ziraat Ameliyat
Mektebi

1891

Halkalı Ziraat
(ve Baytar)
Mekteb-i Alîsi

1892

Zirai Eğitim-Öğretim ve Numune Çiftlikler

1851

Çeşitli
nedenlerle okul
kapatılmıştır

1898

Ankara'da numune
çiftlik (tarla ve ağıllar)
oluşturulmuştur

Daha
sonraki
yıllar

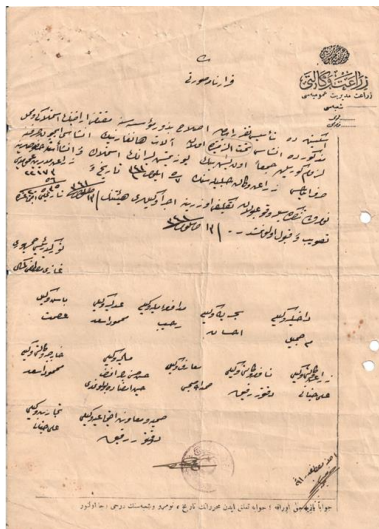
Numune Çiftlikler
açıldı; Erzurum, Halep,
Sivas, Konya (1914)

Seed Improvement Stations / Agricultural Research Stations

In our country, planned and systematic plant breeding studies started with the establishment of seed breeding stations in 1925, at the beginning of the Republican Period.

The first agricultural research institution opened in Turkey is the Sazova, Eskişehir Seed Improvement Station (established in 13 December 1925).
“İslah-ı Buzr İstasyonu”

This was followed by "Seed Improvement Stations" established in Ankara, Adana, Istanbul-Yeşilköy and Adapazarı.



Plant breeding/Cultivar development

9 Central Research Institutes,
10 Regional Research Institutes
28 Research Institutes for specific crops
47 Total Research Institutes

The first agricultural research institution opened in Turkey is the Sazova Seed Improvement Station, which was established in Eskişehir in 13 December 1925.

ZIRAAT VEKALETİ

Ziraat Müdürlüğü Umumiyesi
 Şubesi.....
 Umumi.....
 Hususi.....

KARARNAME SURETİ

Eskişehirde tesisi taharrür eden İslah Büzür Müessesesine muktesli araziina istimlakı ve mahal mezkûrde inşaatı taht olı mindo olan alat hangarını inşaatı için lüzum görülen com'an anbeşbin gü yetmiş liranın istimlak ve inşaat hususla inşaatı için ted'limesi Ziraat Vekalati Caltilesinin 5/7 Eylül 341 tarih ve Ziraat Müdürlüğü ' mimiyesi 22173-56-2-535 numaranlı tekeresi ile vuku bulan teklif userine İcra Vahilleri ayetinin 13 Kanunverevöl 341 tarihli içtimai de tasrip ve habul olanımuştur.

Türkiye Reisicumhuru
 Gazi Mustafa Kemal

Başvekil	Adliye Vekili	Millî Eğitim Vekili	Bahriye Vekili	Dahiliye Vekili
Mahmut Esat	Mahmut Esat	Kaya	İhsan	M. Cemil
Hariciye Vekalati Vekili	Maarif Vekili	Nafia Vekalati Vekili	Ziraat Vekalati Vekili	
Mahmut Esat	Hasan Hüseyin	Doktor Refik	Ali Canani	
Ticaret Vekili	Şahsiyet ve İhtisap Vekili			
Ali Canani	Doktor Ali			



Farasavur

İstiklal marşı...
 Ziraat Müdürlüğü Umumiyesi
 Eskişehir
 12/12/25

Basın Vekili: Mehmet...
 İçişleri Vekili: Ali...
 Hariciye Vekili: Mustafa...
 Bahriye Vekili: İhsan...
 Dahiliye Vekili: M. Cemil...
 Ziraat Vekili: Ali Canani...
 Maarif Vekili: Hasan Hüseyin...
 Nafia Vekili: Doktor Refik...
 Ticaret Vekili: Ali Canani...
 Şahsiyet ve İhtisap Vekili: Doktor Ali...



The first agricultural research institutions in Republic of Turkey

- Seed Improvement Station (Islah 1 Büzur) 1925 Eskişehir
- Seed Breeding and & Experimental Station 1926 Yeşilköy
- Seed Improvement Station 1926 Adapazarı
- Dryfarming Experimental Station 1929 Eskişehir
- Seed Breeding and & Experimental Station 1930 Ankara
- Blacksea Agricultural Research Institute 1944 Samsun
- Southeastern Anatolia Agric. Res. Institute 1962 Diyarbakır

We remember him with gratitude...

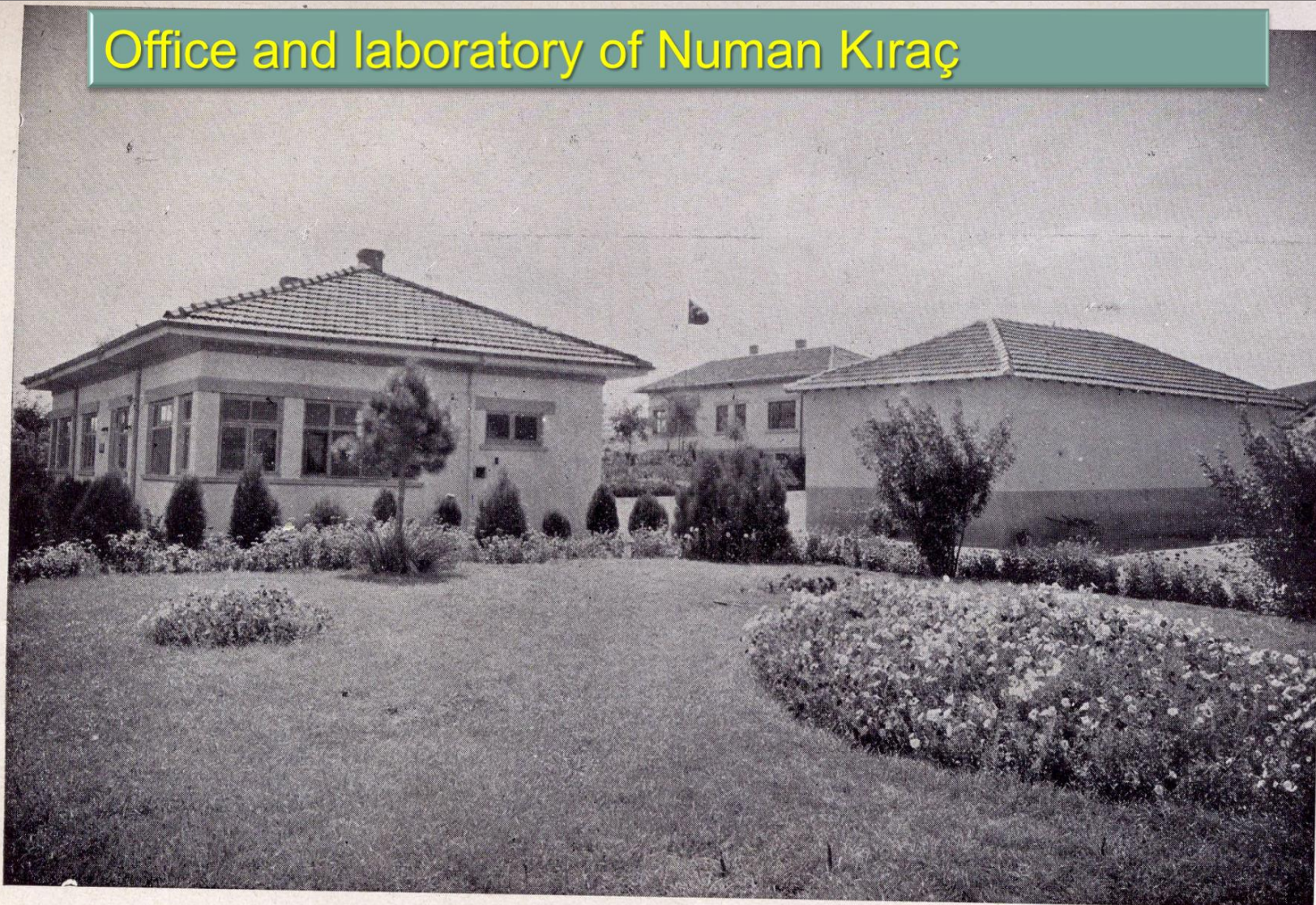
He has protected the genetic resources of the country and made it available to breeders.

Mirza Hacızade (Gökgöl)
1897-1982



DRYFARMING EXPERIMENTAL STATION 1929-1951

Office and laboratory of Numan Kiraç



Agronomy research

- Research on tillage techniques were needed for many years in Turkey and studies on this subject first started in Eskişehir Dry farming Experiment Station in **1931** and have continued until today.



Eskişehirde, Drayfarming Örnek Çiftliğinde nadas hafriyatı
(Orta Anadolu ziraatinde ancak 5.000 dönümlük bir çiftlik traktörü rentabl olarak kullanılabilir. 50 beygir kuvvetinde olan bu traktör günde 15 saat çalışarak 100 dönüm nadas çıkarır.)



Effects of early agricultural research institutions Turkey on wheat yield

Year	Growing Area (1000 ha)	Production (Tons)	Yield Kg/ha
1925	3 130	1 075	344
1930	2 810	2 586	921
1935	3 430	2 521	735
1940	4 381	4 068	928

- Although there were difficulties from time to time until 1955, Turkey was self-sufficient in terms of grain production. However, with the population growth overtaking the agriculture production, country had grain deficit starting from 1955 and generally imported wheat for the next 20 years.

- In 1965, Bahri Dağdaş became Minister of Agriculture.
- In the second Five-Year Development Plan, it was envisaged to develop cultivation techniques by allocating land to the ministry in order to make the country self-sufficient in grain production.
- In 1965, the "Wheat Production Development Project" was initiated with the support of AID (a 40-year loan of 3.5 million USD).

Wheat Research and Education Project Wheat Research and Education Center

- An agreement was signed between Turkey and the Rockefeller Foundation in 1969 and the "National Wheat Development Project" began to be implemented. The Project included training of young scientists.**
- With this project; Collaboration with CIMMYT and Oregon State University began, and support was provided for the training of Agricultural researchers.**
- Wheat Research and Education Center was established and Dr. Ahmet Demirliçakmak was appointed as director.**

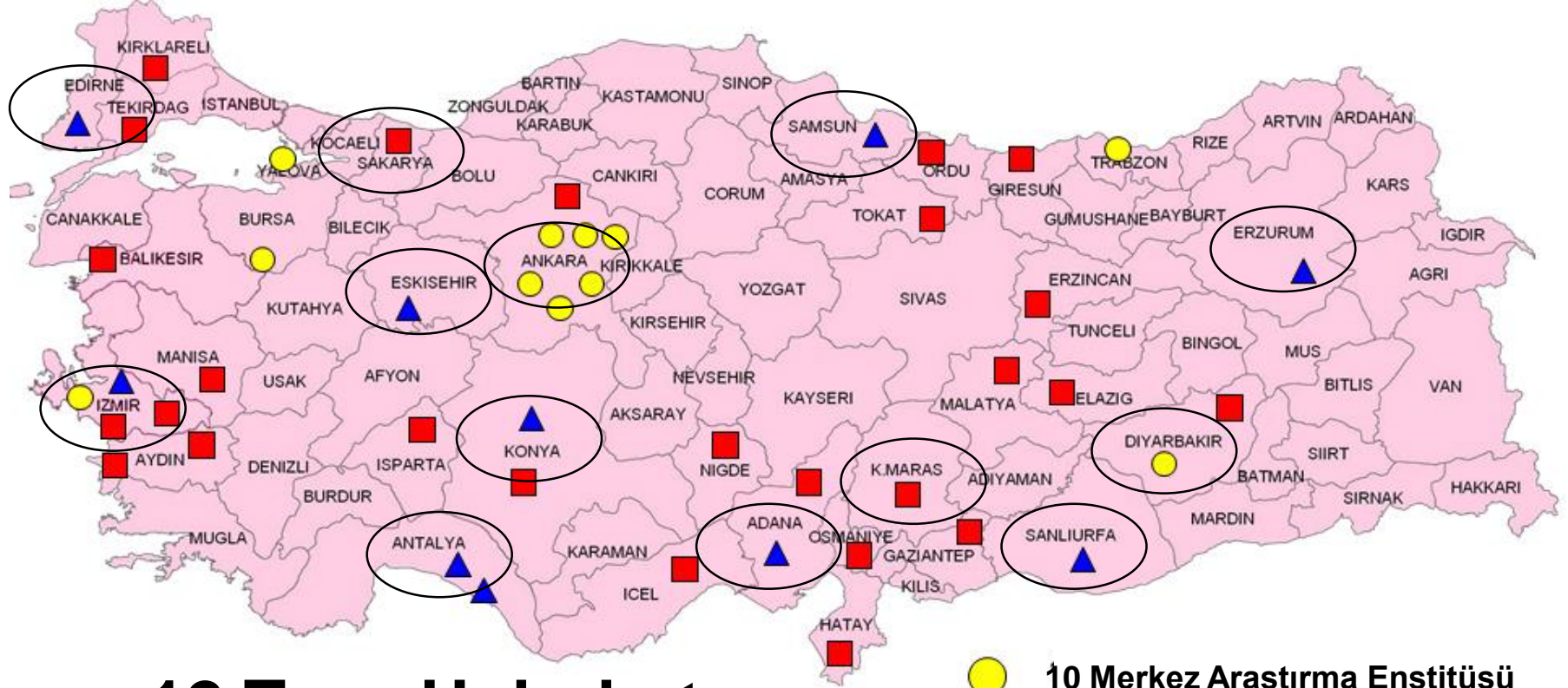
Wheat Research and Education Project

- With this project, breeding programs carried out individually in institutions were combined
- Inter-institutional coordination was achieved, collaborative trials were established
- Joint crossbreeding programs were started
- Most importantly, the breeding, agronomy, pathology and cereal quality & technology groups came together in line with the same goal.

Wheat Research and Education Project

- With the external scholarships provided, the of young research staff had training at CIMMYT and Oregon State University.
- The personnel of the agricultural extension organization had practical training in the State Agricultural production farms (Devlet Üretim Çiflikleri).
- During 3-year ministry of Bahri Dağdaş; Turkey moved from being an importer to an exporter in wheat.
- With this project, Turkey became self-sufficient in wheat.

Araştırma Enstitüleri



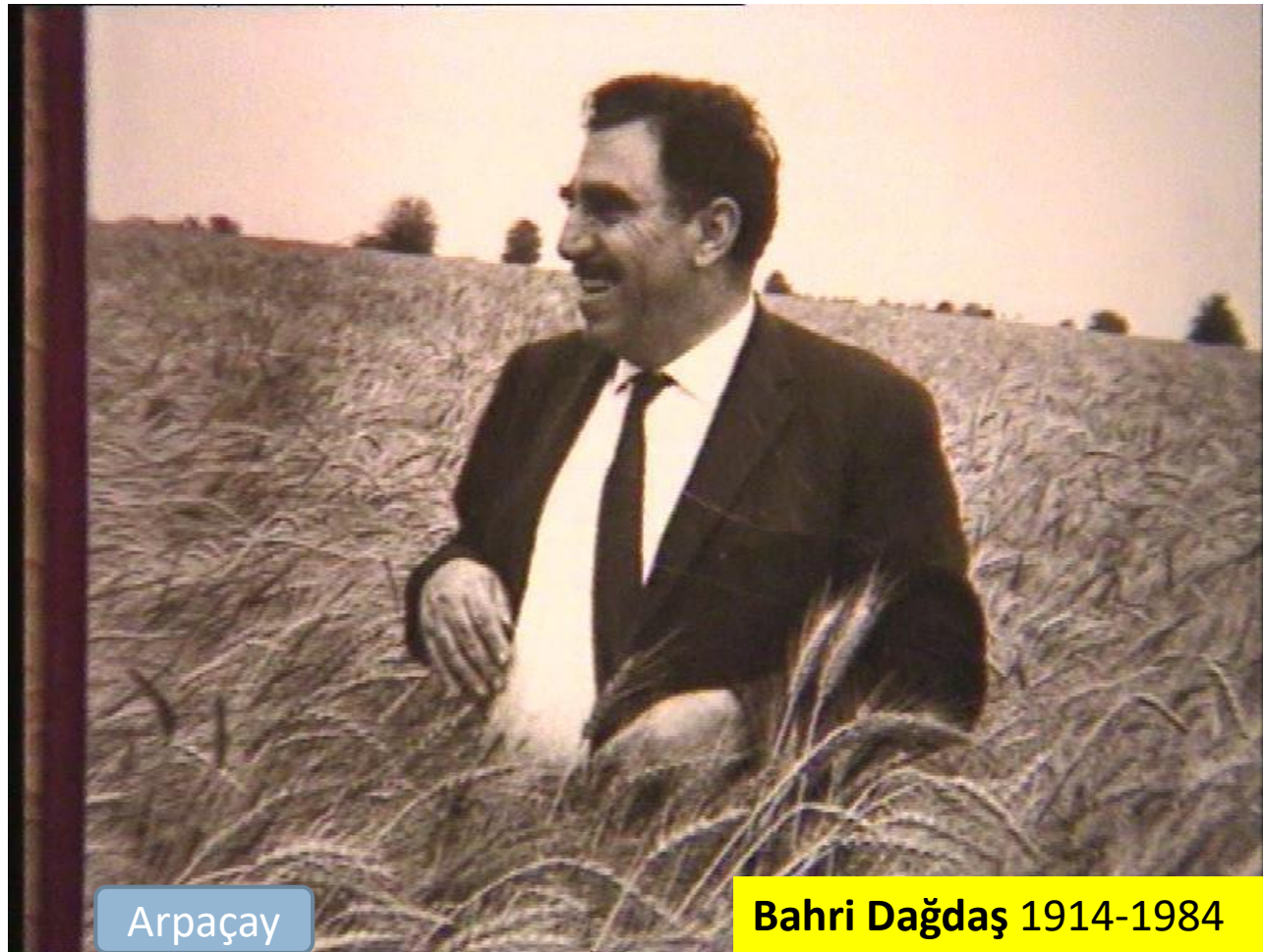
**12 Tane Hububat
Konusunda Çalışan
Araştırma Enstitüsü**

TOPLAM 49 Araştırma Enstitüsü *

* Türkiye Milli Botanik Bahçesi Müdürlüğü

We remember him with gratitude...

Dağdaş started the Breeder Training and laid the foundation of today's seed production.



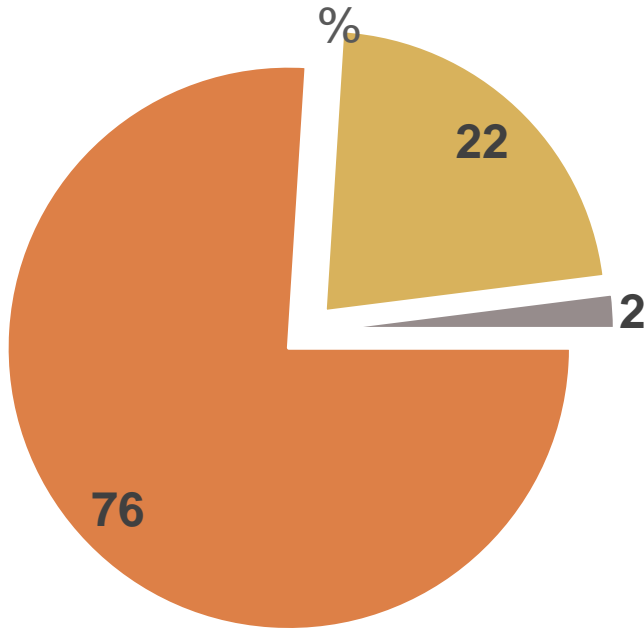
Arpaçay

Bahri Dağdaş 1914-1984

Cultivars & their ratios in seed production (2020)

28

Tarla bitkilerinde tescilli çeşitler



- Ğ Private sector
- K Public sector institutes
- Ü University

	Field Crops	Bread wheat	Barley
Registered cultivars	4625	336	153
Lines with production permit	557	89	32
Total	5182	475	185
Seed Production	1559	386	131
%	30	81	71

TEŞEKKÜRLER

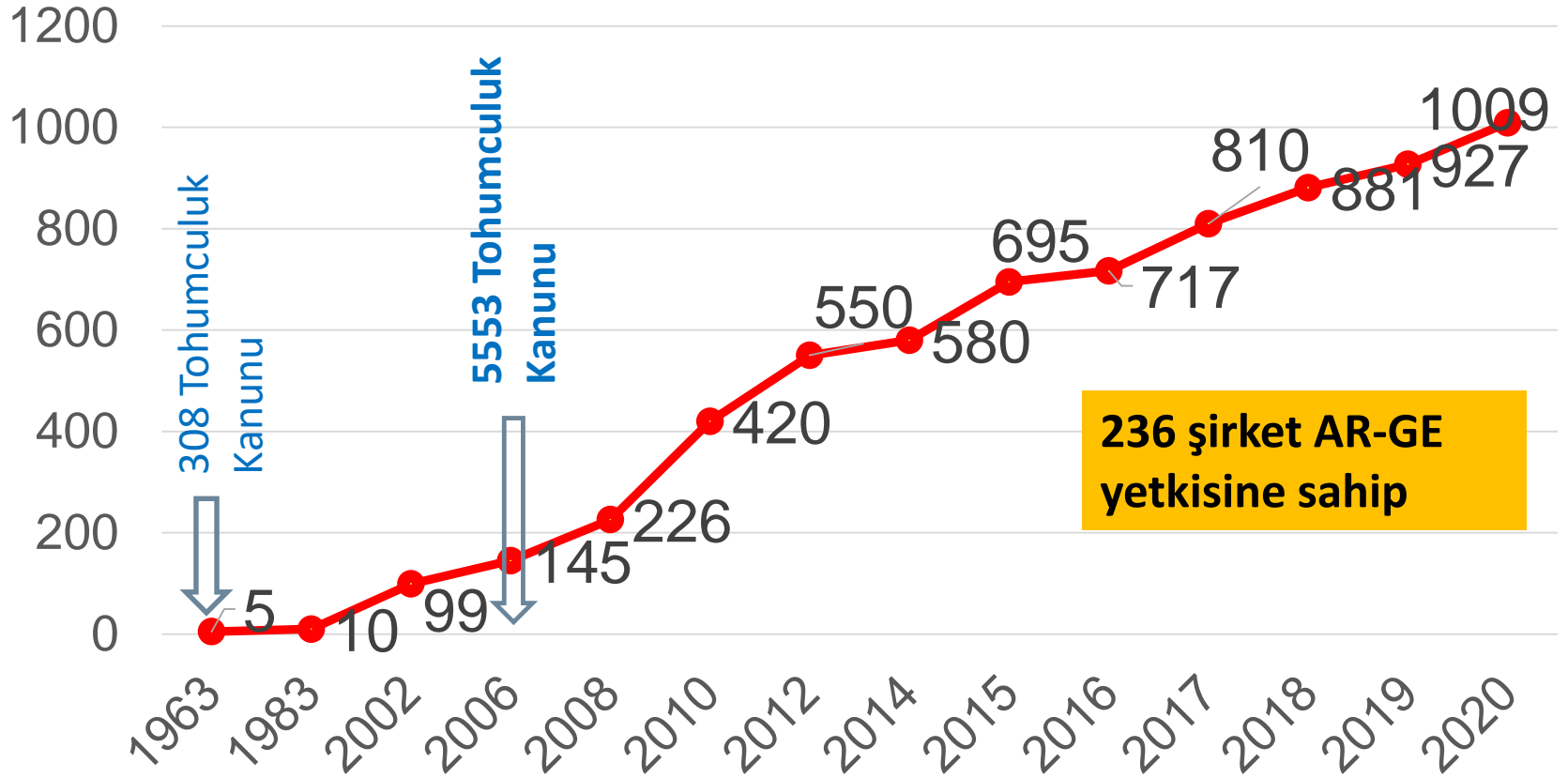
koksel@hacettepe.edu.tr

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Özel Sektör Tohumculuk Firmaları

30



236 şirket AR-GE yetkisine sahip

2021 yılında 1042

Water Footprints of Foods



125 litres
1 apple



80 litres
1 orange



50 litres
1 tomato



1260 litres
1 pizza Margherita



160 litres
1 slice



255 litres
1 glass of milk



318 litres
100 g cheese



196 litres
1 egg



2400 litres
1 beef hamburger



132 litres
1 cup of coffee